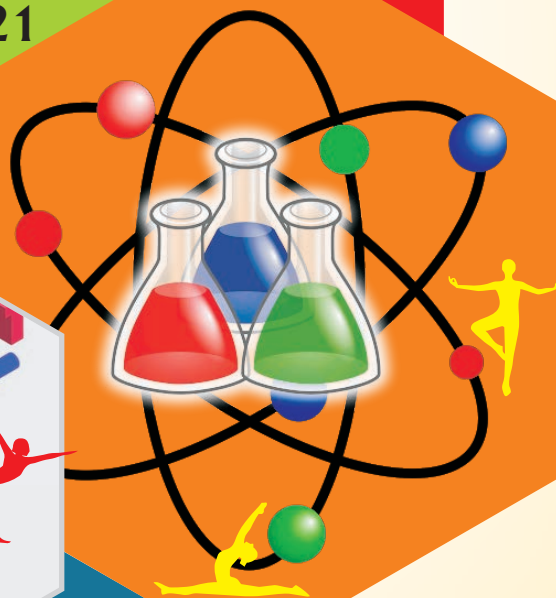


SECONDARY SCHOOL CURRICULUM

CLASS IX - X
2020-21



CENTRAL BOARD OF SECONDARY EDUCATION

Shiksha Sadan, 17, Institutional Area, Rouse Avenue, New Delhi-110 002

1. PRINCIPLES OF THE CBSE CURRICULUM

1.1 CBSE Curriculum

The curriculum refers to the lessons and academic content to be taught to a learner in the school. In empirical terms, it may be regarded as the sum total of a planned set of educational experiences provided to a learner by a school. It encompasses general objectives of learning, courses of study, subject-wise instructional objectives and content, pedagogical practices and assessment guidelines. The curriculum provided by CBSE is based on National Curriculum Framework-2005 and seeks to provide opportunities for students to achieve excellence in learning.

1.2 Salient Features of the CBSE Secondary School Curriculum

The Curriculum prescribed by CBSE strives to:

1. provide ample scope for physical, intellectual and social development of students;
2. enlist general and specific teaching and assessment objectives;
3. uphold Constitutional values such as Socialism, Secularism, Democracy, Republican Character, Justice, Liberty, Equality, Fraternity, Dignity of Individual and the Unity and integrity of the Nation by encouraging values-based learning activities;
4. nurture Life-Skills by prescribing curricular and co-curricular activities to help improve self-esteem, empathy towards others and different cultures etc.;
5. integrate innovations in pedagogy, knowledge and application, such as human sciences with technological innovations to keep pace with the global trends in various disciplines;
6. promote inclusive education by providing equal opportunities to all students;
7. integrate environmental education in various disciplines from classes I-XII;
8. equally emphasize Co-scholastic areas of Art Education and Health and Physical Education.

1.3 Objectives of the Curriculum

The Curriculum aims to:

1. achieve cognitive, affective and psychomotor excellence;
2. enhance self-awareness and explore innate potential;
3. attain mastery over laid down competencies;
4. imbibe 21st century learning, literacy and life skills;
5. promote goal setting, and lifelong learning;
6. inculcate values and foster cultural learning and international understanding in an interdependent society;

7. acquire the ability to utilize technology and information for the betterment of humankind;
8. strengthen knowledge and attitude related to livelihood skills;
9. develop the ability to appreciate art and show case talents;
10. Promote physical fitness, health and well-being.
11. Promote arts integrated learning.

1.4 Curriculum Areas at Secondary Level

CBSE envisions the all-round development of students in consonance with the holistic approach to education and therefore, emphasizes integration of co-curricular domain with curricular domain in an equitable manner.

Secondary Curriculum provides students a broad and balanced understanding of subjects including languages, Mathematics, Science and Social Science to enable students to communicate effectively, analyse information, take informed decisions, construct their worldview in alignment with constitutional values and move ahead in the direction of becoming productive citizens. The recent focus of CBSE is on the development of 21st century skills in settings where each student feels independent, safe and comfortable with their learning. The Board is also trying to align curriculum in a way so that children feel more connected to it and employ their learning in real life contexts. To achieve this aim, it is extremely important that children acquire adequate knowledge and skills in other core areas like Health and Physical Education, Life Skills, Values Education, Art Education, Work Education and other Co-Scholastic areas.

In operational sense, the secondary curriculum is learner-centered with school being a place where students would be acquiring various skills; building self-concept, sense of enterprise, aesthetic sensibilities and sportsmanship. Therefore, for the purpose of fostering core competencies in learners, this curriculum encompasses major learning areas, from scholastic and co scholastic point of view. The Areas of learning at the Secondary level are as under:

Languages 1	Compulsory	Scholastic Areas
Languages 2		
Social Science		
Mathematics		
Science		
Other Academic Elective Subjects	Optional	
Skill Elective		


Subjects		
Health and Physical Education Work Experience* Art Education	Subjects of internal Assessment	Co-scholastic Areas

* subsumed in Health and Physical Education

1.4.1 Scholastic Areas :-

The curriculum envisages individualized learning acumen and seeks to explore the potential of students in acquiring substantial acknowledgement and skills through academic rigors. With greater academic orientation and research skills in core academic areas, students would evolve as judicious young adults with a sense of real self-estimate having true values and principles. The scholastic areas are as follows:

- (i) Languages include Hindi, English and 37 other languages. The curricula in languages focus on listening, speaking, reading and writing skills and, hence, develop effective communicative proficiencies. Learners use language to comprehend, acquire and communicate ideas in an effective manner.
- (ii) Social Science (Geography, History, Economics and Political Science) intends to make learners understand their cultural, geographical and historical milieus and gain in-depth knowledge, attitude, skills and values necessary to bring about transformation for a better world. Social Science includes the learning of history and culture, geographical environment, global institutions, constitutional values and norms, politics, economy, interpersonal and societal interactions, civic responsibilities and the incorporation of the above-mentioned learning. Learners appreciate and value everyone's right to feel respected and safe, and, also understand their Fundamental Rights and Duties and behave responsibly in the society.
- (iii) Science (Biology, Chemistry and Physics) includes gaining knowledge about Food, Materials, The World of the Living, How things work, Moving things, People and Ideas, Natural Phenomenon and Natural Resources. The focus is on knowledge and skills to develop a scientific attitude and to use and apply such knowledge for improving the quality of life. This learning can be used to analyze, evaluate, synthesize and create. Learners understand and appreciate the physical, biological and technological world and acquire the knowledge and develop attitude, skills and values to make rational decisions in relation to it.
- (iv) Mathematics includes acquiring the concepts related to number sense, operation sense, computation, measurement, geometry, probability and statistics, the skill to calculate and organize, the ability to apply this

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- (v) knowledge and acquired skills in their daily life and the skills to think mathematically. It also includes understanding of the principles of reasoning and problem solving. Children learn to rationalize and reason about pre-defined arrangements, norms and relationships in order to comprehend, decode, validate and develop relevant patterns.
 - (vi) A well-skilled workforce is one of the main supports for prosperity and growth for any country. Some skills come from general education, but specific occupational skills are also important. Typically initial vocational education and training systems have a big part to play in supplying these skills. To develop skills and talents as a form of free expression, Board offers variety of competency based subjects under NSQF like Retail, Information Technology, Marketing & Sales, Banking, Finance, AI etc. Choosing any one Skill subject at secondary level can help the child to pursue what truly interests or pleases him or her. This liberty promotes a sense of self-esteem in accepting one's own talents and strengths.


The curriculum and the study material for the Skill Electives is available on the CBSE academic website under the tab 'Skill Education' and can be accessed through the link: <http://cbseacademic.nic.in/skill-education.html>.

1.4.2 Co- Scholastic Areas:-

Only a healthy child can learn effectively and good health leads to better learning. Many activities are necessary for development of the affective and psychomotor domain. The activities like games and sport, art and music, craft work etc. are termed as co-scholastic activities. The term co-scholastic activities is used for both cognitive and non-cognitive development that can take place by exposing the child to the scholastic and non-scholastic subjects.

Art Education including local art, craft, literature and skills, Health and Physical Education, Yoga, traditional games, indigenous sports, NCC, Scouts and Guides, Martial Arts etc. are integral parts of the curriculum and to be included in the routine of the schools for the holistic development of children. These are detailed below:

- (i) Art Education entails instruction in various art forms (visual as well as performing) with an aim to help children develop an interest for arts and encourage them to enthusiastically participate in related activities, thus, promoting abilities such as imagination, creativity, valuing arts and cultural heritage. In addition, Arts should be integrated with other subjects to promote creative thinking and expression
- (ii) Health and Physical Education focuses on holistic development, both mental and physical, understanding the importance of physical fitness, health, wellbeing and the factors that contribute to them. Focus of this area is on helping children develop a positive attitude and commitment to lifelong, healthy active living and the capacity to live satisfying, productive lives with the help of health management, indigenous sports, Yoga, NCC, self-defense, fitness and life style choices.

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- (iii) Work Experience: The Work Experience has been subsumed in the Health and Physical Education, however, it is an integral part of the curriculum and is given as much as focus as Health and Physical Education.

1.5 Integrating all areas of learning:

All these seven areas are to be integrated with each other in terms of knowledge, skills (life and livelihood), comprehension, values and attitudes. Children should get opportunities to think laterally, critically, identify opportunities, challenge their potential and be open to new ideas. Children should be engaged in practices that promote physical, cognitive, emotional and social development and wellbeing, connect different areas of knowledge, application and values with their own lives and the world around them. The holistic nature of human learning and knowledge should be brought forth while transacting the curriculum to make them good citizens who can contribute in making the world a happy place.

2. IMPLEMENTATION OF CURRICULUM


2.1 School Curriculum Committee

The Board mandates that all schools must setup a School Curriculum Committee with teachers representing each areas. The School Curriculum Committee would define activities for pedagogical practices, evolve a plan of assessment and mechanism of feedback and reflection and ensure its implementation. The committee would also ensure that the textbooks/reference materials are age appropriate, incorporate inclusive principles, are gender sensitive, have valid content and do not contain any material which may hurt the sentiments of any community. The committee will then send the list of books to the Principal to take action as per para 2.4.7 (b) of the Affiliation Byelaws, 2018. The committee would also ensure that the reference materials reflect conformity with the underlying principles of the Constitution of India and are compliant with NCF-2005. Issues of gender, social, cultural and regional disparities must be taken care of in the curriculum transaction.

2.2 Pedagogical Leadership:

All Principals have a crucial role to play in the evolution of the teaching-learning ecosystem as the Head and pedagogical leader of their schools. In the role of school pedagogical leader, the Principal is expected to undertake the following:

- a) Lead, Guide and Support the teaching and learning processes in the school by focusing on classroom specific requirements for transacting the curriculum, so that both teachers and students perform at their optimal best.
- b) Direct the entire focus of all school activities towards the students' learning and acquiring of necessary competencies. Every activity taken up by the school, therefore, should be mapped for the

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- academic competencies, and for life skills, values, etc., being acquired by the students.
- c) Prepare Annual Pedagogical Plan of the school by designing and developing annual plan for the school by giving equal importance to scholastic and co-scholastic areas.
 - d) Promote innovative pedagogy, with special focus on integrating art, sports and ICT (Information and Communication Technology) with education, and use active and experiential learning methods in the classrooms.
 - e) Ensure joyful learning at all levels through use of such innovative pedagogy.
 - f) Develop school specific resources for teaching and learning, in the form of lesson plans, e-content, use of mathematics and science kits developed by NCERT, etc.
 - g) Ensure proper in-house training of teachers in the school to enable them to unleash their own unique capabilities and creativity in their classrooms.
 - h) To be up to date with all new ideas and tools, etc. being used in education at the global level and constantly innovate the pedagogy of the school.
 - i) To make efforts to learn from the best practices of other schools, by arranging for discussions with Principals of such schools, or through observation visits of teachers to other schools.

As a pedagogical leader, the principal must prepare Annual Pedagogical Plan. The Board has not laid down the structure or format of the annual pedagogical plan as the Board respects academic autonomy of every school and expects each school to prepare its own unique and innovative annual plan. This plan must be an implementable one with timelines that should include administrative inputs and detailed pedagogical aspects.

2.3 Pedagogical Practices by Teachers

The pedagogical practices should be learner centric. It is expected of a teacher to ensure an atmosphere for students to feel free to ask questions. They would promote active learning among students with a focus on reflections, connecting with the world around them, creating and constructing knowledge. The role of a teacher should be that of a facilitator who would encourage collaborative learning and development of multiple skills through the generous use of resources via diverse approaches for transacting the curriculum.

Teachers should follow inclusive principles and not label children as 'slow learners' or 'bright students', or 'problem children'. They should instead attend to the individual difference of students by diagnosing and modifying their pedagogic planning. As far as possible, Arts should be integrated in teaching, especially while teaching the concept which students find difficult to understand.

2.4 Competency based Learning:

To face the challenges of 21st Century, education should be competency based and Principals as Pedagogical Leaders must create conducive environment for development of competencies among the students. Competency based Learning focuses on the student's demonstration of desired learning outcomes as central to the learning process. Learning outcomes are statements of what is expected that the student will be able to do as a result of learning the activity. In a way learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning. Therefore, the focus is on measuring learning through attainment of prescribed learning outcomes, rather than on measuring time. Experiential and active learning are the best pedagogies for Competency Based Learning. Experiential Learning will promote critical thinking, creativity and effective study skills among students. Learning Outcomes approach developed by NCERT for classes I-X may be adopted by all the schools and teaching-learning process may be changed in the light of these outcomes. The schools are expected to have well-defined Learning Outcomes for every grade that are observable and measurable, and empower learners to focus on mastery of valuable skills and knowledge through these Learning Outcomes, deemed to be essential for success in life. It is expected that teachers will provide meaningful and joyful learning experiences to the students by adopting variety of innovative pedagogies or instructional activities and go beyond textbooks. Schools are expected to track the attainment of Learning Outcomes by each learner and ensure that no child is left behind. CBSE will also come out with suggestive mapping of learning outcomes with NCERT curriculum which can be adopted/ adapted by schools. CBSE will also map each learning outcomes with assessments to enable tracking of learning progress. Schools should also attempt this on their own.

2.5 Lesson/ Unit Plan

Specific Lesson Plans for the topics are to be prepared by the teachers. These plan may have the following parts:

- ❖ Specific Learning Outcomes;
- ❖ Pedagogical Strategies;
- ❖ Group activities/experiments/hands-on-learning;
- ❖ Interdisciplinary Linkages and infusion of Life-skills, Values, Gender sensitivity etc.;
- ❖ Resources (including ICT);
- ❖ Assessment items for measuring the attainment of the Learning Outcome
- ❖ Feedback and Remedial Teaching Plan.
- ❖ Inclusive Practices

2.6 Classroom and School Environment

School environment should be conducive for holistic development of the students. The school should focus on health and hygiene by adopting inclusive practices. As part of the policy the school should adopt practices which will promote mental health. In this direction, the schools may follow the guidelines issued by the Board on making the school a No-Anger Zone or Anger Free Zone. The board has developed school health manuals which are available on www.cbseacademic.nic.in. The time table in the school should take care of proper rest and intake of healthy foods and the children learn subjects with relaxation.

The surroundings and daily life activities and situations are the best experiential teachers for the students. Teachers must make efforts to draw examples and group activities from daily life observations within the classroom/within the school and surroundings, and encourage presentations and reflection by the students once the activity is completed, to develop the skills of critical thinking and communication.


Children learn a lot through peer learning. To promote peer learning, flexible seating arrangements may be made available during the classroom transactions. The seating should also take care the needs of the students with disabilities as well. Learning should focus on individual differences and promote collaborative learning. The classroom activities must be connected to the immediate environment of children. The Learning Outcomes must be clearly specified and the same may be achieved through right kind of interventions. The school should maintain connection with the parents and the progress of children should be communicated to the parents, and, if needed remedial measures be taken up for improving the learning outcomes.

2.7 Creating Cross-Curricular Linkages

Creating cross-curricular linkages are vital to learning as they help to connect prior knowledge with new information. For example, Mathematical data handling and interpretation can be effectively applied in geography and science. Children can write better-framed answers in history, geography and science when they have learnt how to write explanations/short descriptions in a language. Similarly, Life Skills like empathy, problem solving and interpersonal communications can be easily integrated with the study of literature and other areas. Universal Values, Life Skills and Constitutional Values with emphasis on realization of Fundamental Duties may be incorporated depending upon context in almost all the subjects.

2.8 Special emphasis on Integrating Arts in education:

The NCF 2005 has recommended *“Art as a subject at all stages covering all four major spheres, i.e. music, dance, visual arts and theatre....We must bring the arts squarely into the domain of the curricular, infusing them in all areas of learning while giving them an identity of their own at relevant stages.”* It also states that *“the importance of India’s heritage crafts, both in terms of their economic and aesthetic values, should be recognized as being relevant to school education.”*



All disciplines being pursued by students at all stages require creative thinking and problem-solving abilities. Therefore, when Art is integrated with education, it helps the child apply art-based enquiry, investigation and exploration, critical thinking and creativity for a deeper understanding of the concepts/topics. Secondly, Art Integrated learning is a strong contender for experiential learning, as it enables the student to derive meaning and understanding, directly from the learning experience. Thirdly, this kind of integration not only makes the teaching and learning process joyful, it also has a positive impact on the development of certain life skills, such as, communication skills, reflection and enquiry skills, un-conditioning of the mind leading to higher confidence levels and self-esteem, appreciation for aesthetics and creativity, etc. Fourthly, this kind of integration broadens the mind of the student, and enables him/her to see the multi-disciplinary links between subjects, topics, and real life.

In view of the recommendations in the NCF-2005 document, NCERT's recommendation, need for awareness of India's vast and diverse art heritage, and the need for developing creative and critical thinking skills among students, the Board has decided to take up the integration of Art with the teaching learning process.

It must be understood that Art Education and Art Integrated Education may be mutually exclusive, but they build upon each other and strengthen each other. Art Education is not only relevant for developing creativity and appreciation of art among students, but is also necessary for inculcating art-based enquiry skills in the students. Art Education is a necessary precursor for the adoption of Art Integrated learning.

2.8.1 Art Education and Art Integration:

The following two-pronged approach will be followed during the current academic year:

- (i) Art education will continue to be an integral part of the curriculum, as a co-scholastic area at Secondary level. The schools may also promote and offer Visual and Performing Arts based subjects at the Secondary and Senior Secondary level.
- (ii) Art shall be integrated with the teaching and learning process of all academic subjects from classes 1 to 12, to promote active and experiential learning for "connecting knowledge to life outside the school, ensuring that learning shifts away from rote methods and for enriching the curriculum, so that it goes beyond textbooks."

2.8.2 Art Integrated Pedagogy:

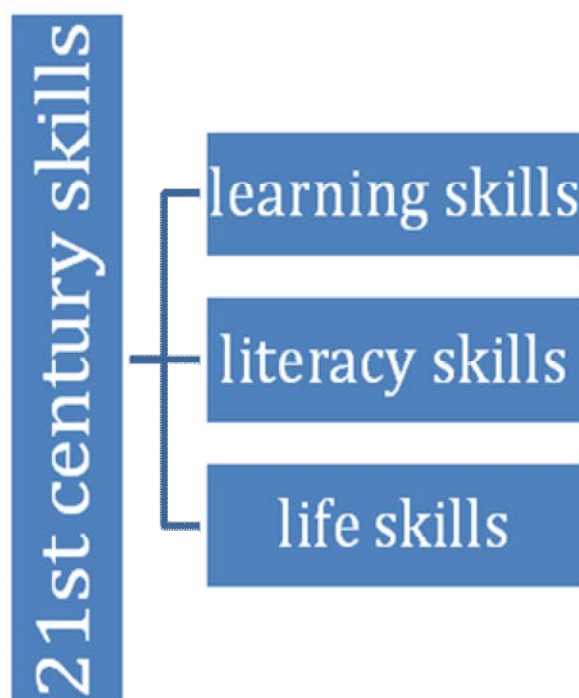
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The forms to be taught, methodology, processes, etc. can be different at different levels, as maybe decided by different schools. However, the interventions should be planned well by the schools. While preparing its annual pedagogical plan under the leadership of the Principal of the school, the school must plan out in detail the Art Education to be imparted at various levels, and how that Art can be integrated with classroom learning of various subjects. The focus must be on mutually reinforcing Art as a subject and Art as a tool for learning, with efforts towards seamless integration. Team teaching (combination of subject teachers and Art teachers) would also strengthen the integration. Arts-Integrated Learning will strengthen teachers for assessing application-skills of the students in their subjects.

For implementing this in classrooms, the subject teacher picks the topic/concept/idea that she wants to teach through integration of Art. The teacher can do this jointly with the Art teacher too. Then, the subject teacher collaborates with the Art teacher to align the pedagogy. Next, the teacher teaches the topic/concept/idea ensuring active learning and ensuring that both the subject and Art are integrated well and there is learning in both areas. Finally, the teacher prepares a rubric to assess the student in both the areas - that is, the topic taught and the Art used.

2.9 21st Century Skills:

There is an increased awareness among the educators of the need to integrate what are called as 21st Century skills in educational systems. There are three key 21st century skills;



Learning skills include:

- Critical Thinking
- Creativity
- Communication
- Collaboration

Literacy skills include:

- Information literacy
- Media literacy
- Technology literacy

Life skills include:

- Flexibility
- Leadership
- Initiative
- Productivity
- Self-awareness

The need of the hour is that schools must focus on enhancing the skills required for a successful adult life in 21st Century. It is important that the students are able to think scientifically, mathematically or artistically to face the real-life challenges in an information and technology driven world and enhance their inherent potential.

2.10 Inclusive Education:

Inclusive education approach is the way for full participation without any discrimination; students with and without disabilities enjoy equal opportunity in both scholastic and co-scholastic areas. Inclusive attitude is crucial for successful inclusive education. Therefore, all the members of teaching and non-teaching staff should be sensitized on the issues of inclusive education. Students without disabilities should also be sensitized. Schools must organize these sensitization programmes with the support of experts from respective field of disabilities. Capacity Building Programmes on Inclusive Education may be organized in collaboration with the CBSE-Centres of Excellence. Board has made the appointment of special educator mandatory to all the schools affiliated to the CBSE. Special Educators must possess the qualification as prescribed by the Rehabilitation Council of India. (CBSE Circular No. 31/2015).


3. SCHEME OF STUDIES

3.1 Subjects to be offered:

Class IX and X is an integrated course. Students need to take only those subjects in class IX which they intend to continue in Class-X. The subjects can be selected as per scheme studies in class IX. They need to continue same subjects in class X also. Subjects can be offered as under:

Subjects		Names of the subjects	Group
Compulsory	Subject 1	Language I (Hindi Course A or Hindi Course B or English Language and Literature)	Group-L
	Subject 2	Language II (Any one from the Group of Languages (Group-L) other than Language chosen at Subject 1)	Group-L
	Subject 3	Mathematics - Basic (Students have the option of selecting Mathematics - Standard or Mathematics - Basic at AISSE (X Board examination) Syllabus shall remain the same. Refer Mathematics syllabus for details)	Group- A1
	Subject 4	Science	
	Subject 5	Social Science	
Optional	Subject 6	Skill subject	Group-S
	Subject 7	Language III /Any Academic subject other than opted above	Group-L/Group-A2
Subjects of Internal Assessment	Subject 8 and 9 Assessment and certification at school level	Art Education Health & Physical Education Work Experience*	

***Work experience is subsumed in Health and Physical Education**

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- a) Examination at two levels is being held in the subject of Mathematics in the Board examination for Class X from the year 2020 onwards and the same shall not be applicable to the internal assessment in class X. For details please refer Circular No. Acad. 03/2019. It may be noted that the students who are opting Mathematics - Basic will have the option of taking Applied Mathematics (241) as an Elective at Class XI/Sr. Secondary though they may not be permitted to take Mathematics (041) at Sr. Secondary level. However a student who has opted for Mathematics - standard can offer any one of the two available Mathematics at Sr. Secondary level.
 - b) If a student fails in any one of the three compulsory academic subjects (i.e. Science, Mathematics and Social Science) and passes in the Skill subject (offered as sixth optional subject), then that academic subject will be replaced by the Skill subject and the result of Class X Board examination will be computed accordingly.
 - c) If a student fails in any language subject, out of first five subjects, the same will be replaced by the language taken as sixth subject (in case of no skills subjects offered) or as seventh subject (optional), provided he or she has passed this language subject and after replacement either Hindi or English remains as a passed language in the first five subjects.
 - d) It is expected that all the students would have studied three languages up to class VIII. Those students who could not clear the third language in class VIII and have been promoted to class IX, shall be examined by the concerned schools at the end of Class IX in the same syllabus and textbooks as prescribed for class VIII. Those who are still unable to clear the third language at the end of class IX may be given another opportunity in class X. No student shall be eligible to appear in the Secondary School Examination of the Board at the end of class X unless she/he has passed in the third language. However, students with disabilities are exempted from the study of third language.
 - e) Either Hindi or English must be one of the two languages to be studied in class IX and X. Hindi and English can also be offered simultaneously. In Hindi, two courses have been provided for class IX and X keeping in view the varying backgrounds of the students and a student may either opt for Hindi A (Code 002) or Hindi B (Code 085).
 - f) Students offering additional sixth skill subject may also offer an additional language III/ any Academic subject as seventh subject.
 - g) Out of the three subjects - Computer Application (Code 165), Information Technology (Code 402) and Artificial Intelligence (code 417) - only one can be offered. A combination of any of these subjects is not permitted.
 - h) For Skill subjects, only those subjects can be offered for which permission has been given by the Department of Skill Education, CBSE.

- i) Board is extending several exemptions/concessions to candidates with disabilities as defined in the "THE RIGHTS OF PERSONS WITH DISABILITIES ACT 2016". Exemptions/Concessions extended to Persons with Benchmark Disabilities for Class X & XII Examinations conducted by the Board and the Standard Operating Procedure for availing these concessions are available on :

<http://cbse.nic.in/newsite/attach/CWSN%20April%202019.pdf>

Schools and candidates may also refer to the circulars issued by the Board from time to time on this matter.

- j) For Regional Languages, the Board prescribes the textbooks being followed in classes IX and X in the respective State Boards where the language is taught. Schools are also advised to bring to the notice of CBSE the changes, if any, brought out at the commencement of the academic session by the respective State Boards, in the textbooks of the language of their State.
- k) Schools are directed to strictly follow the textbooks prescribed by CBSE in its curriculum. Changes, if any, can be adopted only after CBSE notifies it.

3.2 List of subjects offered at Secondary Level:

LANGUAGE (GROUP-L)	
CODE	NAME
002	HINDI COURSE-A
085	HINDI COURSE-B (ANY ONE)
184	ENGLISH LANG & LIT.
003	URDU COURSE-A
303	URDU COURSE-B (ANY ONE)
004	PUNJABI
005	BENGALI
006	TAMIL
007	TELUGU

008	SINDHI
009	MARATHI
010	GUJARATI
011	MANIPURI
012	MALAYALAM
013	ODIA
014	ASSAMESE
015	KANNADA
016	ARABIC
017	TIBETAN
018	FRENCH
020	GERMAN
021	RUSSIAN
023	PERSIAN
024	NEPALI
025	LIMBOO
026	LEPCHA
089	TELUGU TELANGANA
092	BODO
093	TANGKHUL
094	JAPANESE
095	BHUTIA

096	SPANISH
097	KASHMIRI
098	MIZO
099	BAHASA MELAYU
122	SANSKRIT
131	RAI
132	GURUNG
133	TAMANG
134	SHERPA
136	THAI

COMPULSORY ACADEMIC SUBJECTS (GROUP-A1)	
CODE	NAME
041 241	MATHEMATICS -STANDARD OR MATHEMATICS - BASIC (Only for X)
086	SCIENCE
087	SOCIAL SCIENCE

OTHER ACADEMIC SUBJECTS (GROUP- A2)	
CODE	NAME
	(Any one from the following)
031	CARNATIC MUSIC (VOCAL)
032	CARNATIC MUSIC (MELODIC INSTRUMENTS)
033	CARNATIC MUSIC (PERCUSSION INSTRUMENTS)
034	HINDUSTANI MUSIC (VOCAL)
035	HINDUSTANI MUSIC (MELODIC INSTRUMENTS)
036	HINDUSTANI MUSIC (PERCUSSION INSTRUMENTS)
049	PAINTING
064	HOME SCIENCE
076	NATIONAL CADET CORPS (NCC)
165*	COMPUTER APPLICATIONS
154	ELEMENTS OF BUSINESS
254	ELEMENTS OF BOOK-KEEPING & ACCOUNTANCY

SKILL SUBJECTS (GROUP-S)	
CODE	NAME
401	RETAILING
402*	INFORMATION TECHNOLOGY
403	SECURITY
404	AUTOMOTIVE
405	INTRODUCTION TO FINANCIAL MARKETS
406	INTRODUCTION TO TOURISM

407	BEAUTY & WELLNESS
408	AGRICULTURE
409	FOOD PRODUCTION
410	FRONT OFFICE OPERATIONS
411	BANKING & INSURANCE
412	MARKETING & SALES
413	HEALTH CARE
414	APPAREL
415	MEDIA
416	MULTI SKILL FOUNDATION COURSE
417*	ARTIFICIAL INTELLIGENCE

*Out of the three subjects with codes - 165, 402 and 417 - only one subject can be offered.

The curriculum and the study material for the Skill Electives is available on the CBSE academic website under the tab 'Skill Education' and can be accessed through the link: <http://cbseacademic.nic.in/skill-education.html>.

3.3 Instructional Time

Instructional time shall be as per the subjects selected. Schools must ensure that minimum number of hours are spent for each subject as specified in the curriculum. The time duration for the subjects has been clearly indicated in the syllabus of each subject. However, it is expected that schools will create innovative Timetables (such as, teaching-learning only 2 subjects per day etc.) to ensure that the burden of the bag and homework are substantially reduced and the classroom transaction are based on experiential processes. Schools may also think of introducing bag-less day and same may be incorporated in the time tables. The time table must also include the mandatory periods for co scholastic areas including Health and Physical Education.

3.4 Medium of Instruction

The medium of instruction in general in all the schools affiliated with the Board shall either be Hindi or English.

4. STRUCTURE OF ASSESSMENT SCHEME

The Assessment scheme will have an 80 marks component for Board examination (class X) and Annual Examination (class IX) in all scholastic subjects along with a 20 marks component of Internal Assessment. Students have to secure 33 percent in total in each of these components.

This condition has been relaxed vide Notification No. CBSE/Coord/DS/EC dated 11/10/2018 available at:

<http://cbse.nic.in/newsite/circulars/2018/passing%20criteria%20of%20Class%20Xth.pdf>

4.1 Board Examination for (Class X) and Annual Examination (class IX) for 80 marks

For Class X:

The Board Examination in each subject will cover entire syllabus of Class-X. Grades corresponding to the marks shall be on the basis of 9-point grading system. Grades will be awarded in each scholastic subject. For awarding the grades, the Board will put all the passed students in a rank order and will award the grades as follows:

A-1	Top 1/8th of the passed candidates
A-2	Next 1/8th of the passed candidates
B-1	Next 1/8th of the passed candidates
B-2	Next 1/8th of the passed candidates
C-1	Next 1/8th of the passed candidates
C-2	Next 1/8th of the passed candidates
D-1	Next 1/8th of the passed candidates
D-2	Next 1/8th of the passed candidates
E*	(The word/ phrase for this will be informed shortly)

* CBSE has decided to do away with the word "Fail". The word/ phrase to be used instead shall be informed shortly.

Notes:-

- Minor variations in proportion of candidates to adjust ties will be made.
- In case of a tie, all the students getting the same score, will get the same grade. If the number of students at a score point need to be divided into two segments, the smaller segment will go with the larger.
- Method of grading will be used in subjects where the number of candidates who have passed is more than 500.

- d) In respect of subjects where total number of candidates passing a subject is less than 500, the grading would be adopted on the pattern of grading and distribution in other similar subjects.

For Class IX:

The assessment scheme will be similar to class X Board examination. However, the grading in class IX will be as follows:

Grading Scale for Scholastic Areas (Class-IX) (School will award grades as per the following grading scale)	
MARKS RANGE	GRADE
91-100	A1
81-90	A2
71-80	B1
61-70	B2
51-60	C1
41-50	C2
33-40	D
32 and below	E*

*The word/ phrase for this will be informed shortly

- ❖ Absolute grading in class IX is used keeping in view the number of students appearing from any particular school as against positional grading used for class X.

Internal Assessment (20 Marks)

One time year-end examination is complimented and supplemented with Internal Assessment (IA) that assesses students in diverse manner, at different times and also examines a broad range of curriculum objectives. IA, in effect school-based assessment, plays the dual role of providing a complete picture of students' abilities or progress towards fulfilling the aims of education and informing teachers' of students' progress and therefore supporting classroom learning. It also informs the individual learner about his/ her progress over a period of time enabling them to develop strategies to improve learning.

4.2.1 Periodic Assessment

The main purpose of Periodic Assessment is to assess the learning progress of students. Such Assessment done at regular intervals provides feedback and insight to teachers regarding learners' needs and helps them to improve instruction, do remedial teaching and set curricular targets for a student or a group of students. The feedback also helps students to know their errors as well as strengths and weaknesses. The students, thus, are enabled for better learning and setting up realistic goals. In essence, this is *assessment for, of and as learning*. Periodic Assessment is further divided into the following:

1. Periodic Tests (05 marks): As earlier, these would be restricted to 3 in each subject in an academic year and the average of best 2 would be taken for final submission of marks. These tests tend to follow a pattern, which is quite similar to the final end of course examination, and have a gradually increasing portion of content. Hence, they also tend to prepare students for final summative exams in a more confident manner.

The weightage of this component, however, would be of 05 marks only.

4.2.2 Multiple Assessment (05 marks): Multiple assessment strategies relevant to particular learning outcomes are advised over the period of curriculum transaction. The subject teachers would determine the type and frequency of these. This would make assessment more comprehensive and provide schools/teachers flexibility to use multiple and diverse techniques to assess learners viz. observation, oral tests, individual or group work, class discussion, field-work, concept maps, graphic organizers, visual representation etc. Hence, the schools are given autonomy to use alternate modes of assessment as per the demand of the subject and the context towards addressing the goal of assessment for and as learning, such as, quizzes, portfolio, project-work, Self and peer assessment, collaborative projects, experiments, classroom demonstrations, etc.

Caution must be observed that recording of such assessment is not cumbersome and can be easily translated into individual student scores. Thus, developing simple scoring criteria and rubrics becomes of equal importance when deciding to use a particular technique. In tune with purpose of periodic assessment, i.e., to provide feedback to improve teaching and learning, it becomes of equal importance to use follow-up measures incase students are found deficient in proficiency of relevant learning outcomes.


The weightage of this component would be of 05 marks.

4.2.2. Portfolio

The creation of portfolios is suggested to broaden the scope of learning and achieve diverse curriculum outcomes by examining a range of evidence of student performances being assessed.

What is a portfolio?

- a) A portfolio is a purposeful collection of intentionally chosen work by a student representing a selection of performances that is assembled over time and describes the learner's efforts, progress, growth and achievement in key areas learning outcomes. It is a tool for assessing a variety of skills not usually testable in a single setting of the traditional written paper and pencil tests. Assessment would include self and peer assessment among others. Its use is recommended as a support to the new instructional approaches that emphasize student's role in constructing knowledge and understanding.
- b) For a more simple approach in the first year, it was suggested that the portfolio take the form of a journal or notebook that would include besides classwork, students artifacts selected within a coherent framework along with their reflections. Learner here is an active participant involved in constructing his or her journey through the portfolio building process of selecting, organizing and reflecting. Now Schools are expected to develop the portfolios as per para 4.2.2 (a) above.
- c) This portfolio can be seen both as a process and as a product:
As a product, it holds the performance records and documents, a student has produced during the learning course and represents a collection of their learning achievements.
As a process, it enables learners to monitor their own learning systematically, reflect on their performance, redirect their efforts and set future goals.
- d) What purposes does a portfolio serve?
In a general sense, a portfolio
 - offers the possibility of assessing more complex and important aspects of a learning areas or subject matter that can't be assessed through traditional forms of testing;
 - provides a profile of learner's abilities - in-depth growth and progress
 - serves as a concrete vehicle for an ongoing communication or exchange of information and feedback among various stakeholders - students, peers teachers, administrators. It may even be used to compare achievement across classrooms or schools;
 - Serves as a lens and helps to develop among students an awareness of their own learning. The focus on self-assessment and reflection helps students to identify their strengths and weaknesses thereby facilitating setting up of realistic improvement goals. The active role that students plays in examining what they have done and what they want to accomplish, not only motivates them but also help to develop



metacognitive skills which enable them to make adjustments not only in their learning in school but beyond as well;

- Provide an opportunity to share own learning with peers and review and give feedback on each other's work. Peer Assessment thus becomes a great support that further facilitates a clear understanding and evaluation of personal goals;

Thus, a portfolio, on one hand helps to establish a common vision of goals and holistic picture of students learning, on the other, increases accountability and contributes to improved teaching and learning. Enabling review of curriculum and instruction, it may also be seen as a tool for curriculum enhancement.

How to prepare a portfolio?

At the outset, it is important to know *why a portfolio is being created and be clear of the purposes without purpose*. Without purpose, it simply becomes a catalogue of student's work. It is suggested that the portfolios be an extension of note books developed subject-wise. They would include classwork and homework assignments that would help evaluate learner's progress. Besides this, portfolio should be a space for student to display his/her exemplary work in the related area. The attention should be to promote techniques such as annotation, identification of key words / topics / themes, summarization and organization of ideas and content, photos, presentations, assignments, art integrated learning, etc.

The sample of creative work and evidences that demonstrate process skills or development of critical thinking or problem solving merit inclusion as well. A periodic review of the evidences included in the portfolio would facilitate self-assessment by learners who would be more aware of their own learning and be able to identify their strengths and weaknesses. The portfolio also provides an opportunity to learners to share and comment on each other's work. Such peer assessment facilitates understanding of criteria of good work to students. It is advised that such criteria be developed and made clear to students. Initially this self and peer assessment would be a guided endeavor.

Assessing Portfolios

Students' portfolio can be effectively evaluated using a simple scoring rubric. The criteria - the factors to be used in determining the quality of a particular student's portfolio needs to be carefully developed and shared with students. The key elements of the particular criteria need to be specified as well.

Suggested are some elements to judge student's portfolio:

- Organization - Neatness, Creativity and Visual Appeal
- Completion of guided work focused on specific curricular objectives

- Evidences of student's growth
- Inclusion of all relevant work (Completeness)

Teachers can include other subject relevant criteria and elements to assess portfolios.

A Word of Caution: Portfolios need to be developed in an easy to manage form. They need to be meaningful but simple and accessible. Developing them should not be a burden on students- both in terms of cost and time.

The weightage of this component would be of 05 marks.

4.2.3 Subject Enrichment Activities

Subject enrichment activities aligned with the secondary school curriculum aim at enrichment of the understanding and skill development. They provide in-depth learning that motivates students to dig deeper into the discipline. These enrichment activities need to challenge students and permit them to apply knowledge to the next level. These activities become an important instrument to learn the processes by which knowledge is generated in a particular discipline. They ought to provide opportunity to students to explore their own interests as well along with an understanding of the nature of particular discipline.

It is important that the Subject Enrichment Activities be conducted with rigour and focus. Some suggestions for this are as follows:

Languages provide ample space and the autonomy to subject teachers to develop relevant listening and speaking skills. Teachers need to use this opportunity to full advantage and use excerpts from relevant suitable literature to develop vocabulary and heighten students' awareness and sensitivity.

The specified activities in practical work in **Science** and **Mathematics** need to be conducted in the investigatory spirit in congruence to the aims and objectives of the subject. The focus must shift from confirmatory nature of lab experiments to explorations that focus on development of science processes. Students need to be encouraged to raise questions, generate hypotheses, experiment, innovate and find solutions to questions/ problems encountered.

The discipline of **Social Science** puts the responsibility on concerned teachers to facilitate students to design and execute relevant projects. It is suggested that social science being the subject relevant to social context, projects be related to Art and culture and include development of Life Skills too. Art is not only about self - expression but is more about perceptions and a special way of understanding and responding to work. Exploring into ideas and meanings through the works of artists/experts/ writers/poets, the students would develop imagination and critical awareness.

The weightage of this component would be of 05 marks.

Co-Scholastic Areas

Education envisages the comprehensive and holistic development of children and, hence, Co-scholastic activities are essential. CBSE recommends two major Co-scholastic activities viz., Art Education and Health and Physical Education in which the area of Work experience is subsumed.

Art Education

Art Education constitutes curricular activities for the development of the wholesome personality of the children, aesthetic sensibilities and respect for social values and cultural heritage. It encourages learners to develop creative expression, sharpens keen observation and develops a sense of organization and order. Students may select one form each from Visual Arts (drawing, painting, murals, collages, crafts, sculpture, etc.) and Performing Arts (dance, music, drama, puppetry and Folk Art forms etc.). Children's participation in activities/competitions organized and conducted throughout the year form the basis of assessing the student by the Visual Art/Performing Art teacher.

Health and Physical Education (Sports/ Self-Defence /Yoga/ NCC etc.)

Health and Physical Education focuses on holistic development, both mental and physical, understanding the importance of physical fitness, health, wellbeing and the factors that contribute to them. Focus of this area of curriculum is on helping children develop a positive attitude and commitment to life long, healthy and active living and the capacity to live satisfying, productive lives with the help of health, hygiene and sanitation, work experience, indigenous sports, yoga, NCC, self-defense, fitness and lifestyle choices.

Health and Physical Activities, preferably sports must be given one regular period per day. Students should be provided opportunities to get professionally trained in the area of their interest. Indigenous sports, yoga and NCC must be encouraged in the schools as they develop physical fitness, discipline, sportsmanship combined with patriotism, self-sacrifice and health care. Similarly Self-defense may be actively taught to students, especially girl students, as it instills confidence and empowers them. The teachers should ensure that the students get opportunities to participate in activities of their choice and help them in identifying and nurturing their talents and gain confidence. The Physical Education teacher will maintain the record of all the Health and Physical Education activities/competitions that each of the children participate in. The Comprehensive School Health Manuals (four volumes) brought out by CBSE could be referred to for detailed information and the graded activities could be taken up as part of the curriculum in school.

To address the Health aspect of HPE, qualified doctors should examine children once in the academic year along with a follow-up session during the year. School should also bring any noticeable disability in a student to the notice of the school counselor and parents. Cases of special needs of students with medical history must be carefully noted and handled accordingly. Detailed information on the Comprehensive Physical and Health Education Curriculum is enclosed with this document.

4.4 Assessment of Co-Scholastic Areas

Assessment of Co-scholastic Areas may be continuously done by collecting information, reflecting on and using that information to review children's progress and to plan future learning experiences. The documented data, after interpretation, should be reflected in the Report Card of the children in the form of grades.

In the existing scheme of assessment, these activities will be graded on a 5-point grading scale (A to E) for classes IX-X and will have no descriptive indicators. The students shall be assessed on two areas i.e. Art Education, Health and Physical Education. Work Experience is subsumed in the Physical and Health Education. No up scaling of grades will be done.

The concerned teacher would make an objective assessment of the level of performance/ participation demonstrated by a student throughout the academic year and finally assign grades.

4.5 Parameters of Assessment

While the students are engaged in the co-scholastic areas, the process is as important as the product. Hence, the assessment in these areas should take account of both aspects. The basis of assessment has been suggested below:

Co-scholastic Areas	Product	Process
Health and Physical Education which includes Work Experience	Overall fitness	Participation, team-spirit, commitment and honest effort.
Art Education	Expression, creativity and Aesthetic appeal	Participation, Creative process, material use, appreciation, reflection, effort, craftsmanship and completion

Details of Five-point Grading for Art Education (Class IX and X)

Grade	Connotation
A	Exemplary
B	Proficient
C	Developing
D	Emerging
E	Beginner

Distribution of Periods/ Grades for Internal Assessment in Health and Physical Education (with Work Experience subsumed in it)

Strand	Periods(App)	Grades*
1. GAMES Athletics/ Swimming Team Games Individual Games/ Activity Adventure Sports	90 periods	While filling online data, following grades may be filled against HPE: Class IX-X: Grade (A-E) on 5-point scale (A, B, C, D, E)
2. Health and Fitness	50 periods	
3. SEWA	50 periods	Grades of SEWA is considered against Work Experience Class IX-X: Grade (A-E) on 5-point scale (A, B, C, D, E)
4. Health and Activity Card	10 periods	
Total	200 Periods (Approx)	-

* Refer the detailed HPE guidelines available on www.cbseacademic.nic.in, including the above amendment

Development of competencies through Academic activities of the Board:

In the recent past the board has been organizing various activities for promoting various 21st century skills. Following are some such activities introduced with the intention of enhancement of the skills and values.

S. No.	Student Enrichment Activity	Skills/Values to be Enhanced
1	Story Telling Competition	Thinking Skills: Creative, Analytical, Evaluative
2	Reading Week	Communication Skills
3	Fastest Reading Contest	Linguistic Skills
4	Aryabhata Ganit Challenge	Reasoning Abilities Problem Solving Skills Critical thinking Analytical thinking Ability to manipulate precise and intricate ideas Ability to construct logical arguments
5	CBSE Heritage India Quiz	Values of respect for diversity and tolerance Awareness about preserving Indian heritage and monuments Critical thinking skills Appreciation for rich heritage and diversity of the country
6	Science Exhibition	Critical and Creative Thinking Skills
7	Science Literacy Promotion Test	Problem Solving Skills Scientific Temperament Connecting Science to day to day life
8	Expression Series	Creative Thinking Skills Communication Skills
9	Eco-Club Activities	Awareness about Environmental Conservation and Protection
10	Swachhata Abhiyan	Clean lines Habits

11	Ek Bharat Shrestha Bharat	Spirit of Patriotism and Unity
12	Rashtriya Ekta Diwas	Creative Skills
13	Inter School Band Competition	
14	Fit India School Week	Healthy lifestyle
15	CBSE Inter-School Sports & Games Competitions	Attention and concentration powers
16	International Day of Yoga	
17	Matri bhasha Diwas	Awareness of Linguistic and Cultural traditions Values of Tolerance and Dialogue Communication Skills

Schools are encouraged to ensure that their students participate in these activities of the Board for making the students future-ready and also for becoming a holistic learner.

Suggestions for Teachers

Teachers should encourage participation of each child in some activity or the others. They must ensure that no child is left out from participation in activities organized by the Board or at the class/school or at interschool level. By carefully examining the behavior / skills / competencies of children in the class on all possible occasions, teachers will maintain records of the performance of learners. Schools should encourage teachers to work collaboratively with other teachers for facilitating and assessing learner's performance and then finally assigning grades.

Discipline (Attendance, Sincerity, Behavior, Values)

Discipline significantly impacts career shaping and helps build character, sincerity, self-control, perseverance, good behavior and values. The concept of discipline should not be confused with strict authoritarian environment and the students should be given freedom to share their doubts and ideas with teachers regarding class work. Constitutional and universal values should also be encouraged amongst students. Hygiene, sanitation, dedication, honesty, truthfulness, kindness, empathy respect for the environment, elders and all living things etc. are the values that our students must actively practice. Parents may also support schools in cultivating disciplined behavior in their wards. Class teacher will grade the students on a Five-point scale (A to E) keeping in view the overall attendance, sincerity, values and behavior of the students. Values Education Resource Book and Kit developed by CBSE may be used for inculcating values in students.

4.9 Rules regarding Admission and Examination

Regarding eligibility for Admission, Eligibility for Examination, Scheme of Examination and related information, please see the Examination Bye-Laws of CBSE available on www.cbse.nic.in



CENTRAL BOARD OF SECONDARY EDUCATION
Shiksha Sadan, 17, Institutional Area, Rouse Avenue, New Delhi-110 002

ENGLISH LANGUAGE AND LITERATURE

(Code No. 184) (2020-21)

1. Background

Traditionally, language-learning materials beyond the initial stages have been sourced from literature: prose, fiction and poetry. While there is a trend for inclusion of a wider range of contemporary and authentic texts, accessible and culturally appropriate pieces of literature should play a pivotal role at the secondary stage of education. The English class should not be seen as a place merely to read poems and stories in, but an area of activities to develop the learner's imagination, which is a major aim of language study, thus equipping the learner with communicative skills to perform various language functions through speech and writing.

2. Objectives:

Objectives of the course are to enable learners to:

- build greater confidence and proficiency in oral and written communication;
- develop the ability and knowledge required in order to engage in independent reflection and inquiry;
- use appropriate English to communicate in various social settings;
- equip learners with essential language skills to question and to articulate their point of view;
- build competence in the different aspects of English;
- develop sensitivity to, and appreciation of, other varieties of English, like Indian English, and the culture they reflect;
- enable the learner to access knowledge and information through reference skills (consulting a dictionary / thesaurus, library, internet, etc.);
- develop curiosity and creativity through extensive reading;
- facilitate self-learning to enable them to become independent learners;
- review, organise and edit their own work and work done by peers;
- integrate listening and speaking skills in the curriculum;
- give a brief oral description of events / incidents of topical interest;
- retell the contents of authentic audio texts (weather reports, public announcements, simple advertisements, short interviews, etc.);
- participate in conversations, discussions, etc., on topics of mutual interest in non-classroom situations;
- narrate a story which has been depicted pictorially or in any other non-verbal mode;

- respond, in writing, to business letters, official communications email etc.;
- read and identify the main points / significant details of texts like scripts of audio-video interviews, discussions, debates, etc.;
- write without prior preparation on a given topic and be able to defend or explain the stand taken / views expressed in the form of article, speech, or a debate;
- write a summary of short lectures on familiar topics by making / taking notes;
- write an assessment of different points of views expressed in a discussion / debate;
- read poems effectively (with proper rhythm and intonation);
- transcode information from a graph / chart to a description / report and write a dialogue, short story or report.

3. Language Items

In addition to consolidating the grammatical items practised earlier, the courses at the secondary level seek to reinforce the following explicitly:

- sequence of tenses
- reported speech in extended texts
- modal auxiliaries (those not covered at upper primary)
- non-finites (infinitives, gerunds, participles)
- conditional clauses
- complex and compound sentences
- phrasal verbs and prepositional phrases
- cohesive devices
- punctuation (semicolon, colon, dash, hyphen, parenthesis or use of brackets and exclamation mark)

4. Methods and Techniques

The methodology is based on a multi-skill, activity-based, learner-centered approach. Care is taken to fulfill the functional (communicative), literary (aesthetic) and cultural (sociological) needs of the learner. In this situation, the teacher is the facilitator of learning, She/he presents language items, contrives situations which motivates the child to use English for the purposes of communication and expression. Aural-oral teaching and testing is an integral feature of the teaching-learning process. The electronic and print media could be used extensively. A few suggestive activities are:

- Role play
- Simulating real life situations
- Dramatising and miming

- Problem solving and decision making
- Interpreting information given in tabular form and schedule
- Using newspaper clippings
- Borrowing situations from the world around the learners, from books and from other disciplines
- Using language games, riddles, puzzles and jokes
- Interpreting pictures / sketches / cartoons
- Debating and discussing
- Narrating and discussing stories, anecdotes, etc.
- Reciting poems
- Working in pairs and groups
- Using media inputs - computer, television, video cassettes, tapes, software packages

ENGLISH LANGUAGE AND LITERATURE (Code No. 184)
SYLLABUS CLASS – IX (2020-21)
SECTION - WISE WEIGHTAGE

Section		Total Weightage 80
A	Reading Skills	20
B	Writing Skills with Grammar	30
C	Literature Textbook and Supplementary Reading Text	30

Note-The annual examination will be of 80 marks

There will be internal assessment of 20 Marks.

SECTION A: READING

50 Periods

This section will have two reading passages.

20 Marks

1: A Factual passage 300-350 words with eight Objective Type Questions (including Multiple Choice Questions). **8 marks**

2 A Discursive passage of 350-400 words with four Short Answer Type Questions to test inference, evaluation and analysis and four Objective Type Questions (including Multiple Choice Questions) to test vocabulary. **12 marks**

SECTION B: WRITING SKILLS AND CONTEXTUAL GRAMMAR

(30 Marks)

60 Periods

For writing tasks there will be internal choice.

3: Writing an Informal Letter on a situation /Descriptive Paragraph (person/place/event/diary entry) in about 150-200 words based on visual or verbal cue/s. 10 marks

4: Writing a story based on a given outline or cue/s in about 150-200 words. 10 marks

The Grammar syllabus will include the following topics-

- i. Tenses
- ii. Modals
- iii. Use of passive voice
- iv. Subject – verb concord
- v. Reported speech
 - a. Commands and requests
 - b. Statements
 - c. Questions
- vi. Clauses:
 - a. Noun clauses
 - b. Adverb clauses of condition and time
 - c. Relative clauses
- vii. Determiners
- viii. Prepositions

The above items may be tested through test types (grammar in context) as given below:

5: Cloze passage / Gap Filling / Editing. 4 marks.

6: Dialogue Writing/ Reporting dialogue on a given cue. 6 marks

SECTION C: LITERATURE TEXTBOOK & SUPPLEMENTARY READER TEXTBOOK

(30 Marks)

There will be Internal Choice for every question.

60 Periods

7. One out of two extracts from prose/poetry/play for reference to the context. Two Short Answer Type Questions of two marks each based on interpretation. (2x2=4 marks)

8. Five Short Answer Type Questions out of seven short answer type questions from BEEHIVE AND MOMENTS (3 questions out of four from BEEHIVE and 2 questions out of three from MOMENTS) to test local and global comprehension of theme and ideas (to be answered in 30-40 words each)

(2x5=10 marks)

9. One out of two Long Answer Type questions to be answered in 100-150 words, from the book BEEHIVE to assess creativity, imagination and extrapolation beyond the text and across the texts. This can be a passage based question taken from a situation / plot from the texts. (8 marks)

10 One out of two Long Answer Type questions from the book MOMENTS on theme or plot involving interpretation, extrapolation beyond the text and inference or character sketch in about (100-150 words). (8 marks)

Prescribed Books: Published by NCERT, New Delhi

- BEEHIVE – Textbook for class IX
- MOMENTS – Supplementary Reader for Class IX
- Words and Expressions-I, Workbook

NOTE: Teachers are advised to:

- (i) encourage classroom interaction among peers, students and teachers through activities such as role play, group work etc.
- (ii) reduce teacher-talk time and keep it to the minimum,
- (iii) take up questions for discussion to encourage pupils to participate and to marshal their ideas and express and defend their views.

Besides measuring learning outcome, texts serve the dual purpose of diagnosing mistakes and areas of non-learning. To make evaluation a true index of learners' knowledge, each language skill is to be assessed through a judicious mixture of different types of questions.

1. Reading Section: Reading for comprehension, critical evaluation, inference and analysis are to be tested.
2. Writing Section: All types of short and extended writing tasks will be dealt with.
3. Grammar: Grammar items mentioned in the syllabus will be taught and assessed.

INTERNAL ASSESSMENT

Listening and Speaking Competencies

50 Periods

Assessment of Listening and Speaking Skills will be for 05 marks.

It is recommended that listening and speaking skills should be regularly practised in the class.

Art-integrated activities like Role Play, Skit, Dramatization etc. can also be used.

Guidelines for Assessment in Listening and Speaking Skills

i. Activities:

- Activities for listening and speaking available at www.cbseacademic.in can be used for developing listening and speaking skills of students.
- Subject teachers should also refer to books prescribed in the syllabus.
- In addition to the above, teachers may plan their own activities and create their own material for assessing the listening and speaking skills.

ii. Parameters for Assessment:

The listening and speaking skills are to be assessed on the following parameters:

- i. Interactive competence (Initiation & turn taking, relevance to the topic).
- ii. Fluency (cohesion, coherence and speed of delivery).
- iii. Pronunciation
- iv. Language (accuracy and vocabulary).

iii. Schedule:

- The practice of listening and speaking skills should be done throughout the academic year.
- The final assessment of the skills is to be done as per the convenience and schedule of the school.

III. Record keeping:

The record of the activities done and the marks given must be kept for three months after the declaration of result, for any random checking by the Board.

No recording of speaking skills is to be sent to the Board.

ENGLISH LANGUAGE AND LITERATURE

(Code No. 184) CLASS – IX (2020 – 21) Marks-80

Sections	Competencies	Total marks	% Weightage
Reading Comprehension	Conceptual understanding, decoding, analyzing, inferring, interpreting and vocabulary	20	25%
Writing Skill and Grammar	Creative expression of an opinion, reasoning, justifying, illustrating, appropriacy of style and tone, using appropriate format and fluency. Applying conventions, using integrated structures with accuracy and fluency	30	37.50%
Literature Textbook and Supplementary Reading Text	Recalling, reasoning, appreciating, applying literary conventions illustrating and justifying etc. Extract relevant information, identifying the central theme and sub-theme, understanding the writers' message and writing fluently.	30	37.50%
Total		80	

ENGLISH LANGUAGE AND LITERATURE (Code No. 184)

CLASS – X (2020-21)

SECTION - WISE WEIGHTAGE IN ENGLISH LANGUAGE AND LITERATURE

Section		Total Weightage 80
A	Reading Skills	20
B	Writing Skills with Grammar	30
C	Literature Textbooks and Supplementary Reading Text	30
	TOTAL	80

Note: The annual board examination will be of 80 marks, with a duration of three hours. There will be internal assessment of 20 Marks.

SECTION A: READING

50 Periods

20 Marks

This section will have two unseen passages of a total length of 700-750. The arrangement within the reading section is as follows:

1. A factual passage of 300-350 words with eight Objective Type Questions (including Multiple Choice Questions). 8 marks

2. A Discursive passage of 350-400 words with four Short Answer Type Questions to test inference, evaluation and analysis and four Objective Type Questions (including Multiple Choice Questions) to test vocabulary. 12 marks

SECTION B: WRITING AND GRAMMAR

60 Periods

For writing tasks, there will be internal choice

30 Marks

3. Formal letter based on a given situation in about 150-200 words. 10marks

4. Writing an analytical paragraph on the basis of the given map/ chart/ report/ line graph etc.in about 150-200 words. 10marks

The Grammar syllabus will include the following topics in class X:

1. Tenses
2. Modals
3. Use of passive voice
4. Subject – verb concord
5. Reported speech
 - (i) Commands and requests
 - (ii) Statements
 - (iii) Questions
6. Clauses
 - (i) Noun clauses
 - (ii) Adverb clauses
 - (iii) Relative clauses
7. Determiners
8. Prepositions

The above items may be tested through test types given below:

5. Cloze passage/ Gap Filling /Editing. 4marks
6. Dialogue writing/Reporting a dialogue on a given cue. 6marks

SECTION C

LITERATURE TEXTBOOK AND SUPPLEMENTARY READING TEXT 60 Periods

Internal choice will be there. 30 Marks

7. One out of two extracts from prose/poetry/drama for reference to context. Two Short Answer Type Questions on interpretation. 2x2=4marks

8. Five Short Answer Type Questions out of seven to be answered in 30-40 words each from FIRST FLIGHT and FOOTPRINTS WITHOUT FEET (three from FIRST FLIGHT and two from FOOTPRINTS WITHOUT FEET).
2x5=10 marks

9. One out of two Long Answer Type Questions from the book 'FIRST FLIGHT' to be answered in about 100-150 words each to assess creativity, imagination and extrapolation beyond the text and across the texts. This can be a passage based question taken from a situation/plot from the texts. 8 marks

10. One out of two Long Answer Type Question from the book 'FOOTPRINTS WITHOUT FEET' on theme or plot involving interpretation, extrapolation beyond the text and inference or character sketch to be answered in about 100-150 words. 8 marks

Prescribed Books: Published by NCERT, New Delhi

- FIRST FLIGHT – Text for Class X
- FOOTPRINTS WITHOUT FEET – Supplementary Reader for Class X
- WORDS AND EXPRESSIONS – II (WORKBOOK FOR CLASS X)

Note: Teachers are advised to:

- (i) encourage classroom interaction among peers, students and teachers through activities such as role play, group work etc.
- (ii) reduce teacher-talking time and keep it to the minimum,
- (iii) take up questions for discussion to encourage pupils to participate and to marshal their ideas and express and defend their views, and
- (iv) follow the Speaking and Listening activities given in the NCERT books.

Besides measuring learning outcome, texts serve the dual purpose of diagnosing mistakes and areas of non-learning. To make evaluation a true index of learners' knowledge, each language skill is to be assessed through a judicious mixture of different types of questions.

1. Reading Section: Reading for comprehension, critical evaluation, inference and analysis are to be tested.
2. Writing Section: All types of short and extended writing tasks will be dealt with.
3. Grammar: Grammar items mentioned in the syllabus will be taught and assessed over a period of time. There will be no division of syllabus for Grammar.

INTERNAL ASSESSMENT

Listening and Speaking Competencies	50 Periods
Assessment of Listening and Speaking Skills will be for	05 marks.
It is recommended that listening and speaking skills should be regularly practised in the class. Art-integrated activities like Role Play, Skit, Dramatization etc. can also be used.	

Guidelines for Assessment in Listening and Speaking Skills

i. Activities:

- Activities for listening and speaking available at www.cbseacademic.in can be used for developing listening and speaking skills of students.
- Subject teachers should also refer to books prescribed in the syllabus.
- In addition to the above, teachers may plan their own activities and create their own material for assessing the listening and speaking skills.

ii. Parameters for Assessment:

The listening and speaking skills are to be assessed on the following parameters:

- i. Interactive competence (Initiation & turn taking, relevance to the topic).
- ii. Fluency (cohesion, coherence and speed of delivery).
- iii. Pronunciation
- iv. Language (accuracy and vocabulary).

iii. Schedule:

- The practice of listening and speaking skills should be done throughout the academic year.
- The final assessment of the skills is to be done as per the convenience and schedule of the school.

III. Record keeping:

The record of the activities done and the marks given must be kept for three months after the declaration of result, for any random checking by the Board.

No recording of speaking skills is to be sent to the Board.

ENGLISH LANGUAGE AND LITERATURE
CLASS - X (2020-21)(Code no.184)

Marks 80

Sections	Competencies	Total marks	% Weightage
Reading Comprehension	Conceptual understanding, decoding, analyzing, inferring, interpreting and vocabulary	20	25%
Writing Skill and Grammar	Creative expression of an opinion, reasoning, justifying, illustrating, appropriacy of style and tone, using appropriate format and fluency. Applying conventions, using integrated structures with accuracy and fluency	30	37.50%
Literature Textbook and Supplementary Reading Text	Recalling, reasoning, appreciating, applying literary conventions illustrating and justifying etc. Extract relevant information, identifying the central theme and sub-theme, understanding the writers' message and writing fluently.	30	37.50%
Total		80	

हिंदी मातृभाषा (कोड 002)
कक्षा 9वीं-10वीं (2020-21)

माध्यमिक स्तर तक आते-आते विद्यार्थी किशोर हो चुका होता है और उसमें सुनने, बोलने, पढ़ने, लिखने के साथ-साथ आलोचनात्मक दृष्टि विकसित होने लगती है। भाषा के सौंदर्यात्मक पक्ष, कथात्मकता/गीतात्मकता, अखबारी समझ, शब्द शक्तियों की समझ, राजनैतिक एवं सामाजिक चेतना का विकास, स्वयं की अस्मिता का संदर्भ और आवश्यकता के अनुसार उपयुक्त भाषा- प्रयोग, शब्दों का सुचिंतित प्रयोग, भाषा की नियमबद्ध प्रकृति आदि से विद्यार्थी परिचित हो जाता है। इतना ही नहीं वह विविध विधाओं और अभिव्यक्ति की अनेक शैलियों से भी परिचित हो चुका होता है। अब विद्यार्थी की दृष्टि आस-पड़ोस, राज्य-देश की सीमा को लांघते हुए वैश्विक क्षितिज तक फैल जाती है। इन बच्चों की दुनिया में समाचार, खेल, फिल्म तथा अन्य कलाओं के साथ-साथ पत्र-पत्रिकाएँ और अलग-अलग तरह की किताबें भी प्रवेश पा चुकी होती हैं।

इस स्तर पर मातृभाषा हिंदी का अध्ययन साहित्यिक, सांस्कृतिक और व्यावहारिक भाषा के रूप में कुछ इस तरह से हो कि उच्चतर माध्यमिक स्तर पर पहुँचते-पहुँचते यह विद्यार्थियों की पहचान, आत्मविश्वास और विमर्श की भाषा बन सके। प्रयास यह भी होगा कि विद्यार्थी भाषा के लिखित प्रयोग के साथ-साथ सहज और स्वाभाविक मौखिक अभिव्यक्ति में भी सक्षम हो सके।

इस पाठ्यक्रम के अध्ययन से -

- (क) विद्यार्थी अगले स्तरों पर अपनी रुचि और आवश्यकता के अनुरूप हिंदी की पढ़ाई कर सकेंगे तथा हिंदी में बोलने और लिखने में सक्षम हो सकेंगे।
- (ख) अपनी भाषा दक्षता के चलते उच्चतर माध्यमिक स्तर पर विज्ञान, समाज विज्ञान और अन्य पाठ्यक्रमों के साथ सहज संबद्धता (अंतर्संबंध) स्थापित कर सकेंगे।
- (ग) दैनिक जीवन व्यवहार के विविध क्षेत्रों में हिन्दी के औपचारिक/अनौपचारिक उपयोग की दक्षता हासिल कर सकेंगे।
- (घ) भाषा प्रयोग के परंपरागत तौर-तरीकों एवं विधाओं की जानकारी एवं उनके समसामयिक संदर्भों की समझ विकसित कर सकेंगे।
- (ङ) हिंदी भाषा में दक्षता का इस्तेमाल वे अन्य भाषा-संरचनाओं की समझ विकसित करने के लिए कर सकेंगे।

कक्षा 9वीं व 10वीं में मातृभाषा के रूप में हिंदी-शिक्षण के उद्देश्य :

- कक्षा आठवीं तक अर्जित भाषिक कौशलों (सुनना, बोलना, पढ़ना और लिखना) का उत्तरोत्तर विकास।
- सृजनात्मक साहित्य के आलोचनात्मक आस्वाद की क्षमता का विकास।
- स्वतंत्र और मौखिक रूप से अपने विचारों की अभिव्यक्ति का विकास।
- ज्ञान के विभिन्न अनुशासनों के विमर्श की भाषा के रूप में हिंदी की विशिष्ट प्रकृति एवं क्षमता का बोध कराना।
- साहित्य की प्रभावकारी क्षमता का उपयोग करते हुए सभी प्रकार की विविधताओं (राष्ट्रीयता, धर्म, लिंग एवं भाषा) के प्रति सकारात्मक और संवेदनशील रवैये का विकास।

- जाति, धर्म, लिंग, राष्ट्रीयता, क्षेत्र आदि से संबंधित पूर्वाग्रहों के चलते बनी रुढ़ियों की भाषिक अभिव्यक्तियों के प्रति सजगता।
- भारतीय भाषाओं एवं विदेशी भाषाओं की संस्कृतिक विविधता से परिचय।
- व्यावहारिक और दैनिक जीवन में विविध अभिव्यक्तियों की मौखिक व लिखित क्षमता का विकास।
- संचार माध्यमों (प्रिंट और इलेक्ट्रॉनिक) में प्रयुक्त हिंदी की प्रकृति से अवगत कराना और नवीन भाषा प्रयोग करने की क्षमता से परिचय।
- विश्लेषण और तर्क क्षमता का विकास।
- भावभिव्यक्ति क्षमताओं का उत्तरोत्तर विकास।
- मतभेद, विरोध और टकराव की परिस्थितियों में भी भाषा को संवेदनशील और तर्कपूर्ण इस्तेमाल से शांतिपूर्ण संवाद की क्षमता का विकास।
- भाषा की समावेशी और बहुभाषिक प्रकृति की समझ का विकास करना।

शिक्षण युक्तियाँ

माध्यमिक कक्षाओं में अध्यापक की भूमिका उचित वातावरण के निर्माण में सहायक होनी चाहिए। भाषा और साहित्य की पढ़ाई में इस बात पर ध्यान देने की जरूरत होगी कि -

- विद्यार्थी द्वारा की जा रही गलतियों को भाषा के विकास के अनिवार्य चरण के रूप में स्वीकार किया जाना चाहिए जिससे विद्यार्थी अबाध रूप से बिना झिझक के लिखित और मौखिक अभिव्यक्ति करने में उत्साह का अनुभव करें। विद्यार्थियों पर शुद्धि का ऐसा दबाव नहीं होना चाहिए कि वे तनावग्रस्त माहौल में पड़ जाएँ। उन्हें भाषा के सहज, कारगर और रचनात्मक रूपों से इस तरह परिचित कराना उचित है कि वे स्वयं सहज रूप से भाषा का सृजन कर सकें।
- विद्यार्थी स्वतंत्र और अबाध रूप से लिखित और मौखिक अभिव्यक्ति करें। अधिगम बाधित होने पर अध्यापक, अध्यापन शैली में परिवर्तन करें।
- ऐसे शिक्षण-बिंदुओं की पहचान की जाए जिससे कक्षा में विद्यार्थी निरंतर सक्रिय भागीदारी करें और अध्यापक भी इस प्रक्रिया में उनका साथी बने।
- हर भाषा का अपना व्याकरण होता है। भाषा की इस प्रकृति की पहचान कराने में परिवेशगत और पाठगत संदर्भों का ही प्रयोग करना चाहिए। यह पूरी प्रक्रिया ऐसी होनी चाहिए कि विद्यार्थी स्वयं को शोधकर्ता समझे तथा अध्यापक इसमें केवल निर्देशन करें।
- हिंदी में क्षेत्रीय प्रयोगों, अन्य भाषाओं के प्रयोगों के उदाहरण से यह बात स्पष्ट की जा सकती है कि भाषा अलगाव में नहीं बनती और उसका परिवेश अनिवार्य रूप से बहुभाषिक होता है।
- भिन्न क्षमता वाले विद्यार्थियों के लिए उपयुक्त शिक्षण-सामग्री का इस्तेमाल किया जाए तथा किसी भी प्रकार से उन्हें अन्य विद्यार्थियों से कमतर या अलग न समझा जाए।
- कक्षा में अध्यापक को हर प्रकार की विविधताओं (लिंग, जाति, वर्ग, धर्म आदि) के प्रति सकारात्मक और संवेदनशील वातावरण निर्मित करना चाहिए।
- काव्य भाषा के मर्म से विद्यार्थी का परिचय कराने के लिए जरूरी होगा कि किताबों में आए काव्यांशों की लयबद्ध प्रस्तुतियों के ऑडियो-वीडियो कैसेट तैयार किए जाएँ। अगर आसानी से कोई गायक/गायिका मिले तो कक्षा में मध्यकालीन साहित्य के अध्यापन-शिक्षण में उससे मदद ली जानी चाहिए।

- रा.शै.अ. और प्र. प.,(एन.सी.ई.आर.टी.) मानव संसाधन विकास मंत्रालय के विभिन्न संगठनों तथा स्वतंत्र निर्माताओं द्वारा उपलब्ध कराए गए कार्यक्रम/ ई-सामग्री वृत्तचित्रों और फीचर फिल्मों को शिक्षण-सामग्री के तौर पर इस्तेमाल करने की जरूरत है। इनके प्रदर्शन के क्रम में इन पर लगातार बातचीत के जरिए सिनेमा के माध्यम से भाषा के प्रयोग की विशिष्टता की पहचान कराई जा सकती है और हिंदी की अलग-अलग छटा दिखाई जा सकती है।
- कक्षा में सिर्फ पाठ्यपुस्तक की उपस्थिति से बेहतर होगा कि शिक्षक के हाथ में तरह-तरह की पाठ्यसामग्री को विद्यार्थी देखें और कक्षा में अलग-अलग मौकों पर शिक्षक उनका इस्तेमाल करें।
- भाषा लगातार ग्रहण करने की क्रिया में बनती है, इसे प्रदर्शित करने का एक तरीका यह भी है कि शिक्षक खुद यह सिखा सकें कि वे भी शब्दकोश, साहित्यकोश, संदर्भग्रंथ की लगातार मदद ले रहे हैं। इससे विद्यार्थियों में इनके इस्तेमाल करने को लेकर तत्परता बढ़ेगी। अनुमान के आधार पर निकटतम अर्थ तक पहुँचकर संतुष्ट होने की जगह वे सटीक अर्थ की खोज करने के लिए प्रेरित होंगे। इससे शब्दों की अलग-अलग रंगत का पता चलेगा, वे शब्दों के सूक्ष्म अंतर के प्रति और सजग हो पाएँगे।

व्याकरण बिंदु

कक्षा 9वीं

- उपसर्ग, प्रत्यय
- समास
- अर्थ की दृष्टि से वाक्य भेद
- अलंकार : शब्दालंकार - अनुप्रास, यमक एवं श्लेष; अर्थालंकार-उपमा, रूपक, उत्प्रेक्षा, अतिशयोक्ति एवं मानवीकरण।

कक्षा 10वीं

- रचना के आधार पर वाक्य भेद
- वाच्य
- पद-परिचय
- रस

श्रवण व वाचन (मौखिक बोलना) संबंधी योग्यताएँ

श्रवण (सुनना) कौशल

- वर्णित या पठित सामग्री, वार्ता, भाषण, परिचर्चा, वार्तालाप, वाद-विवाद, कविता-पाठ आदि का सुनकर अर्थ ग्रहण करना, मूल्यांकन करना और अभिव्यक्ति के ढंग को जानना।
- वक्तव्य के भाव, विनोद व उसमें निहित संदेश, व्यंग्य आदि को समझना।
- वैचारिक मतभेद होने पर भी वक्ता की बात को ध्यानपूर्वक, धैर्यपूर्वक व शिष्टाचारानुकूल प्रकार से सुनना व वक्ता के दृष्टिकोण को समझना।
- जानार्जन मनोरंजन व प्रेरणा ग्रहण करने हेतु सुनना।
- वक्तव्य का आलोचनात्मक विश्लेषण करना एवं सुनकर उसका सार ग्रहण करना।

श्रवण (सुनना) वाचन (बोलना) का परीक्षण : कुल 5 अंक (2.5+2.5)

- परीक्षक किसी प्रासंगिक विषय पर एक अनुच्छेद का स्पष्ट वाचन करेगा। अनुच्छेद तथ्यात्मक या सुझावात्मक हो सकता है। अनुच्छेद लगभग 100-150 शब्दों का होना चाहिए।

या

परीक्षक 1-2 मिनट का श्रव्य अंश (ऑडियो क्लिप) सुनवाएगा। अंश रोचक होना चाहिए। कथ्य /घटना पूर्ण एवं स्पष्ट होनी चाहिए। वाचक का उच्चारण शुद्ध, स्पष्ट एवं विराम चिह्नों के उचित प्रयोग सहित होना चाहिए।

- परीक्षार्थी ध्यान पूर्वक परीक्षा/आडियो क्लिप को सुनने के पश्चात परीक्षक द्वारा पूछे गए प्रश्नों का अपनी समझ से मौखिक उत्तर देंगे।

कौशलों के मूल्यांकनका आधार

	श्रवण (सुनना)		वाचन(बोलना)
1	विद्यार्थी में परिचित संदर्भों में प्रयुक्त शब्दों और पदों को समझने की सामान्य योग्यता है।	1	विद्यार्थी केवल अलग-अलग शब्दों और पदों के प्रयोग की योग्यता प्रदर्शित करता है।
2	छोटे सुसंबद्धकथनों को परिचित संदर्भों में समझने की योग्यता है।	2	परिचित संदर्भों में केवल छोटे सुसंबद्ध कथनों का सीमित शुद्धता से प्रयोग करता है।
3	परिचित या अपरिचित दोनों संदर्भों में कथित सूचना को स्पष्ट समझने की योग्यता है।	3	अपेक्षित दीर्घ भाषण में जटिल कथनों के प्रयोग की योग्यता प्रदर्शित करता है।
4	दीर्घ कथनों की श्रृंखला को पर्याप्त शुद्धता से समझता है और निष्कर्ष निकाल सकता है।	4	अपरिचित स्थितियों में विचारों को तार्किक ढंग से संगठित कर धारा प्रवाह रूप में प्रस्तुत कर सकता है।
5	जटिल कथनों के विचार-बिंदुओं को समझने की योग्यता प्रदर्शित करता है।	5	उद्देश्य और श्रोता के लिए उपयुक्त शैली को अपना सकता है।

टिप्पणी

- परीक्षण से पूर्व परीक्षार्थी को तैयारी के लिए कुछ समय दिया जाए।
- विवरणात्मक भाषा में वर्तमान काल का प्रयोग अपेक्षित है।

- निर्धारित विषय परीक्षार्थी के अनुभव संसार के हों, जैसे - कोई चुटकुला या हास्य-प्रसंग सुनाना, हाल में पढ़ी पुस्तक या देखे गए सिनेमा की कहानी सुनाना।
- जब परीक्षार्थी बोलना प्रारंभ करें तो परीक्षक कम से कम हस्तक्षेप करें।

पठन कौशल

- सरसरी दृष्टि से पढ़कर पाठ का केंद्रीय विचार ग्रहण करना।
- एकाग्रचित हो एक अभीष्ट गति के साथ मौन पठन करना।
- पठित सामग्री पर अपनी प्रतिक्रिया व्यक्त करना।
- भाषा, विचार एवं शैली की सराहना करना।
- साहित्य के प्रति अभिरूचि का विकास करना।
- साहित्य की विभिन्न विधाओं की प्रकृति के अनुसार पठन कौशल का विकास।
- संदर्भ के अनुसार शब्दों के अर्थ-भेदों की पहचान करना।
- सक्रिय (व्यवहारोपयोगी) शब्द भंडार की वृद्धि करना।
- पठित सामग्री के विभिन्न अंशों का परस्पर संबंध समझना।
- पठित अनुच्छेदों के शीर्षक एवं उपशीर्षक देना।
- कविता के प्रमुख उपादान यथा - तुक, लय, यति, गति, बलाघात आदि से परिचित कराना।

लेखन कौशल

- लिपि के मान्य रूप का ही व्यवहार करना।
- विराम-चिह्नों का उपयुक्त प्रयोग करना।
- प्रभावपूर्ण भाषा तथा लेखन-शैली का स्वाभाविक रूप से प्रयोग करना।
- उपयुक्त अनुच्छेदों में बाँटकर लिखना।
- प्रार्थना पत्र, निमंत्रण पत्र, बधाई पत्र, संवेदना पत्र, ई-मेल, आदेश पत्र, एस.एम.एस आदि लिखना और विविध प्रपत्रों को भरना।
- विविध स्रोतों से आवश्यक सामग्री एकत्र कर अभीष्ट विषय पर निबंध लिखना।
- देखी हुई घटनाओं का वर्णन करना और उन पर अपनी प्रतिक्रिया देना।
- हिन्दी की एक विधा से दूसरी विधा में रूपांतरण का कौशल।
- समारोह और गोष्ठियों की सूचना और प्रतिवेदन तैयार करना।
- सार, संक्षेपीकरण एवं भावार्थ लिखना।
- गद्य एवं पद्य अवतरणों की व्याख्या लिखना।
- स्वानुभूत विचारों और भावनाओं को स्पष्ट सहज और प्रभावशाली ढंग से अभिव्यक्त करना।
- क्रमबद्धता और प्रकरण की एकता बनाए रखना।
- लिखने में मौलिकता और सृजनात्मकता लाना।

रचनात्मक अभिव्यक्ति

अनुच्छेद लेखन

- पूर्णता - संबंधित विषय के सभी पक्षों को अनुच्छेद के सीमित आकार में संयोजित करना।
- क्रमबद्धता - विचारों को क्रमबद्ध एवं तर्कसंगत विधि से प्रकट करना।
- विषय-केन्द्रित - प्रारंभ से अंत तक अनुच्छेद का एक सूत्र में बंधा होना।
- समासिकता - सीमित शब्दों में यथासंभव पूरी बात कहने का प्रयास, अनावश्यक बातें न करके केवल विषय संबद्ध वर्णन-विवेचन।

पत्र लेखन

- अनौपचारिक पत्र विचार-विमर्श का जरिया जिनमें मैत्रीपूर्ण भावना निहित, सरलता, संक्षिप्त और सादगी के साथ लेखन शैली।
- औपचारिक पत्रों द्वारा दैनंदिनी जीवन की विभिन्न स्थितियों में कार्य, व्यापार, संवाद, परामर्श, अनुरोध तथा सुझाव के लिए प्रभावी एवं स्पष्ट संप्रेषण क्षमता का विकास
- सरल और बोलचाल की भाषाशैली, उपयुक्त, सटीक शब्दों के प्रयोग, सीधे-सादे ढंग से स्पष्ट और प्रत्यक्ष बात की प्रस्तुति।
- प्रारूप की आवश्यक औपचारिकताओं के साथ सुस्पष्ट, सुलझे और क्रमबद्ध विचार आवश्यक तथ्य, संक्षेप और सम्पूर्णता के साथ प्रभावान्विति।

विज्ञापन लेखन

विज्ञापित वस्तु / विषय को केंद्र में रखते हुए

- विज्ञापित वस्तु के विशिष्ट गुणों का उल्लेख।
- आकर्षक लेखन शैली।
- प्रस्तुति में नयापन, वर्तमान से जुड़ाव तथा दूसरों से भिन्नता।
- विज्ञापन में आवश्यकतानुसार नारे (स्लोगन) का उपयोग।
- (विज्ञापन लेखन में बॉक्स, चित्र अथवा रंग का उपयोग अनिवार्य नहीं) ।

संवाद लेखन

दो या दो से अधिक लोगों के बीच होने वाले वार्तालाप/ बातचीत विषय, काल्पनिक या किसी वार्ता को सुनकर यथार्थ पर आधारित संवाद लेखन की रचनात्मक शक्ति का विकास, कहानी, नाटक, फिल्म और टीवी सीरियल से लें।

- पात्रों के अनुकूल भाषा शैली।
- शब्द सीमा के भीतर एक दूसरे से जुड़े सार्थक और उद्देश्यपूर्ण संवाद।
- वक्ता के हाव-भाव का संकेत।
- संवाद लेखन के अंत तक विषय/मुद्दे पर वार्ता पूरी।

लघु-कथा लेखन (दिए गए प्रस्थान बिंदु के आधार पर लघु कथा लेखन)

- निरंतरता
- कथात्मकता

- प्रभावी संवाद/ पात्रनुकूल संवाद
- रचनात्मकता/कल्पना शक्ति का उपयोग
- जिज्ञासा/रोचकता

संदेश लेखन (शुभकामना, पर्व-त्यौहारों एवं विशेष अवसरों पर दिए जाने वाले संदेश)

- विषय से संबद्धता
- संक्षिप्त और सारगर्भित
- भाषाई दक्षता एवं प्रस्तुति
- रचनात्मकता/सृजनात्मकता

हिंदी पाठ्यक्रम - अ (कोड सं. - 002)

कक्षा 9वीं हिंदी अ -परीक्षा हेतु पाठ्यक्रम विनिर्देशन 2020-21

परीक्षा भार विभाजन				
	विषयवस्तु		उप भार	कुल भार
1	अपठित गद्यांश(चिंतन क्षमता एवं अभिव्यक्ति कौशल पर) अति लघूत्तरात्मक एवं लघूत्तरात्मक प्रश्न पूछे जाएंगे।			10
	एक अपठित गद्यांश (100 से 150 शब्दों के) (1x2=2) (2x4=8)		10	
2	व्याकरण के लिए निर्धारित विषयों पर विषय-वस्तु का बोध, भाषिक बिंदु /संरचना आदि परप्रश्न (1x16)			16
	व्याकरण			
	1	शब्द निर्माण उपसर्ग - 2 अंक, प्रत्यय - 2 अंक, समास -4 अंक	8	
	2	अर्थ की दृष्टि से वाक्य भेद - 4 अंक	4	
	3	अलंकार - 4 अंक (शब्दालंकार: अनुप्रास, यमक, श्लेष) (अर्थालंकार : उपमा, रूपक, उत्प्रेक्षा, अतिशयोक्ति, मानवीकरण)	4	
3	पाठ्यपुस्तक क्षितिज भाग - 1 व पूरकपाठ्यपुस्तक कृतिका भाग -1			34
	अ	गद्य खंड	14	
	1	क्षितिज से निर्धारित पाठों में से गद्यांश के आधार पर विषय-वस्तु का ज्ञान बोध, अभिव्यक्ति आदि पर तीन प्रश्न पूछे जाएंगे। (2x3)	6	
	2	क्षितिज से निर्धारित गद्य पाठों के आधार पर विद्यार्थियों की उच्च चिंतन क्षमताओं एवं अभिव्यक्ति का आकलन करने हेतु चार प्रश्न पूछे जाएंगे।(2x4) (विकल्प सहित)	8	
	ब	काव्य खंड	14	
	1	क्षितिज से निर्धारित कविताओं में से काव्यांश के आधार पर तीन प्रश्न पूछे जाएंगे (2x3)	6	

	2	क्षितिज से निर्धारित कविताओं के आधार पर विद्यार्थियों का काव्यबोध परखने हेतु चार प्रश्न पूछे जाएंगे। (2x4) (विकल्प सहित)	8	
	स	पूरक पाठ्यपुस्तक कृतिका भाग - 1	6	
		कृतिका के निर्धारित पाठों पर आधारित दो प्रश्न पूछे जाएँगे (विकल्प सहित)। (3x2)	6	
4	लेखन			
	अ	विभिन्न विषयों और संदर्भों पर विद्यार्थियों के तर्कसंगत विचार प्रकट करने की क्षमता को परखने के लिए संकेत बिंदुओं पर आधारित समसामयिक एवं व्यावहारिक जीवन से जुड़े हुए विषयों में से किन्हीं तीन विषयों पर 80 से 100 शब्दों में किसी एक विषय पर अनुच्छेद (5x1)	5	20
	ब	अभिव्यक्ति की क्षमता पर केंद्रित औपचारिक अथवा अनौपचारिक विषयों में से किसी एक विषय पर पत्र। (5x1)	5	
	स	किसी एक विषय पर संवाद लेखन। (5x1) (विकल्प सहित)	5	
	द	लघु-कथा लेखन (दिए गए प्रस्थान बिंदु के आधार पर 100-120 शब्दों में) (विकल्प सहित)	5	
		कुल		80

निर्धारित पुस्तकें :

1. **क्षितिज, भाग-1**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित नवीनतम संस्करण
2. **कृतिका, भाग-1**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित नवीनतम संस्करण

नोट : पाठ्यक्रम के निम्नलिखित पाठ केवल पढ़ने के लिए होंगे।

क्षितिज (भाग - 1)	<ul style="list-style-type: none"> • उपभोक्तावाद की संस्कृति • एक कुत्ता और एक मैना • साखियाँ व सबद पाठ से सबद - 2 संतो भाई आई.. • ग्राम श्री
कृतिका (भाग - 1)	<ul style="list-style-type: none"> • इस जल प्रलय में • किस तरह आखिरकार में हिंदी भाषा में आया

हिंदी पाठ्यक्रम -अ (कोड सं. 002)
कक्षा 10वीं हिंदी - अ परीक्षा हेतु पाठ्यक्रम विनिर्देशन 2020-21

परीक्षा भार विभाजन			
	विषयवस्तु	उप भार	कुलभार
1	अपठित गद्यांश (चिंतन क्षमता एवं अभिव्यक्ति कौशल पर) अति लघूत्तरात्मक एवं लघूत्तरात्मक प्रश्न।		10
	एक अपठित गद्यांश (100 से 150 शब्दों के) (1x2=2) (2x4=8)	10	
2	व्याकरण के लिए निर्धारित विषयों पर विषय-वस्तु का बोध, भाषिक बिंदु /संरचना आदि पर प्रश्न (1x16)		16
	व्याकरण		
	1 रचना के आधार पर वाक्य भेद (4 अंक)	4	
	2 वाच्य (4 अंक)	4	
	3 पद परिचय (4 अंक)	4	
	4 रस (4 अंक)	4	
3	पाठ्यपुस्तक क्षितिज भाग - 2 व पूरक पाठ्य पुस्तक कृतिका भाग - 2		34
	अ गद्य खंड	14	
	1 क्षितिज से निर्धारित पाठों में से गद्यांश के आधार पर विषय-वस्तु का ज्ञान बोध, अभिव्यक्ति आदि पर तीन प्रश्न पूछे जाएंगे। (2x3)	6	
	2 क्षितिज से निर्धारित गद्य पाठों के आधार पर विद्यार्थियों की उच्च चिंतन क्षमताओं एवं अभिव्यक्ति का आकलन करने हेतु चार प्रश्न पूछे जाएंगे। (2x4) (विकल्प सहित)	8	
	ब काव्य खंड	14	
	1 क्षितिज से निर्धारित कविताओं में से काव्यांश के आधार पर तीन प्रश्न पूछे जाएंगे(2x3) (विकल्प सहित)	6	
	2 क्षितिज से निर्धारित कविताओं के आधार पर विद्यार्थियों का काव्य बोध परखने हेतु चार प्रश्न पूछे जाएंगे। (2x4)(विकल्प सहित)	8	
	स पूरक पाठ्यपुस्तक कृतिका भाग - 2		
कृतिका के निर्धारित पाठों पर आधारित दो प्रश्न पूछे जाएँगे (विकल्प सहित)। (2x3)	6		
4	लेखन		
	अ विभिन्न विषयों और संदर्भों पर विद्यार्थियों के तर्कसंगत विचार प्रकट करने की क्षमता को परखने के लिए संकेत बिंदुओं पर आधारित समसामयिक एवं व्यावहारिक जीवन से जुड़े हुए तीन विषयों पर 80 से 100 शब्दों में से किसी एक विषय पर अनुच्छेद। (5x1)	5	20

ब	अभिव्यक्ति की क्षमता पर केन्द्रित औपचारिक अथवा अनौपचारिक विषयों में से किसी एक विषय पर पत्र। (5x1)	5	
स	विषय से संबंधित 25-50 शब्दों के अंतर्गत विज्ञापन लेखन। (5x1)(विकल्प सहित)	5	
द	संदेश लेखन (शुभकामना, पर्व-त्योहारों एवं विशेष अवसरों पर दिए जाने वाले संदेश) (30-40 शब्दों में) (5x1)(विकल्प सहित)	5	
		कुल	80

निर्धारित पुस्तकें :

1. **क्षितिज, भाग-2**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित नवीनतम संस्करण
2. **कृतिका, भाग-2**, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित नवीनतम संस्करण

नोट : पाठ्यक्रम के निम्नलिखित पाठ केवल पढ़ने के लिए होंगे।

क्षितिज (भाग - 2)	<ul style="list-style-type: none"> • देव • जयशंकर प्रसाद - आत्मकथ्य • स्त्री शिक्षा के विरोधी कुतर्कों का खंडन • संस्कृति
कृतिका (भाग - 2)	<ul style="list-style-type: none"> • एही ठैयाँ झुलनी हेरानी हो राम! • मैं क्यों लिखता हूँ?

प्रश्न - पत्र प्रारूप कक्षा - दसवीं हिंदी पाठ्यक्रम -अ (002)

क्र. सं	विषय-विस्तार	ज्ञान और समझ			अनुप्रयोग			विश्लेषण एवंसृजनात्मकता			योग
		बहुविकल्पी/अति लघूत्तरात्मक	लघूत्तरात्मक	निबंधात्मक	बहुविकल्पी/अति लघूत्तरात्मक	लघूत्तरात्मक	निबंधात्मक	बहुविकल्पी/अति लघूत्तरात्मक	लघूत्तरात्मक	निबंधात्मक	
1	अपठितगद्यांश	1 (2)	2 (4)								10
2	वाक्यभेद				1 (4)						4
3	वाच्य				1 (4)						4
4	पद-परिचय				1 (4)						4
5	रस	1 (1)			1 (2)			1 (1)			4
6	पठित गद्यांश		2 (2)			2 (1)					6
7	गद्य से प्रश्न		2 (2)			2 (2)					8
8	पठित काव्यांश		2 (2)			2 (1)					6
9	काव्य पाठों से प्रश्न		2 (2)			2 (2)					8
10	पूरक पुस्तिका								3 (2)		6
11	अनुच्छेद-लेखन			2 (-)			1 (-)			2 (1)	5
12	पत्र-लेखन	1 (-)			1 (-)					3 (1)	5
13	विज्ञापन-लेखन	1 (-)				2 (-)				2 (1)	5
14	सन्देश-लेखन	1 (-)				2 (-)			2 (1)		5
	कुल भार	6	24	2	15	16	1	1	8	7	80

कोष्ठक के बाहरअंक तथा भीतर प्रश्न संख्या दी गई है ।

MATHEMATICS (IX-X)
(CODE NO. 041)
Session 2020-21

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in the Focus Group on Teaching of Mathematics which is to meet the emerging needs of all categories of students. For motivating the teacher to relate the topics to real life problems and other subject areas, greater emphasis has been laid on applications of various concepts.

The curriculum at Secondary stage primarily aims at enhancing the capacity of students to employ Mathematics in solving day-to-day life problems and studying the subject as a separate discipline. It is expected that students should acquire the ability to solve problems using algebraic methods and apply the knowledge of simple trigonometry to solve problems of height and distances. Carrying out experiments with numbers and forms of geometry, framing hypothesis and verifying these with further observations form inherent part of Mathematics learning at this stage. The proposed curriculum includes the study of number system, algebra, geometry, trigonometry, mensuration, statistics, graphs and coordinate geometry, etc.

The teaching of Mathematics should be imparted through activities which may involve the use of concrete materials, models, patterns, charts, pictures, posters, games, puzzles and experiments.

Objectives

The broad objectives of teaching of Mathematics at secondary stage are to help the learners to:

- consolidate the Mathematical knowledge and skills acquired at the upper primary stage;
- acquire knowledge and understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles and symbols and underlying processes and skills;
- develop mastery of basic algebraic skills;
- develop drawing skills;
- feel the flow of reason while proving a result or solving a problem;
- apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method;
- to develop ability to think, analyze and articulate logically;
- to develop awareness of the need for national integration, protection of environment, observance of small family norms, removal of social barriers, elimination of gender biases;
- to develop necessary skills to work with modern technological devices and mathematical software's.
- to develop interest in mathematics as a problem-solving tool in various fields for its beautiful structures and patterns, etc.
- to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics;
- to develop interest in the subject by participating in related competitions;
- to acquaint students with different aspects of Mathematics used in daily life;
- to develop an interest in students to study Mathematics as a discipline.

COURSE STRUCTURE CLASS -IX

Units	Unit Name	Marks
I	NUMBER SYSTEMS	08
II	ALGEBRA	17
III	COORDINATE GEOMETRY	04
IV	GEOMETRY	28
V	MENSURATION	13
VI	STATISTICS & PROBABILITY	10
	Total	80

UNIT I: NUMBER SYSTEMS

1. REAL NUMBERS

(16 Periods)

- Review of representation of natural numbers, integers, rational numbers on the number line. Representation of terminating / non-terminating recurring decimals on the number line through successive magnification. Rational numbers as recurring/ terminating decimals. Operations on real numbers.
- Examples of non-recurring/non-terminating decimals. Existence of non-rational numbers (irrational numbers) such as $\sqrt{2}$, $\sqrt{3}$ and their representation on the number line. Explaining that every real number is represented by a unique point on the number line and conversely, viz. every point on the number line represents a unique real number.
- Definition of nth root of a real number.
- Rationalization (with precise meaning) of real numbers of the type $\frac{1}{a+b\sqrt{x}}$ and $\frac{1}{\sqrt{x}+\sqrt{y}}$ (and their combinations) where x and y are natural number and a and b are integers.
- Recall of laws of exponents with integral powers. Rational exponents with positive real bases (to be done by particular cases, allowing learner to arrive at the general laws.)

UNIT II: ALGEBRA

1. POLYNOMIALS

(23) Periods

Definition of a polynomial in one variable, with examples and counter examples. Coefficients of a polynomial, terms of a polynomial and zero polynomial. Degree of a polynomial. Constant, linear, quadratic and cubic polynomials. Monomials, binomials, trinomials. Factors and multiples. Zeros of a polynomial. Motivate and State the Remainder Theorem with examples. Statement and proof of the Factor Theorem. Factorization of $ax^2 + bx + c$, $a \neq 0$ where a, b and c are real numbers, and of cubic polynomials using the Factor Theorem.

Recall of algebraic expressions and identities. Verification of identities:

$$(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx$$

$$(x \pm y)^3 = x^3 \pm y^3 \pm 3xy(x \pm y)$$

$$x^3 \pm y^3 = (x \pm y)(x^2 \mp xy + y^2)$$

$$x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$$

and their use in factorization of polynomials.

2. LINEAR EQUATIONS IN TWO VARIABLES (14) Periods

Recall of linear equations in one variable. Introduction to the equation in two variables. Focus on linear equations of the type $ax+by+c=0$. Explain that a linear equation in two variables has infinitely many solutions and justify their being written as ordered pairs of real numbers, plotting them and showing that they lie on a line. Graph of linear equations in two variables. Examples, problems from real life, including problems on Ratio and Proportion and with algebraic and graphical solutions being done simultaneously.

UNIT III: COORDINATE GEOMETRY

COORDINATE GEOMETRY (6) Periods

The Cartesian plane, coordinates of a point, names and terms associated with the coordinate plane, notations, plotting points in the plane.

UNIT IV: GEOMETRY

1. INTRODUCTION TO EUCLID'S GEOMETRY (Not for assessment) (6) Periods

History - Geometry in India and Euclid's geometry. Euclid's method of formalizing observed phenomenon into rigorous Mathematics with definitions, common/obvious notions, axioms/postulates and theorems. The five postulates of Euclid. Equivalent versions of the fifth postulate. Showing the relationship between axiom and theorem, for example:

- (Axiom) 1. Given two distinct points, there exists one and only one line through them.
- (Theorem) 2. (Prove) Two distinct lines cannot have more than one point in common.

2. LINES AND ANGLES (13) Periods

1. (Motivate) If a ray stands on a line, then the sum of the two adjacent angles so formed is 180° and the converse.
2. (Prove) If two lines intersect, vertically opposite angles are equal.
3. (Motivate) Results on corresponding angles, alternate angles, interior angles when a transversal intersects two parallel lines.
4. (Motivate) Lines which are parallel to a given line are parallel.
5. (Prove) The sum of the angles of a triangle is 180° .
6. (Motivate) If a side of a triangle is produced, the exterior angle so formed is equal to the sum of the two interior opposite angles.

3. TRIANGLES (20) Periods

1. (Motivate) Two triangles are congruent if any two sides and the included angle of one triangle is equal to any two sides and the included angle of the other triangle (SAS Congruence).
2. (Prove) Two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle (ASA Congruence).

3. (Motivate) Two triangles are congruent if the three sides of one triangle are equal to three sides of the other triangle (SSS Congruence).
4. (Motivate) Two right triangles are congruent if the hypotenuse and a side of one triangle are equal (respectively) to the hypotenuse and a side of the other triangle. (RHS Congruence)
5. (Prove) The angles opposite to equal sides of a triangle are equal.
6. (Motivate) The sides opposite to equal angles of a triangle are equal.
7. (Motivate) Triangle inequalities and relation between 'angle and facing side' inequalities in triangles.

4. QUADRILATERALS

(10) Periods

1. (Prove) The diagonal divides a parallelogram into two congruent triangles.
2. (Motivate) In a parallelogram opposite sides are equal, and conversely.
3. (Motivate) In a parallelogram opposite angles are equal, and conversely.
4. (Motivate) A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and equal.
5. (Motivate) In a parallelogram, the diagonals bisect each other and conversely.
6. (Motivate) In a triangle, the line segment joining the mid points of any two sides is parallel to the third side and in half of it and (motivate) its converse.

5. AREA

(7) Periods

Review concept of area, recall area of a rectangle.

1. (Prove) Parallelograms on the same base and between the same parallels have equal area.
2. (Motivate) Triangles on the same base (or equal bases) and between the same parallels are equal in area.

6. CIRCLES

(15) Periods

Through examples, arrive at definition of circle and related concepts-radius, circumference, diameter, chord, arc, secant, sector, segment, subtended angle.

1. (Prove) Equal chords of a circle subtend equal angles at the center and (motivate) its converse.
2. (Motivate) The perpendicular from the center of a circle to a chord bisects the chord and conversely, the line drawn through the center of a circle to bisect a chord is perpendicular to the chord.
3. (Motivate) There is one and only one circle passing through three given non-collinear points.
4. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the center (or their respective centers) and conversely.
5. (Prove) The angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle.
6. (Motivate) Angles in the same segment of a circle are equal.
7. (Motivate) If a line segment joining two points subtends equal angle at two other points lying on the same side of the line containing the segment, the four points lie on a circle.
8. (Motivate) The sum of either of the pair of the opposite angles of a cyclic quadrilateral is 180° and its converse.

7. CONSTRUCTIONS

(10) Periods

1. Construction of bisectors of line segments and angles of measure 60° , 90° , 45° etc., equilateral triangles.
2. Construction of a triangle given its base, sum/difference of the other two sides and one base angle.
3. Construction of a triangle of given perimeter and base angles.

UNIT V: MENSURATION

1. AREAS

(4) Periods

Area of a triangle using Heron's formula (without proof) and its application in finding the area of a quadrilateral.

2. SURFACE AREAS AND VOLUMES

(12) Periods

Surface areas and volumes of cubes, cuboids, spheres (including hemispheres) and right circular cylinders/cones.

UNIT VI: STATISTICS & PROBABILITY

1. STATISTICS

(13) Periods

Introduction to Statistics: Collection of data, presentation of data – tabular form, ungrouped / grouped, bar graphs, histograms (with varying base lengths), frequency polygons. Mean, median and mode of ungrouped data.

2. PROBABILITY

(9) Periods

History, Repeated experiments and observed frequency approach to probability. Focus is on empirical probability. (A large amount of time to be devoted to group and to individual activities to motivate the concept; the experiments to be drawn from real - life situations, and from examples used in the chapter on statistics).

MATHEMATICS
QUESTION PAPER DESIGN
CLASS – IX (2020-21)

Time: 3 Hrs.

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weightage (approx.)
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	43	54
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	19	24
3	<p>Analysing : Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p>Evaluating: Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	18	22
	Total	80	100

INTERNAL ASSESSMENT	20 MARKS
Pen Paper Test and Multiple Assessment (5+5)	10 Marks
Portfolio	05 Marks
Lab Practical (Lab activities to be done from the prescribed books)	05 Marks

COURSE STRUCTURE CLASS -X

Units	Unit Name	Marks
I	NUMBER SYSTEMS	06
II	ALGEBRA	20
III	COORDINATE GEOMETRY	06
IV	GEOMETRY	15
V	TRIGONOMETRY	12
VI	MENSURATION	10
VII	STATISTICS & PROBABILITY	11
	Total	80

UNIT I: NUMBER SYSTEMS

1. REAL NUMBER

(15) Periods

Euclid's division lemma, Fundamental Theorem of Arithmetic - statements after reviewing work done earlier and after illustrating and motivating through examples, Proofs of irrationality of $\sqrt{2}, \sqrt{3}, \sqrt{5}$ Decimal representation of rational numbers in terms of terminating/non-terminating recurring decimals.

UNIT II: ALGEBRA

1. POLYNOMIALS

(7) Periods

Zeros of a polynomial. Relationship between zeros and coefficients of quadratic polynomials. Statement and simple problems on division algorithm for polynomials with real coefficients.

2. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

(15) Periods

Pair of linear equations in two variables and graphical method of their solution, consistency/inconsistency.

Algebraic conditions for number of solutions. Solution of a pair of linear equations in two variables algebraically - by substitution, by elimination and by cross multiplication method. Simple situational problems. Simple problems on equations reducible to linear equations.

3. QUADRATIC EQUATIONS

(15) Periods

Standard form of a quadratic equation $ax^2 + bx + c = 0$, ($a \neq 0$). Solutions of quadratic equations (only real roots) by factorization, and by using quadratic formula. Relationship between discriminant and nature of roots.

Situational problems based on quadratic equations related to day to day activities to be incorporated.

4. ARITHMETIC PROGRESSIONS

(8) Periods

Motivation for studying Arithmetic Progression Derivation of the n^{th} term and sum of the first n terms of A.P. and their application in solving daily life problems.

UNIT III: COORDINATE GEOMETRY

1. LINES (In two-dimensions)

(14) Periods

Review: Concepts of coordinate geometry, graphs of linear equations. Distance formula. Section formula (internal division). Area of a triangle.

UNIT IV: GEOMETRY

1. TRIANGLES

(15) Periods

Definitions, examples, counter examples of similar triangles.

1. (Prove) If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.
2. (Motivate) If a line divides two sides of a triangle in the same ratio, the line is parallel to the third side.
3. (Motivate) If in two triangles, the corresponding angles are equal, their corresponding sides are proportional and the triangles are similar.
4. (Motivate) If the corresponding sides of two triangles are proportional, their corresponding angles are equal and the two triangles are similar.
5. (Motivate) If one angle of a triangle is equal to one angle of another triangle and the sides including these angles are proportional, the two triangles are similar.
6. (Motivate) If a perpendicular is drawn from the vertex of the right angle of a right triangle to the hypotenuse, the triangles on each side of the perpendicular are similar to the whole triangle and to each other.
7. (Prove) The ratio of the areas of two similar triangles is equal to the ratio of the squares of their corresponding sides.
8. (Prove) In a right triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides.
9. (Prove) In a triangle, if the square on one side is equal to sum of the squares on the other two sides, the angles opposite to the first side is a right angle.

2. CIRCLES

(8) Periods

Tangent to a circle at, point of contact

1. (Prove) The tangent at any point of a circle is perpendicular to the radius through the point of contact.
2. (Prove) The lengths of tangents drawn from an external point to a circle are equal.

3. CONSTRUCTIONS

(8) Periods

1. Division of a line segment in a given ratio (internally).
2. Tangents to a circle from a point outside it.
3. Construction of a triangle similar to a given triangle.

UNIT V: TRIGONOMETRY

1. INTRODUCTION TO TRIGONOMETRY

(10) Periods

Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined); motivate the ratios whichever are defined at 0° and 90° . Values of the trigonometric ratios of 30° , 45° and 60° . Relationships between the ratios.

2. TRIGONOMETRIC IDENTITIES

(15) Periods

Proof and applications of the identity $\sin^2 A + \cos^2 A = 1$. Only simple identities to be given. Trigonometric ratios of complementary angles.

3. HEIGHTS AND DISTANCES: Angle of elevation, Angle of Depression. (8) Periods

Simple problems on heights and distances. Problems should not involve more than two right triangles. Angles of elevation / depression should be only 30° , 45° , 60° .

UNIT VI: MENSURATION

1. AREAS RELATED TO CIRCLES

(12) Periods

Motivate the area of a circle; area of sectors and segments of a circle. Problems based on areas and perimeter / circumference of the above said plane figures. (In calculating area of segment of a circle, problems should be restricted to central angle of 60° , 90° and 120° only. Plane figures involving triangles, simple quadrilaterals and circle should be taken.)

2. SURFACE AREAS AND VOLUMES

(12) Periods

1. Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones. Frustum of a cone.
2. Problems involving converting one type of metallic solid into another and other mixed problems. (Problems with combination of not more than two different solids be taken).

UNIT VII: STATISTICS AND PROBABILITY

1. STATISTICS

(18) Periods

Mean, median and mode of grouped data (bimodal situation to be avoided). Cumulative frequency graph.

2. PROBABILITY

(10) Periods

Classical definition of probability. Simple problems on finding the probability of an event.

**MATHEMATICS-Standard
QUESTION PAPER DESIGN
CLASS – X (2020-21)**

Time : 3 Hours

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weightage (approx.)
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	43	54
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	19	24
3	<p>Analysing : Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p>Evaluating: Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	18	22
	Total	80	100

INTERNAL ASSESSMENT	20 MARKS
Pen Paper Test and Multiple Assessment (5+5)	10 Marks
Portfolio	05 Marks
Lab Practical (Lab activities to be done from the prescribed books)	05 Marks

MATHEMATICS-Basic
QUESTION PAPER DESIGN
CLASS – X (2020-21)

Time : 3Hours

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weightage (approx.)
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	60	75
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	12	15
3	<p>Analysing : Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p>Evaluating: Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	8	10
	Total	80	100

INTERNAL ASSESSMENT	20 MARKS
Pen Paper Test and Multiple Assessment (5+5)	10 Marks
Portfolio	05 Marks
Lab Practical (Lab activities to be done from the prescribed books)	05 Marks

PRESCRIBED BOOKS:

1. Mathematics - Textbook for class IX - NCERT Publication
2. Mathematics - Textbook for class X - NCERT Publication
3. Guidelines for Mathematics Laboratory in Schools, class IX - CBSE Publication
4. Guidelines for Mathematics Laboratory in Schools, class X - CBSE Publication
5. Laboratory Manual - Mathematics, secondary stage - NCERT Publication
6. Mathematics exemplar problems for class IX, NCERT publication.
7. Mathematics exemplar problems for class X, NCERT publication.

SCIENCE

(Code No. 086)

Classes: IX and X (2020-21)

The subject of Science plays an important role in developing well-defined abilities in cognitive, affective and psychomotor domains in children. It augments the spirit of enquiry, creativity, objectivity and aesthetic sensibility.

Upper primary stage demands that a number of opportunities should be provided to the students to engage them with the processes of Science like observing, recording observations, drawing, tabulation, plotting graphs, etc., whereas the secondary stage also expects abstraction and quantitative reasoning to occupy a more central place in the teaching and learning of Science. Thus, the idea of atoms and molecules being the building blocks of matter makes its appearance, as does Newton's law of gravitation.

The present syllabus has been designed around seven broad themes viz. Food; Materials; The World of The Living; How Things Work; Moving Things, People and Ideas; Natural Phenomenon and Natural Resources. Special care has been taken to avoid temptation of adding too many concepts than can be comfortably learnt in the given time frame. No attempt has been made to be comprehensive.

At this stage, while science is still a common subject, the disciplines of Physics, Chemistry and Biology begin to emerge. The students should be exposed to experiences based on hands on activities as well as modes of reasoning that are typical of the subject.

General Instructions:

1. There will be an Annual Examination based on the entire syllabus.
2. The Annual Examination will be of 80 marks and 20 marks weightage shall be for Internal Assessment.
3. For Internal Assessment:
 - a. There will be Periodic Assessment that would include:
 - For 5 marks- Three periodic tests conducted by the school. Average of the best two tests to be taken that will have a weightage of 05 marks towards the final result.
 - For 5 marks- Diverse methods of assessment as per the need of the class dynamics and curriculum transaction. These may include - short tests, oral test, quiz, concept maps, projects, posters, presentations and enquiry based scientific investigations etc. and use rubrics for arguing them objectively. This will also have a weightage of 05 marks towards the final result.

- b. Practical / Laboratory work should be done throughout the year and the student should maintain record of the same. Practical Assessment should be continuous. There will be weightage of 5 marks towards the final result. All practicals listed in the syllabus must be completed.
- c. Portfolio to be prepared by the student- This would include classwork and other sample of student work and will carry a weightage of 5 marks towards the final results.

COURSE STRUCTURE
CLASS IX
(Annual Examination)

Marks: 80

Unit No.	Unit	Marks	Periods
I	Matter - Its Nature and Behaviour	23	50
II	Organization in the Living World	20	45
III	Motion, Force and Work	27	60
IV	Our Environment	06	15
V	Food; Food Production	04	10
	Total	80	
	Internal assessment	20	
	Grand Total	100	

Theme: Materials

(50 Periods)

Unit I: Matter-Nature and Behaviour

Definition of matter; solid, liquid and gas; characteristics - shape, volume, density; change of state- melting (absorption of heat), freezing, evaporation (cooling by evaporation), condensation, sublimation.

Nature of matter: Elements, compounds and mixtures. Heterogeneous and homogenous mixtures, colloids and suspensions.

Particle nature and their basic units: Atoms and molecules, Law of constant proportions, Atomic and molecular masses. Mole concept: Relationship of mole to mass of the particles and numbers.

Structure of atoms: Electrons, protons and neutrons, valency, chemical formula of common compounds. Isotopes and Isobars.

Theme: The World of the Living

(45 Periods)

Unit II: Organization in the Living World

Cell - Basic Unit of life : Cell as a basic unit of life; prokaryotic and eukaryotic cells, multicellular organisms; cell membrane and cell wall, cell organelles and cell inclusions; chloroplast, mitochondria, vacuoles, endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number.

Tissues, Organs, Organ System, Organism:

Structure and functions of animal and plant tissues (only four types of tissues in animals; Meristematic and Permanent tissues in plants).

Biological Diversity: Diversity of plants and animals-basic issues in scientific naming, basis of classification. Hierarchy of categories / groups, Major groups of plants (salient features) (Bacteria, Thallophyta, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms). Major groups of animals (salient features) (Non-chordates upto phyla and chordates upto classes).

Health and Diseases: Health and its failure. Infectious and Non-infectious diseases, their causes and manifestation. Diseases caused by microbes (Virus, Bacteria and Protozoans) and their prevention; Principles of treatment and prevention. Pulse Polio programmes.

Theme: Moving Things, People and Ideas

(60 Periods)

Unit III: Motion, Force and Work

Motion: Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and uniformly accelerated motion, derivation of equations of motion by graphical method; elementary idea of uniform circular motion.

Force and Newton's laws : Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Elementary idea of conservation of Momentum.

Gravitation: Gravitation; Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Free fall.

Floatation: Thrust and Pressure. Archimedes' Principle; Buoyancy; Elementary idea of Relative Density.

Work, energy and power: Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy.

Sound: Nature of sound and its propagation in various media, speed of sound, range of hearing in humans; ultrasound; reflection of sound; echo and SONAR. Structure of the Human Ear (Auditory aspect only).

Theme: Natural Resources: Balance in nature

(15 Periods)

Unit IV: Our Environment

Physical resources: Air, Water, Soil. Air for respiration, for combustion, for moderating temperatures; movements of air and its role in bringing rains across India.

Air, water and soil pollution (brief introduction). Holes in ozone layer and the probable damages.

Bio-geo chemical cycles in nature: Water, Oxygen, Carbon and Nitrogen.

Theme: Food

(10 Periods)

Unit V: Food Production

Plant and animal breeding and selection for quality improvement and management; Use of fertilizers and manures; Protection from pests and diseases; Organic farming.

PRACTICALS

(30 Periods)

Practicals should be conducted alongside the concepts taught in theory classes.

(LIST OF EXPERIMENTS)

1. Preparation of: **Unit-I**
 - a) a true solution of common salt, sugar and alum
 - b) a suspension of soil, chalk powder and fine sand in water
 - c) a colloidal solution of starch in water and egg albumin/milk in water and distinguish between these on the basis of
 - transparency
 - filtration criterion
 - stability

2. Preparation of **Unit-I**
 - a) A mixture
 - b) A compound

using iron filings and sulphur powder and distinguishing between these on the basis of:

 - (i) appearance, i.e., homogeneity and heterogeneity
 - (ii) behaviour towards a magnet
 - (iii) behaviour towards carbon disulphide as a solvent
 - (iv) effect of heat

3. Separation of the components of a mixture of sand, common salt and ammonium chloride (or camphor). **Unit-I**

4. Perform the following reactions and classify them as physical or chemical changes: **Unit-I**
 - a) Iron with copper sulphate solution in water
 - b) Burning of magnesium ribbon in air
 - c) Zinc with dilute sulphuric acid
 - d) Heating of copper sulphate crystals
 - e) Sodium sulphate with barium chloride in the form of their solutions in water

5. Preparation of stained temporary mounts of (a) onion peel, (b) human cheek cells & to record observations and draw their labeled diagrams. **Unit-II**

6. Identification of Parenchyma, collenchyma and Sclerenchyma tissues in plants, striped, smooth and cardiac muscle fibers and nerve cells in animals, from prepared slides. Draw their labeled diagrams. **Unit-II**
7. Determination of the melting point of ice and the boiling point of water. **Unit-I**
8. Verification of the Laws of reflection of sound. **Unit-III**
9. Determination of the density of solid (denser than water) by using a spring balance and a measuring cylinder. **Unit-III**
10. Establishing the relation between the loss in weight of a solid when fully immersed in
 - a) Tap water **Unit-III**
 - b) Strongly salty water with the weight of water displaced by it by taking at least two different solids.
11. Determination of the speed of a pulse propagated through a stretched string/slinky (helical spring). **Unit-III**
12. Study of the characteristics of *Spirogyra*, *Agaricus*, Moss, Fern, Pinus (either with male or female cone) and an Angiospermic plant. Draw and give two identifying features of the groups they belong to. **Unit-II**
13. Observe the given pictures/charts/models of earthworm, cockroach, bony fish and bird. For each organism, draw their picture and record:
 - a) one specific feature of its phylum.
 - b) one adaptive feature with reference to its habitat.**Unit-II**
14. Verification of the law of conservation of mass in a chemical reaction. **Unit-III**
15. Study of the external features of root, stem, leaf and flower of monocot and dicot plants. **Unit-III**

COURSE STRUCTURE CLASS X
(Annual Examination)

Marks: 80

Unit No.	Unit	Marks	Periods
I	Chemical Substances-Nature and Behaviour	25	55
II	World of Living	23	50
III	Natural Phenomena	12	23
IV	Effects of Current	13	32
V	Natural Resources	07	20
	Total	80	
	Internal assessment	20	
	Grand Total	100	

Theme: Materials

(55 Periods)

Unit I: Chemical Substances - Nature and Behaviour

Chemical reactions: Chemical equation, Balanced chemical equation, implications of a balanced chemical equation, types of chemical reactions: combination, decomposition, displacement, double displacement, precipitation, neutralization, oxidation and reduction.

Acids, bases and salts: Their definitions in terms of furnishing of H^+ and OH^- ions, General properties, examples and uses, concept of pH scale (Definition relating to logarithm not required), importance of pH in everyday life; preparation and uses of Sodium Hydroxide, Bleaching powder, Baking soda, Washing soda and Plaster of Paris.

Metals and nonmetals: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds; Basic metallurgical processes; Corrosion and its prevention.

Carbon compounds: Covalent bonding in carbon compounds. Versatile nature of carbon. Homologous series. Nomenclature of carbon compounds containing functional groups (halogens, alcohol, ketones, aldehydes, alkanes and alkynes), difference between saturated hydro carbons and unsaturated hydrocarbons. Chemical properties of carbon compounds (combustion, oxidation, addition and substitution reaction). Ethanol and Ethanoic acid (only properties and uses), soaps and detergents.

Periodic classification of elements: Need for classification, early attempts at classification of elements (Dobereiner's Triads, Newland's Law of Octaves, Mendeleev's Periodic Table), Modern periodic table, gradation in properties, valency, atomic number, metallic and non-metallic properties.

Theme: The World of the Living**(50 Periods)****Unit II: World of Living**

Life processes: 'Living Being'. Basic concept of nutrition, respiration, transport and excretion in plants and animals.

Control and co-ordination in animals and plants: Tropic movements in plants; Introduction of plant hormones; Control and co-ordination in animals: Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones.

Reproduction: Reproduction in animals and plants (asexual and sexual) reproductive health-need and methods of family planning. Safe sex vs HIV/AIDS. Child bearing and women's health.

Heredity and Evolution: Heredity; Mendel's contribution- Laws for inheritance of traits: Sex determination: brief introduction; Basic concepts of evolution.

Theme: Natural Phenomena**(23 Periods)****Unit III: Natural Phenomena**

Reflection of light by curved surfaces; Images formed by spherical mirrors, centre of curvature, principal axis, principal focus, focal length, mirror formula (Derivation not required), magnification.

Refraction; Laws of refraction, refractive index.

Refraction of light by spherical lens; Image formed by spherical lenses; Lens formula (Derivation not required); Magnification. Power of a lens.

Functioning of a lens in human eye, defects of vision and their corrections, applications of spherical mirrors and lenses.

Refraction of light through a prism, dispersion of light, scattering of light, applications in daily life.

Theme: How Things Work**(32 Periods)****Unit IV: Effects of Current**

Electric current, potential difference and electric current. Ohm's law; Resistance, Resistivity, Factors on which the resistance of a conductor depends. Series combination of resistors, parallel combination of resistors and its applications in daily life. Heating effect of electric current and its applications in daily life. Electric power, Interrelation between P, V, I and R.

Magnetic effects of current : Magnetic field, field lines, field due to a current carrying conductor, field due to current carrying coil or solenoid; Force on current carrying conductor, Fleming's Left Hand Rule, Electric Motor, Electromagnetic induction. Induced potential difference, Induced current. Fleming's Right Hand Rule, Electric Generator, Direct current. Alternating current: frequency of AC. Advantage of AC over DC. Domestic electric circuits.

Theme: Natural Resources

(20 Periods)

Unit V: Natural Resources

Sources of energy: Different forms of energy, conventional and non-conventional sources of energy: Fossil fuels, solar energy; biogas; wind, water and tidal energy; Nuclear energy. Renewable versus non-renewable sources of Energy.

Our environment: Eco-system, Environmental problems, Ozone depletion, waste production and their solutions. Biodegradable and non-biodegradable substances.

Management of natural resources: Conservation and judicious use of natural resources. Forest and wild life; Coal and Petroleum conservation. Examples of people's participation for conservation of natural resources. Big dams: advantages and limitations; alternatives, if any. Water harvesting. Sustainability of natural resources.

PRACTICALS

Practical should be conducted alongside the concepts taught in theory classes

LIST OF EXPERIMENTS

1. A. Finding the pH of the following samples by using pH paper/universal indicator: **Unit-I**
 - (i) Dilute Hydrochloric Acid
 - (ii) Dilute NaOH solution
 - (iii) Dilute Ethanoic Acid solution
 - (iv) Lemon juice
 - (v) Water
 - (vi) Dilute Hydrogen Carbonate solutionB. Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with: **Unit-I**
 - a) Litmus solution (Blue/Red)
 - b) Zinc metal
 - c) Solid sodium carbonate
2. Performing and observing the following reactions and classifying them into: **Unit-I**
 - A. Combination reaction
 - B. Decomposition reaction
 - C. Displacement reaction
 - D. Double displacement reaction
 - (i) Action of water on quicklime
 - (ii) Action of heat on ferrous sulphate crystals
 - (iii) Iron nails kept in copper sulphate solution
 - (iv) Reaction between sodium sulphate and barium chloride solutions
3. Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions: **Unit-I**
 - i) $\text{ZnSO}_4(\text{aq})$
 - ii) $\text{FeSO}_4(\text{aq})$
 - iii) $\text{CuSO}_4(\text{aq})$
 - iv) $\text{Al}_2(\text{SO}_4)_3(\text{aq})$Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result.
4. Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determine its resistance. Also plotting a graph between V and I. **Unit-IV**
5. Determination of the equivalent resistance of two resistors when connected in series and parallel. **Unit-IV**
6. Preparing a temporary mount of a leaf peel to show stomata. **Unit- II**
7. Experimentally show that carbon dioxide is given out during respiration. **Unit-II**

8. Study of the following properties of acetic acid (ethanoic acid): **Unit- I**
- i) Odour
 - ii) solubility in water
 - iii) effect on litmus
 - iv) reaction with Sodium Hydrogen Carbonate
9. Study of the comparative cleaning capacity of a sample of soap in soft and hard water. **Unit- I**
10. Determination of the focal length of: **Unit-III**
- i) Concave mirror
 - ii) Convex lens
- by obtaining the image of a distant object.
11. Tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Measure the angle of incidence, angle of refraction, angle of emergence and interpret the result. **Unit - III**
12. Studying (a) binary fission in *Amoeba*, and (b) budding in yeast and Hydra with the help of prepared slides. **Unit-II**
13. Tracing the path of the rays of light through a glass prism. **Unit-III**
14. Finding the image distance for varying object distances in case of a convex lens and drawing corresponding ray diagrams to show the nature of image formed. **Unit-III**
15. Identification of the different parts of an embryo of a dicot seed (Pea, gram or red kidney bean). **Unit-II**

PRESCRIBED BOOKS:

- Science-Textbook for class IX-NCERT Publication
- Science-Text book for class X- NCERT Publication
- Assessment of Practical Skills in Science-Class IX - CBSE Publication
- Assessment of Practical Skills in Science- Class X- CBSE Publication
- Laboratory Manual-Science-Class IX, NCERT Publication
- Laboratory Manual-Science-Class X, NCERT Publication
- Exemplar Problems Class IX – NCERT Publication
- Exemplar Problems Class X – NCERT Publication

Assessment Areas (Theory) 2020-21

(Class X)

Science (086)

Time: 3 hrs.

Maximum Marks: 80 Marks

Competencies	
Demonstrate Knowledge and Understanding	46 %
Application of Knowledge/Concepts	22 %
Analyze, Evaluate and Create	32 %

Note:

- Typology of Questions: VSA including objective type questions, Assertion – Reasoning type questions; SA; LA; Source-based/ Case-based/ Passage-based/ Integrated assessment questions.
- An internal choice of approximately 33% would be provided.

Internal Assessment (20 Marks)

- **Periodic Assessment** - 05 marks + 05 marks
- **Subject Enrichment** (Practical Work) - 05 marks
- **Portfolio** - 05 marks

Suggestive verbs for various competencies

- **Demonstrate Knowledge and Understanding**
State, name, list, identify, define, suggest, describe, outline, summarize, etc.
- **Application of Knowledge/Concepts**
Calculate, illustrate, show, adapt, explain, distinguish, etc.
- **Analyze, Evaluate and Create**
Interpret, analyze, compare, contrast, examine, evaluate, discuss, construct, etc.

SOCIAL SCIENCE
CLASS IX-X (2020-21)
(CODE NO. 087)

Rationale

Social Science is a compulsory subject up to secondary stage of school education. It is an integral component of general education because it helps the learners to understand the environment in its totality and developing a broader perspective and an empirical, reasonable and humane outlook. This is of crucial importance because it helps them grow into well-informed and responsible citizens with necessary attributes and skills for being able to participate and contribute effectively in the process of development and nation-building.

The Social Science curriculum draws its content mainly from History, Geography, Political Science and Economics. Some elements of Sociology and Commerce are also included. Together they provide a comprehensive view of society over space and time, and in relation to each other. Each subject's distinct methods of enquiry help the learners to understand society from different angles and form a holistic view.

Objectives

The main objectives of this syllabus are to:

- develop an understanding of the processes of change and development-both in terms of time and space, through which human societies have evolved
- make learners realise that the process of change is continuous and any event or phenomenon or issue cannot be viewed in isolation but in a wider context of time and space
- develop an understanding of contemporary India with its historical perspective, of the basic framework of the goals and policies of national development in independent India, and of the process of change with appropriate connections to world development
- deepen knowledge about and understanding of India's freedom struggle and of the values and ideals that it represented, and to develop an appreciation of the contributions made by people of all sections and regions of the country
- help learners understand and cherish the values enshrined in the Indian Constitution and to prepare them for their roles and responsibilities as effective citizens of a democratic society
- deepen the knowledge and understanding of India's environment in its totality, their interactive processes and effects on the future quality of people's lives

- facilitate the learners to understand and appreciate the diversity in the land and people of the country with its underlying unity
- develop an appreciation of the richness and variety of India's heritage-both natural and cultural and the need for its preservation
- promote an understanding of the issues and challenges of contemporary India-environmental, economic and social, as part of the development process
- help pupils acquire knowledge, skills and understanding to face the challenges of contemporary society as individuals and groups and learn the art of living a confident and stress-free life as well as participating effectively in the community
- develop scientific temperament by promoting the spirit of enquiry and following a rational and objective approach in analysing and evaluating data and information as well as views and interpretations
- develop academic and social skills such as critical thinking, communicating effectively both in visual and verbal forms - cooperating with others, taking initiatives and providing leadership in solving others' problems
- develop qualities clustered around the personal, social, moral, national and spiritual values that make a person humane and socially effective.

COURSE STRUCTURE CLASS IX (2020-21)

Theory Paper

Time: 3 Hrs.			Max. Marks: 80
No.	Units	No. of Periods	Marks
I	India and the Contemporary World – I	60	20
II	Contemporary India – I	55	20
III	Democratic Politics - I	50	20
IV	Economics	50	20
Total		215	80

COURSE CONTENT

Unit 1: India and the Contemporary World – I		60 Periods
Themes	Learning Objectives	
Section 1: Events and Processes: (All the three themes are compulsory)	In each of the themes in this unit students would get familiarized with distinct ideologies, extracts of speeches, political declarations, as well as the politics of caricatures, posters and engravings. Students	

<p>I. The French Revolution</p> <ul style="list-style-type: none"> • French Society During the Late Eighteenth Century • The Outbreak of the Revolution • France Abolishes Monarchy and Becomes a Republic • Did Women have a Revolution? • The Abolition of Slavery • The Revolution and Everyday Life <p>II. Socialism in Europe and the Russian Revolution</p> <ul style="list-style-type: none"> • The Age of Social Change • The Russian Revolution • The February Revolution in Petrograd • What Changed after October? • The Global Influence of the Russian Revolution and the USSR <p>III. Nazism and the Rise of Hitler</p> <ul style="list-style-type: none"> • Birth of the Weimar Republic • Hitler’s Rise to Power • The Nazi Worldview • Youth in Nazi Germany • Ordinary People and the Crimes Against Humanity <p>Section 2: Livelihoods, Economies and Societies Any one theme of the following</p> <p>IV. Forest Society and Colonialism</p> <ul style="list-style-type: none"> • Why Deforestation? • The Rise of Commercial Forestry • Rebellion in the Forest • Forest Transformations in Java 	<p>would learn how to interpret these kinds of historical evidences.</p> <ul style="list-style-type: none"> • Familiarize with the names of people involved, the different types of ideas that inspired the revolution, the wider forces that shaped it. • Know the use of written, oral and visual material to recover the history of revolutions. <ul style="list-style-type: none"> • Explore the history of socialism through the study of Russian Revolution. • Familiarize with the different types of ideas that inspired the revolution. <ul style="list-style-type: none"> • Discuss the critical significance of Nazism in shaping the politics of modern world. • Get familiarized with the speeches and writings of Nazi Leaders. <ul style="list-style-type: none"> • Discuss the social and cultural world of forest communities through the study of specific revolts. • Understand how oral traditions can be used to explore tribal revolts.
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<p>V. Pastoralists in the Modern World</p> <ul style="list-style-type: none"> • Pastoral Nomads and their Movements • Colonial Rule and Pastoral Life • Pastoralism in Africa 	<ul style="list-style-type: none"> • Highlight varying patterns of developments within pastoral societies in different places. • Analyse the impact of colonialism on forest societies, and the implication of scientific forestry. • Show the different processes through which agrarian transformation may occur in the modern world. • Analyse the impact of modern states, marking of boundaries, processes of sedentarization, contraction of pastures, and expansion of markets on pastoralism in the modern world.
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Unit 2: Contemporary India – I	55 Periods
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Themes	Learning Objectives
<p>1. India</p> <ul style="list-style-type: none"> • Size and Location • India and the World • India’s Neighbours <p>2. Physical Features of India</p> <ul style="list-style-type: none"> • Major Physiographic Divisions <p>3. Drainage</p> <ul style="list-style-type: none"> • Major rivers and tributaries • Lakes • Role of rivers in the economy • Pollution of rivers <p>4. Climate</p> <ul style="list-style-type: none"> • Concept • Climatic Controls 	<ul style="list-style-type: none"> • Identify the location of India in the Indian subcontinent. • Understand the major landform features and the underlying geological structure; their association with various rocks and minerals as well as nature of soil types. • Identify the river systems of the country and explain the role of rivers in the human society. • Identify various factors influencing the climate and explain the climatic variation of our country

<ul style="list-style-type: none"> • Factors influencing India's climate • The Indian Monsoon • Distribution of Rainfall • Monsoon as a unifying bond <p>5. Natural Vegetation and Wild Life</p> <ul style="list-style-type: none"> • Factors affecting Vegetation • Vegetation types • Wild Life • Conservation <p>6. Population</p> <ul style="list-style-type: none"> • Size • Distribution • Population Growth and Process of Population Change 	<p>and its impact on the life of people.</p> <ul style="list-style-type: none"> • Explain the importance and unifying role of monsoons. • Explain the nature of diverse flora and fauna as well as their distribution. • Develop concern about the need to protect the biodiversity of our country. • Analyse the uneven nature of population distribution and show concern about the large size of our population. • Identify the different occupations of people and explain various factors of population change. • Explain various dimensions of National Population Policy and understand the needs of adolescents as underserved group.
Unit 3: Democratic Politics – I 50 Periods	
Themes	Learning Objectives
<p>1. What is Democracy? Why Democracy?</p> <ul style="list-style-type: none"> • What is Democracy? • Features of Democracy • Why Democracy? • Broader Meaning of Democracy 	<ul style="list-style-type: none"> • Develop conceptual skills of defining democracy. • Understand how different historical processes and forces have promoted democracy. • Develop a sophisticated defense of democracy against common prejudices. • Develop a historical sense of the choice and nature of democracy in India.

<p>2. Constitutional Design</p> <ul style="list-style-type: none"> • Democratic Constitution in South Africa • Why do we need a Constitution? • Making of the Indian Constitution • Guiding Values of the Indian Constitution <p>3. Electoral Politics</p> <ul style="list-style-type: none"> • Why Elections? • What is our System of Elections? • What makes elections in India democratic? <p>4. Working of Institutions</p> <ul style="list-style-type: none"> • How is the major policy decision taken? • Parliament • Political Executive • Judiciary <p>5. Democratic Rights</p> <ul style="list-style-type: none"> • Life without rights • Rights in a Democracy 	<ul style="list-style-type: none"> • Understand the process of Constitution making. • Develop respect for the Constitution and appreciation for Constitutional values. • Recognize Constitution as a dynamic and living document. <ul style="list-style-type: none"> • Understand representative democracy via competitive party politics. • Familiarize with Indian electoral system. • Reason out for the adoption of present Indian Electoral System. • Develop an appreciation of citizen's increased participation in electoral politics. • Recognize the significance of the Election Commission. <ul style="list-style-type: none"> • Get an overview of central governmental structures. • Identify the role of Parliament and its procedures. • Distinguish between political and permanent executive authorities and functions. • Understand the parliamentary system of executive's accountability to the legislature. • Understand the working of Indian Judiciary. <ul style="list-style-type: none"> • Recognize the need for rights in one's life.
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<ul style="list-style-type: none"> • Rights in the Indian Constitution • Expanding the scope of rights 	<ul style="list-style-type: none"> • Understand the availability /access of rights in a democratic system/government. • Identify and be able to comprehend the Fundamental Rights given by the Indian Constitution to its citizens. • Create awareness regarding the process of safeguarding rights.
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Unit 4: Economics	50 Periods
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Themes	Objectives
<p>1. The Story of Village Palampur</p> <ul style="list-style-type: none"> • Overview • Organization of production • Farming in Palampur • Non-farm activities of Palampur <p>2. People as Resource</p> <ul style="list-style-type: none"> • Overview • Economic activities by men and women • Quality of Population • Unemployment <p>3. Poverty as a Challenge</p> <ul style="list-style-type: none"> • Two typical cases of poverty • Poverty as seen by Social Scientists • Poverty Estimates • Vulnerable Groups • Interstate disparities • Global Poverty Scenario • Causes of Poverty • Anti-poverty measures • The Challenges Ahead <p>4. Food Security in India</p> <ul style="list-style-type: none"> • Overview • What is Food Security? • Why Food Security? • Who are food insecure? 	<ul style="list-style-type: none"> • Familiarize with basic economic concepts through an imaginary story of a village. • Understand the demographic concepts. • Understand how population can be an asset or a liability for a nation. • Understand poverty as a challenge. • Identify vulnerable group and interstate disparities • Appreciate the initiatives of the government to alleviate poverty. • Understand the concept of food security.

<ul style="list-style-type: none"> • Food Security in India • What is Buffer Stock? • What is the Public Distribution System? • Current Status of Public Distribution System 	<ul style="list-style-type: none"> • Appreciate and analyse the role of government in ensuring food supply.
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**PROJECT WORK
CLASS IX (2020-21)**

05 Periods	05 Marks												
<p>1. Every student has to compulsorily undertake one project on Disaster Management.</p>													
<p>2. Objectives: The main objectives of giving project work on Disaster Management to the students are to:</p> <ol style="list-style-type: none"> create awareness in them about different disasters, their consequences and management prepare them in advance to face such situations ensure their participation in disaster mitigation plans enable them to create awareness and preparedness among the community. 													
<p>3. The project work should also help in enhancing the Life Skills of the students.</p>													
<p>4. If possible, different forms of art may be integrated in the project work.</p>													
<p>5. In order to realize the expected objectives completely, it would be required of the Principals / teachers to muster support from various local authorities and organizations like the Disaster Management Authorities, Relief, Rehabilitation and the Disaster Management Departments of the States, Office of the District Magistrate/ Deputy Commissioners, Fire Service, Police, Civil Defense etc. in the area where the schools are located.</p>													
<p>6. The distribution of marks over different aspects relating to Project Work is as follows:</p>													
<table border="1"> <thead> <tr> <th style="text-align: center;">S. No.</th> <th style="text-align: center;">Aspects</th> <th style="text-align: center;">Marks</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">a</td> <td>Content accuracy, originality and analysis</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">b</td> <td>Presentation and creativity</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">c</td> <td>Viva Voce</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>	S. No.	Aspects	Marks	a	Content accuracy, originality and analysis	2	b	Presentation and creativity	2	c	Viva Voce	1	
S. No.	Aspects	Marks											
a	Content accuracy, originality and analysis	2											
b	Presentation and creativity	2											
c	Viva Voce	1											

7. The project carried out by the students should subsequently be shared among themselves through interactive sessions such as exhibitions, panel discussions, etc.
8. All documents pertaining to assessment under this activity should be meticulously maintained by the schools.
9. A Summary Report should be prepared highlighting:
 - a. objectives realized through individual work and group interactions;
 - b. calendar of activities;
 - c. innovative ideas generated in the process ;
 - d. list of questions asked in viva voce.
10. It is to be noted here by all the teachers and students that the projects and models prepared should be made from eco-friendly products without incurring too much expenditure.
11. The Project Report should be handwritten by the students themselves.
12. The record of the project work (internal assessment) should be kept for a period of three months for verification, if any.

PRESCRIBED BOOKS:

1. India and the Contemporary World - I (History) - Published by NCERT
2. Contemporary India - I (Geography) - Published by NCERT
3. Democratic Politics - I Published by NCERT
4. Economics - Published by NCERT
5. Together, Towards a Safer India - Part II, a textbook on Disaster Management for Class IX - Published by CBSE
6. Learning outcomes at Secondary stage Published by NCERT

Note: Please procure latest reprinted edition (2020) of prescribed NCERT textbooks.

SOCIAL SCIENCE (CODE NO. 087)
QUESTION PAPER DESIGN
CLASS IX (2020-21)

Time: 3 Hours		Maximum Marks: 80	
Sr. No.	Competencies	Total Marks	% Weightage
1	Remembering and Understanding: Exhibiting memory of previously learned material by recalling facts, terms, basic concepts, and answers; Demonstrating understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas	28	35%
2	Applying: Solving problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	14	17.5%
3	Formulating, Analysing, Evaluating and Creating: Examining and breaking information into parts by identifying motives or causes; Making inferences and finding evidence to support generalizations; Presenting and defending opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria; Compiling information together in a different way by combining elements in a new pattern or proposing alternative solutions.	32	40%
4	Map Skill	6	7.5%
		80	100%

Note: Teachers may refer 'Learning Outcomes' published by NCERT for developing lesson plans, assessment framework and questions.

* 02 Items from History Map List and 04 from Geography Map List

Internal Assessment: 20 Marks

INTERNAL ASSESSMENT

	Marks	Description				
Periodic Assessment	10 Marks	<table border="1" style="width: 100%;"> <tr> <td style="width: 70%;">Pen Paper Test</td> <td style="text-align: center;">5 marks</td> </tr> <tr> <td>Assessment using multiple strategies For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.</td> <td style="text-align: center;">5 marks</td> </tr> </table>	Pen Paper Test	5 marks	Assessment using multiple strategies For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.	5 marks
Pen Paper Test	5 marks					
Assessment using multiple strategies For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.	5 marks					
Portfolio	5 Marks	<ul style="list-style-type: none"> • Classwork and Assignments • Any exemplary work done by the student • Reflections, Narrations, Journals, etc. • Achievements of the student in the subject throughout the year • Participation of the student in different activities like Heritage India Quiz 				
Subject Enrichment Activity	5 Marks	<ul style="list-style-type: none"> • Project Work 				

LIST OF MAP ITEMS CLASS IX (2020-21)

SUBJECT - HISTORY

Chapter-1: The French Revolution

Outline Political Map of France (For locating and labeling / Identification)

- Bordeaux
- Nantes
- Paris
- Marseilles

Chapter-2: Socialism in Europe and the Russian Revolution

Outline Political Map of World (For locating and labeling / Identification)

- Major countries of First World War
(Central Powers and Allied Powers)
Central Powers - Germany, Austria-Hungary, Turkey (Ottoman Empire)
Allied Powers - France, England, Russia, U.S.A.

Chapter-3: Nazism and Rise of Hitler

Outline Political Map of World (For locating and labeling / Identification)

- Major countries of Second World War
Axis Powers – Germany, Italy, Japan
Allied Powers – UK, France, Former USSR, USA
- Territories under German expansion (Nazi Power)
Austria, Poland, Czechoslovakia (only Slovakia shown in the map), Denmark, Lithuania, France, Belgium

SUBJECT – GEOGRAPHY (Outline Political Map of India)

Chapter -1: India-Size and Location

- India-States with Capitals, Tropic of Cancer, Standard Meridian (Location and Labelling)

Chapter -2: Physical Features of India

- Mountain Ranges: The Karakoram, The Zasker, The Shivalik, The Aravali, The Vindhya, The Satpura, Western & Eastern Ghats
- Mountain Peaks – K2, Kanchan Junga, Anai Mudi
- Plateau - Deccan Plateau, Chotta Nagpur Plateau, Malwa Plateau
- Coastal Plains - Konkan, Malabar, Coromandal & Northern Circar (Location and Labelling)

Chapter -3: Drainage

- Rivers: (Identification only)
 - *The Himalayan River Systems*-The Indus, The Ganges, and The Satluj
 - *The Peninsular rivers*-The Narmada, The Tapi, The Kaveri, The Krishna, The Godavari, The Mahanadi
- Lakes: Wular, Pulicat, Sambhar, Chilika

Chapter - 4: Climate

- Areas receiving rainfall less than 20 cm and over 400 cm (Identification only)

Chapter - 5: Natural Vegetation and Wild Life

- Vegetation Type: Tropical Evergreen Forest, Tropical Deciduous Forest, Thorn Forest, Montane Forests and Mangrove- For identification only
- National Parks: Corbett, Kaziranga, Ranthambor, Shivpuri, Kanha, Simlipal & Manas
- Bird Sanctuaries: Bharatpur and Ranganthitto
- Wild Life Sanctuaries: Sariska, Mudumalai, Rajaji, Dachigam (Location and Labelling)

Chapter - 6: Population (Location and Labelling)

- The state having highest and lowest density of population
- The state having highest and lowest sex ratio
- Largest and smallest state according to area

**COURSE STRUCTURE
CLASS X (2020-21)**

Theory Paper

Time: 3 Hrs.		Max. Marks: 80	
No.	Units	No. of Periods	Marks
I	India and the Contemporary World – II	60	20
II	Contemporary India – II	55	20
III	Democratic Politics - II	50	20
IV	Understanding Economic Development	50	20
Total		215	80

COURSE CONTENT

Unit 1: India and the Contemporary World – II		60 Periods
Themes	Learning Objectives	
Section 1: Events and Processes		
1. The Rise of Nationalism in Europe <ul style="list-style-type: none"> • The French Revolution and the Idea of the Nation • The Making of Nationalism in Europe • The Age of Revolutions: 1830-1848 • The Making of Germany and Italy • Visualizing the Nation • Nationalism and Imperialism 	<ul style="list-style-type: none"> • Enable the learners to identify and comprehend the forms in which nationalism developed along with the formation of nation states in Europe in the post-1830 period. • Establish the relationship and bring out the difference between European nationalism and anti-colonial nationalisms. • Understand the way the idea of nationalism emerged and led to the formation of nation states in Europe and elsewhere. 	
2. Nationalism in India <ul style="list-style-type: none"> • The First World War, Khilafat and Non-Cooperation • Differing Strands within the Movement • Towards Civil Disobedience • The Sense of Collective Belonging 	<ul style="list-style-type: none"> • Recognize the characteristics of Indian nationalism through a case study of Non-Cooperation and Civil Disobedience Movement. • Analyze the nature of the diverse social movements of the time. • Familiarize with the writings and ideals of different political groups and individuals. 	

<p>Section 2: Livelihoods, Economies and Societies: Any one theme of the following:</p> <p>3. The Making of a Global World</p> <ul style="list-style-type: none"> • The Pre-modern world • The Nineteenth Century (1815-1914) • The Inter war Economy • Rebuilding a World Economy: The Post-War Era <p>4. The Age of Industrialization</p> <ul style="list-style-type: none"> • Before the Industrial Revolution • Hand Labour and Steam Power • Industrialization in the colonies • Factories Come Up • The Peculiarities of Industrial Growth • Market for Goods <p>Section 3: Everyday Life, Culture and Politics</p> <p>5. Print Culture and the Modern World</p> <ul style="list-style-type: none"> • The First Printed Books • Print Comes to Europe • The Print Revolution and its Impact • The Reading Mania • The Nineteenth Century • India and the World of Print • Religious Reform and Public Debates • New Forms of Publication • Print and Censorship 	<ul style="list-style-type: none"> • Appreciate the ideas promoting Pan Indian belongingness. • Show that globalization has a long history and point to the shifts within the process. • Analyze the implication of globalization for local economies. • Discuss how globalization is experienced differently by different social groups. • Familiarize with the Pro- to-Industrial phase and Early – factory system. • Familiarize with the process of industrialization and its impact on labour class. • Enable them to understand industrialization in the colonies with reference to Textile industries. • Identify the link between print culture and the circulation of ideas. • Familiarize with pictures, cartoons, extracts from propaganda literature and newspaper debates on important events and issues in the past. • Understand that forms of writing have a specific history, and that they reflect historical changes within society and shape the forces of change.
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Unit 2: Contemporary India – II		55 Periods
Themes		Learning Objectives
<p>1. Resources and Development</p> <ul style="list-style-type: none"> • Types of Resources • Development of Resources • Resource Planning in India • Land Resources • Land Utilization • Land Use Pattern in India • Land Degradation and Conservation Measures • Soil as a Resource • Classification of Soils • Soil Erosion and Soil Conservation <p>2. Forest and Wildlife</p> <ul style="list-style-type: none"> • Biodiversity or Biological Diversity • Flora and Fauna in India • Vanishing Forests • Asiatic Cheetah: Where did they go? • The Himalayan Yew in trouble • Conservation of forest and wildlife in India • Project Tiger • Types and distribution of forests and wildlife resources • Community and Conservation <p>Note: The chapter 'Forest and Wildlife' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.</p> <p>3. Water Resources</p> <ul style="list-style-type: none"> • Water Scarcity and The Need for Water Conservation and Management • Multi-Purpose River Projects and Integrated Water Resources Management • Rainwater Harvesting 	<ul style="list-style-type: none"> • Understand the value of resources and the need for their judicious utilization and conservation. • Understand the importance of biodiversity with regard to flora and fauna in India. • Analyse the importance of conservation of forests and wildlife. • Comprehend the importance of water as a resource as well as develop awareness towards its judicious use and conservation. 	

Note: The theoretical aspect of chapter 'Water Resources' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination. However, the map items of this chapter as given in the Map List will be evaluated in Board Examination.

4. Agriculture

- Types of farming
- Cropping Pattern
- Major Crops
- Technological and Institutional Reforms
- Impact of Globalization on Agriculture

5. Minerals and Energy Resources

- What is a mineral?
- Mode of occurrence of Minerals
- Ferrous and Non-Ferrous Minerals
- Non-Metallic Minerals
- Rock Minerals
- Conservation of Minerals
- Energy Resources
 - Conventional and Non-Conventional
 - Conservation of Energy Resources

6. Manufacturing Industries

- Importance of manufacturing
- Contribution of Industry to National Economy
- Industrial Location
- Classification of Industries

- Explain the importance of agriculture in national economy.
- Identify various types of farming and discuss the various farming methods; describe the spatial distribution of major crops as well as understand the relationship between rainfall regimes and cropping pattern.
- Explain various government policies for institutional as well as technological reforms since independence.
- Identify different types of minerals and energy resources and places of their availability
- Feel the need for their judicious utilization
- Bring out the importance of industries in the national economy as well as understand the regional disparities which resulted due to concentration of industries in some areas.

<ul style="list-style-type: none"> • Spatial distribution • Industrial pollution and environmental degradation • Control of Environmental Degradation <p>7. Life Lines of National Economy</p> <ul style="list-style-type: none"> • Transport – Roadways, Railways, Pipelines, Waterways, Airways • Communication • International Trade • Tourism as a Trade 	<ul style="list-style-type: none"> • Discuss the need for a planned industrial development and debate over the role of government towards sustainable development. • Explain the importance of transport and communication in the ever-shrinking world. • Understand the role of trade and tourism in the economic development of a country.
Unit 3: Democratic Politics – II 50 Periods	
Themes	Learning Objectives
<p>1. Power Sharing</p> <ul style="list-style-type: none"> • Case Studies of Belgium and Sri Lanka • Why power sharing is desirable? • Forms of Power Sharing <p>2. Federalism</p> <ul style="list-style-type: none"> • What is Federalism? • What make India a Federal Country? • How is Federalism practiced? • Decentralization in India <p>3. Democracy and Diversity</p> <ul style="list-style-type: none"> • Case Studies of Mexico • Differences, similarities and divisions • Politics of social divisions <p>Note: The chapter ‘Democracy and Diversity’ to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.</p> <p>4. Gender, Religion and Caste</p> <ul style="list-style-type: none"> • Gender and Politics • Religion, Communalism and Politics • Caste and Politics 	<ul style="list-style-type: none"> • Familiarize with the centrality of power sharing in a democracy. • Understand the working of spatial and social power sharing mechanisms. • Analyse federal provisions and institutions. • Explain decentralization in rural and urban areas. • Analyse the relationship between social cleavages and political competition with reference to Indian situation. • Identify and analyse the challenges posed by communalism to Indian democracy.

<p>5. Popular Struggles and Movements</p> <ul style="list-style-type: none"> • Popular Struggles in Nepal and Bolivia • Mobilization and Organization • Pressure Groups and Movements <p>Note: The chapter ‘Popular Struggles and Movements’ to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.</p> <p>6. Political Parties</p> <ul style="list-style-type: none"> • Why do we need Political Parties? • How many Parties should we have? • National Political Parties • State Parties • Challenges to Political Parties • How can Parties be reformed? <p>7. Outcomes of Democracy</p> <ul style="list-style-type: none"> • How do we assess democracy’s outcomes? • Accountable, responsive and legitimate government • Economic growth and development • Reduction of inequality and poverty • Accommodation of social diversity • Dignity and freedom of the citizens <p>8. Challenges to Democracy</p> <ul style="list-style-type: none"> • Thinking about challenges • Thinking about Political Reforms • Redefining democracy 	<ul style="list-style-type: none"> • Recognise the enabling and disabling effects of caste and ethnicity in politics. • Develop a gender perspective on politics. • Understand the vital role of people’s struggle in the expansion of democracy. • Analyse party systems in democracies. • Introduction to major political parties, challenges faced by them and reforms in the country. • Evaluate the functioning of democracies in comparison to alternative forms of governments. • Understand the causes for continuation of democracy in India. • Distinguish between sources of strengths and weaknesses of Indian democracy. • Reflect on the different kinds of measures possible to deepen democracy. • Promote an active and participatory citizenship.
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Note: The chapter ‘Challenges to Democracy’ to be assessed in the Periodic Tests only and will not be evaluated in Board Examination.	
Unit 4: Understanding Economic Development 50 Periods	
Themes	Objectives
<p>1. Development</p> <ul style="list-style-type: none"> • What Development Promises - Different people different goals • Income and other goals • National Development • How to compare different countries or states? • Income and other criteria • Public Facilities • Sustainability of development <p>2. Sectors of the Indian Economy</p> <ul style="list-style-type: none"> • Sectors of Economic Activities • Comparing the three sectors • Primary, Secondary and Tertiary Sectors in India • Division of sectors as organized and unorganized • Sectors in terms of ownership: Public and Private Sectors <p>3. Money and Credit</p> <ul style="list-style-type: none"> • Money as a medium of exchange • Modern forms of money • Loan activities of Banks • Two different credit situations • Terms of credit • Formal sector credit in India • Self Help Groups for the Poor <p>4. Globalization and the Indian Economy</p> <ul style="list-style-type: none"> • Production across countries • Interlinking production across countries 	<ul style="list-style-type: none"> • Familiarize with concepts of macroeconomics. • Understand the rationale for overall human development in our country, which includes the rise of income, improvements in health and education rather than income. • Understand the importance of quality of life and sustainable development. • Identify major employment generating sectors. • Reason out the government investment in different sectors of economy. • Understand money as an economic concept. • Understand the role of financial institutions from the point of view of day-to- day life. • Explain the working of the Global Economic phenomenon.

<ul style="list-style-type: none"> • Foreign Trade and integration of markets • What is globalization? • Factors that have enabled Globalisation • World Trade Organisation • Impact of Globalization on India • The Struggle for a fair Globalisation <p>5. Consumer Rights Note: Chapter 5 'Consumer Rights' to be done as Project Work.</p>	<ul style="list-style-type: none"> • Gets familiarized with the rights and duties as a consumer; and legal measures available to protect from being exploited in markets.
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**PROJECT WORK
CLASS X (2020-21)**

05 Periods	05 Marks
<p>1. Every student has to compulsorily undertake any one project on the following topics:</p> <p style="text-align: center;">Consumer Awareness OR Social Issues OR Sustainable Development</p> <p>2. Objective: The overall objective of the project work is to help students gain an insight and pragmatic understanding of the theme and see all the Social Science disciplines from interdisciplinary perspective. It should also help in enhancing the Life Skills of the students.</p> <p>Students are expected to apply the Social Science concepts that they have learnt over the years in order to prepare the project report.</p> <p>If required, students may go out for collecting data and use different primary and secondary resources to prepare the project. If possible, different forms of art may be integrated in the project work.</p> <p>3. The distribution of marks over different aspects relating to Project Work is as follows:</p>	

S. No.	Aspects	Marks
a.	Content accuracy, originality and analysis	2
b.	Presentation and creativity	2
c.	Viva Voce	1

4. The projects carried out by the students in different topics should subsequently be shared among themselves through interactive sessions such as exhibitions, panel discussions, etc.

5. All documents pertaining to assessment under this activity should be meticulously maintained by concerned schools.

6. A Summary Report should be prepared highlighting:

- objectives realized through individual work and group interactions;
- calendar of activities;
- innovative ideas generated in the process ;
- list of questions asked in viva voce.

7. It is to be noted here by all the teachers and students that the projects and models prepared should be made from eco-friendly products without incurring too much expenditure.

8. The Project Report should be handwritten by the students themselves.

9. Records pertaining to projects (internal assessment) of the students will be maintained for a period of three months from the date of declaration of result for verification at the discretion of Board. Subjudiced cases, if any or those involving RTI / Grievances may however be retained beyond three months.

PRESCRIBED BOOKS:

1. India and the Contemporary World-II (History) - Published by NCERT
2. Contemporary India II (Geography) - Published by NCERT
3. Democratic Politics II (Political Science) - Published by NCERT
4. Understanding Economic Development - Published by NCERT
5. Together Towards a Safer India - Part III, a textbook on Disaster Management - Published by CBSE
6. Learning Outcomes at the Secondary Stage – Published by NCERT

Note: Please procure latest reprinted edition (2020) of prescribed NCERT textbooks.

SOCIAL SCIENCE (CODE NO. 087)
QUESTION PAPER DESIGN
CLASS X (2020-21)

Time: 3 Hours		Maximum Marks : 80	
Sr. No.	Competencies	Total Marks	% Weightage
1	Remembering and Understanding: Exhibiting memory of previously learned material by recalling facts, terms, basic concepts, and answers; Demonstrating understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas	28	35%
2	Applying: Solving problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	14	17.5%
3	Formulating, Analysing, Evaluating and Creating: Examining and breaking information into parts by identifying motives or causes; Making inferences and finding evidence to support generalizations; Presenting and defending opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria; Compiling information together in a different way by combining elements in a new pattern or proposing alternative solutions.	32	40%
4	Map Skill	6	7.5%
		80	100%

Note: Teachers may refer 'Learning Outcomes' published by NCERT for developing lesson plans, assessment framework and questions.

*02 Items from History Map List and 04 from Geography Map List

Internal Assessment: 20 Marks

INTERNAL ASSESSMENT

	Marks	Description				
Periodic Assessment	10 Marks	<table border="1" style="width: 100%;"> <tr> <td>Pen Paper Test</td> <td style="text-align: right;">5 marks</td> </tr> <tr> <td>Assessment using multiple strategies For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.</td> <td style="text-align: right;">5 marks</td> </tr> </table>	Pen Paper Test	5 marks	Assessment using multiple strategies For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.	5 marks
Pen Paper Test	5 marks					
Assessment using multiple strategies For example, Quiz, Debate, Role Play, Viva, Group Discussion, Visual Expression, Interactive Bulletin Boards, Gallery Walks, Exit Cards, Concept Maps, Peer Assessment, Self-Assessment, etc.	5 marks					
Portfolio	5 Marks	<ul style="list-style-type: none"> • Classwork and Assignments • Any exemplary work done by the student • Reflections, Narrations, Journals, etc. • Achievements of the student in the subject throughout the year • Participation of the student in different activities like Heritage India Quiz 				
Subject Enrichment Activity	5 Marks	<ul style="list-style-type: none"> • Project Work 				

LIST OF MAP ITEMS CLASS X (2020-21)

A. HISTORY (Outline Political Map of India)

Chapter - 3 Nationalism in India – (1918 – 1930) for Locating and Labelling / Identification

1. Indian National Congress Sessions:

- a. Calcutta (Sep. 1920)
- b. Nagpur (Dec. 1920)
- c. Madras (1927)

2. Important Centres of Indian National Movement

- a. Champaran (Bihar) - Movement of Indigo Planters
- b. Kheda (Gujarat) - Peasant Satyagrah

- c. Ahmedabad (Gujarat) - Cotton Mill Workers Satyagraha
- d. Amritsar (Punjab) - Jallianwala Bagh Incident
- e. Chauri Chaura (U.P.) - Calling off the Non-Cooperation Movement
- f. Dandi (Gujarat) - Civil Disobedience Movement

B. GEOGRAPHY (Outline Political Map of India)

Chapter 1: Resources and Development (Identification only)

- a. Major soil Types

Chapter 3: Water Resources (Locating and Labelling)

Dams:

- | | |
|----------------------|--------------------|
| a. Salal | e. Sardar Sarovar |
| b. Bhakra Nangal | f. Hirakud |
| c. Tehri | g. Nagarjuna Sagar |
| d. Rana Pratap Sagar | h. Tungabhadra |

Note: The theoretical aspect of chapter 'Water Resources' to be assessed in the Periodic Tests only and will not be evaluated in Board Examination. However, the map items of this chapter as listed above will be evaluated in Board Examination.

Chapter 4: Agriculture (Identification only)

- a. Major areas of Rice and Wheat
- b. Largest / Major producer states of Sugarcane, Tea, Coffee, Rubber, Cotton and Jute

Chapter 5: Minerals and Energy Resources

Minerals (Identification only)

a. Iron Ore mines

- | | |
|--------------|-------------|
| • Mayurbhanj | • Bellary |
| • Durg | • Kudremukh |
| • Bailadila | |

b. Coal Mines

- | | |
|------------|-----------|
| • Raniganj | • Talcher |
| • Bokaro | • Neyveli |

c. Oil Fields

- | | |
|---------------|---------------|
| • Digboi | • Bassien |
| • Naharkatia | • Kalol |
| • Mumbai High | • Ankaleshwar |

Power Plants

(Locating and Labelling only)

a. Thermal

- Namrup
- Singrauli
- Ramagundam

b. Nuclear

- Narora
- Kakrapara
- Tarapur
- Kalpakkam

Chapter 6: Manufacturing Industries (Locating and Labelling Only)

Cotton Textile Industries:

- a. Mumbai
- b. Indore
- c. Surat
- d. Kanpur
- e. Coimbatore

Iron and Steel Plants:

- a. Durgapur
- b. Bokaro
- c. Jamshedpur
- d. Bhilai
- e. Vijaynagar
- f. Salem

Software Technology Parks:

- a. Noida
- b. Gandhinagar
- c. Mumbai
- d. Pune
- e. Hyderabad
- f. Bengaluru
- g. Chennai
- h. Thiruvananthapuram

Chapter 7: Lifelines of National Economy

Major Ports: (Locating and Labelling)

- a. Kandla
- b. Mumbai
- c. Marmagao
- d. New Mangalore
- e. Kochi
- f. Tuticorin
- g. Chennai
- h. Vishakhapatnam
- i. Paradip
- j. Haldia

International Airports:

- a. Amritsar (Raja Sansi)
- b. Delhi (Indira Gandhi International)
- c. Mumbai (Chhatrapati Shivaji)
- d. Chennai (Meenam Bakkam)
- e. Kolkata (Netaji Subhash Chandra Bose)
- f. Hyderabad (Rajiv Gandhi)

Note: Items of Locating and Labelling may also be given for Identification.

SENIOR SCHOOL CURRICULUM

CLASS XI - XII

2020-21



CENTRAL BOARD OF SECONDARY EDUCATION

Shiksha Sadan, 17, Institutional Area, Rouse Avenue, New Delhi-110 002



1. PRINCIPLES OF THE CBSE CURRICULUM

The curriculum refers to the lessons and academic content to be taught to a learner in the school. In empirical terms, it may be regarded as the sum total of a planned set of educational experiences provided to a learner by a school. It encompasses general objectives of learning, courses of study, subject-wise instructional objectives and content, pedagogical practices and assessment guidelines. The curriculum provided by CBSE is based on National Curriculum Framework-2005 and seeks to provide opportunities for students to achieve excellence in learning.

1.1 Salient Features of the CBSE Senior Secondary School Curriculum

The Curriculum prescribed by CBSE strives to:

1. provide ample scope for physical, intellectual and social development of students;
2. enlist general and specific teaching and assessment objectives;
3. uphold Constitutional values such as Socialism, Secularism, Democracy, Republican Character, Justice, Liberty, Equality, Fraternity, Human Dignity of Individual and the Unity and integrity of the Nation by encouraging values-based learning activities;
4. nurture Life-Skills by prescribing curricular and co-curricular activities to help improve self-esteem, empathy towards different cultures etc.;
5. integrate innovations in pedagogy and assessment to keep pace with the global trends in various disciplines;
6. promote inclusive education by providing maximum possible equal opportunities to all students;
7. integrate environmental education in various disciplines;
8. equally emphasize Co-scholastic areas of General Studies and Health and Physical Education.
9. Promote Art integrating learning.

1.2 Objectives of the Curriculum

The Curriculum aims to:

1. achieve desired national level of competencies in cognitive, affective and psychomotor domains;
2. facilitate acquisition of 21st Century Skills and enhance self and social awareness through thematic or multidisciplinary approach;
3. promote Cooperative Learning, Collaborative Learning, Self directed learning etc. to facilitate realization of learning outcomes;
4. promote Authentic Assessments based on real world tasks involving meaningful application of knowledge and skills;
5. promote Life Skills, inculcate values, foster cultural learning and international understanding in an interdependent society;



6. acquire the ability to utilize technology and information for the betterment of humankind;
7. strengthen knowledge and attitude related to livelihood skills and promote lifelong learning;
8. develop the ability to appreciate art and showcase talents;
9. promote physical fitness, health and well-being...

1.3 Curriculum Areas at Senior Secondary Level

For the purpose of fostering competences in learners, the curriculum encompasses seven major learning areas, which are: Languages, Humanities, Mathematics, Sciences, Skill Subjects, General Studies and Health and Physical Education. These areas are broadly divided into Scholastic and Co-scholastic areas as detailed below:

Languages	Scholastic Areas
Academic Electives	
Skill Electives	
General Studies Health & Physical Education *Work Experience	Co-scholastic Areas

*Work experience is subsumed in Health and Physical Education

1.3.1 Scholastic Areas:

The curriculum envisages individualized personal learning acumen and seeks to explore the potential of students in acquiring substantial knowledge and skills through academic rigors. With greater academic orientation and research skills in core academic areas, students would evolve as discerning young adults with a sense of real self-esteem having true values and principles. The scholastic areas are as follows:

- (i) Languages include Hindi, English and other 30 languages. The curricula in languages focus on listening, speaking, reading and writing skills and to develop effective communicative proficiency. Learners use language to comprehend, acquire and communicate ideas.
- (ii) Subjects like Geography, History, Economics, Home Science, Sociology, Fine Arts, Political Science, Fashion Studies, and related subjects promote the learning of history and culture, geographical environment, global institutions, constitutional values and norms, politics, economy, interpersonal and societal interactions, civic responsibilities and the interplay of the above-mentioned learning. Learners appreciate and value every human's right to feel respected and safe, and, in this regard, also understand their Fundamental Rights and Duties and behave responsibly. Learners learn to be tolerant and empathetic towards others through the study of these subjects.



- (iii) Subjects like Biology, Chemistry, Physics, Computer Science, Informatics Practices help in making students perceptive about matter and energy, nature, the environment, technology breakthrough in science. The focus is on knowledge and skills to develop a scientific attitude and to use and apply such knowledge for improving the quality of life. This learning can be used to analyze and evaluate existing scenarios and propose innovative solutions to situations. Learners understand and appreciate the physical, biological and technological world and acquire the knowledge and develop attitude, skills and values to make rational decisions in relation to it.
- (iv) Mathematics includes acquiring the concepts related to numbers, operations, computation, measurement, geometry, probability and statistics, the skill to calculate and organize and the ability to apply this knowledge and acquired skills in their daily life. It also includes understanding of the principles of reasoning and problem solving. Learners identify, integrate and apply numerical and spatial concepts and techniques. They have clarity of concepts and are able to connect them to the real world. Learners rationalize and reason about pre-defined arrangements, norms and relationships in order to comprehend, decode, validate and develop relevant patterns.
- (v) Subjects like Business Studies, Accountancy, Entrepreneurship, Economics and related subjects help in gaining understanding about core business disciplines. They understand the concept like, the exchange of items of value or products between persons or companies and the meaning / relevance/ Significance of any such exchange of money for a product, service, or information.
- (vi) Subjects like Dance, Drama, Music, Heritage Crafts, Fine Arts, Sculpture and related subjects aim to help learners cultivate an interest and appreciation for arts and encourage them to enthusiastically participate in related activities, thus, promoting abilities such as imagination, creativity, value arts, and the cultural heritage.
- (vii) Skill Electives help in development of professional competencies, which are analytical, applied and outcome based. Undergoing skills training in schools can help students learn about a trade progressively to create a product and also to become a problem solver in real life. At present many Skill electives are being offered by the Board in the fields of Hospitality and Tourism, emerging technology like Artificial Intelligence, Geospatial Technology, Finance, Business, Retail & Insurance etc. Students can also choose subject from diverse areas such as Fashion Design, Agriculture, Banking, Mass-Media Healthcare and many more.

1.3.2 Co- Scholastic Areas:

Co-curricular activities aim at development and using knowledge and skills in different fields to groom the overall personality and character of



students. It includes Health and Physical Education including Work Education and SEWA, various Creative Arts like Painting, Crafts, Dance and Music, and social activities. Instead of co-curricular activities, the term co-scholastic activities is used as both cognitive and non-cognitive development can take place by exposing the child to the lesson on scholastic subjects and non-scholastic subjects. General Studies, Health and Physical Education (Work Education has been subsumed), Yoga, traditional games, indigenous sports, NCC, Scouts and Guides, Martial Arts etc. are integral part of the curriculum and would be in the routine of the schools for the holistic development of children as per the specific details given below:

Health and Physical Education focuses on holistic development, both mental and physical, understanding the importance of physical fitness, health, well-being and the factors that contribute to them. Focus of this area is on helping learners develop a positive attitude and commitment to lifelong, healthy active living and the capacity to live satisfying, productive lives with the help of health management, indigenous sports, yoga, NCC, self-defense, fitness and lifestyle choices.

These learning areas are to be integrated with each other in terms of knowledge, skills (life and livelihood), comprehension, values and attitudes. Learners should get opportunities to think laterally, critically, identify opportunity, challenge their potential and be open to challenges. Learners value and engage in practices that promote physical, cognitive, emotional and social development and wellbeing. This enables learners to connect different areas of knowledge, application and values with their own lives and the world around them. The holistic nature of human learning and knowledge should be brought forth throughout.

General Studies: The purpose of orienting students to General Studies is to develop in them an appreciation for the holistic nature of knowledge. In contemporary times, familiarity with General Studies is indispensable because at the senior school stage there is an element of specialization due to which the students do not get exposed to some vital disciplines/areas of study that are not covered in their specialized field. The whole course of General Studies is, therefore, focused on proper development of the 'affective domain' by exposing the students to varied domains of study.

The documents with details of Health and Physical Education and General Studies are available on www.cbseacademic.nic.in

2. IMPLEMENTATION OF CURRICULUM

2.1 School Curriculum Committee

The Board mandates that all schools must setup a School Curriculum Committee with teachers representing each areas. The School Curriculum Committee would define activities for pedagogical practices, evolve a plan of assessment and mechanism of feedback and reflection and ensure its implementation. The committee would also ensure that the textbooks/



reference materials are age appropriate, incorporate inclusive principles, are gender sensitive, have valid content and do not contain any material which may hurt the sentiments of any community. The committee will then send the list of books to the Principal to take action as per para 2.4.7 (b) of the Affiliation Byelaws, 2018. The committee would also ensure that the reference materials reflect conformity with the underlying principles of the Constitution of India and are compliant with NCF-2005. Issues of gender, social, cultural and regional disparities must be taken care of in the curriculum transaction.

2.2 Pedagogical Leadership:

All Principals have a crucial role to play in the evolution of the teaching-learning ecosystem as the Head and pedagogical leader of their schools. In the role of school pedagogical leader, the Principal is expected to undertake the following:

- a) Lead, Guide and Support the teaching and learning processes in the school by focusing on classroom specific requirements for transacting the curriculum, so that both teachers and students perform at their optimal best.
- b) Direct the entire focus of all school activities towards the students' learning and acquiring of necessary competencies. Every activity taken up by the school, therefore, should be mapped for the academic competencies, and for life skills, values, etc., being acquired by the students.
- c) Prepare Annual Pedagogical Plan of the school by designing and developing annual plan for the school by giving equal importance to scholastic and co-scholastic areas.
- d) Promote innovative pedagogy, with special focus on integrating art, sports and ICT (Information and Communication Technology) with education, and use active and experiential learning methods in the classrooms.
- e) Ensure joyful learning at all levels through use of such innovative pedagogy.
- f) Develop school specific resources for teaching and learning, in the form of lesson plans, e-content, use of mathematics and science kits developed by NCERT, etc.
- g) Ensure proper in-house training of teachers in the school to enable them to unleash their own unique capabilities and creativity in their classrooms.
- h) To be up to date with all new ideas and tools, etc. being used in education at the global level and constantly innovate the pedagogy of the school.
- i) To make efforts to learn from the best practices of other schools, by arranging for discussions with Principals of such schools, or through observation visits of teachers to other schools.



As a pedagogical leader, the principal must prepare Annual Pedagogical Plan. The Board has not laid down the structure or format of the annual pedagogical plan as the Board respects academic autonomy of every school and expects each school to prepare its own unique and innovative annual plan. This plan must be an implementable one with timelines that should include administrative inputs and detailed pedagogical aspects.

2.3 Pedagogical Practices by Teachers

The pedagogical practices should be learner centric. It is expected of a teacher to ensure an atmosphere for students to feel free to ask questions. They would promote active learning among students with a focus on reflections, connecting with the world around them, creating and constructing knowledge. The role of a teacher should be that of a facilitator who would encourage collaborative learning and development of multiple skills through the generous use of resources via diverse approaches for transacting the curriculum.

Teachers should follow inclusive principles and not label children as 'slow learners' or 'bright students', or 'problem children'. They should instead attend to the individual difference of students by diagnosing and modifying their pedagogic planning. As far as possible, Arts should be integrated in teaching, especially while teaching the concept which students find difficult to understand.

2.4 Competency based Learning:

To face the challenges of 21st Century, education should be competency based and Principals as Pedagogical Leaders must create conducive environment for development of competencies among the students. Competency based Learning focuses on the student's demonstration of desired learning outcomes as central to the learning process. Learning outcomes are statements of what is expected that the student will be able to do as a result of learning the activity. In a way learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning. Therefore, the focus is on measuring learning through attainment of prescribed learning outcomes, rather than on measuring time. Experiential and active learning are the best pedagogies for Competency Based Learning. Experiential Learning will promote critical thinking, creativity and effective study skills among students. Learning Outcomes approach developed by NCERT for classes I-X may be adopted by all the schools and teaching-learning process may be changed in the light of these outcomes. The schools are expected to have well-defined Learning Outcomes for every grade that are observable and measurable, and empower learners to focus on mastery of valuable skills and knowledge through these Learning Outcomes, deemed to be essential for success in life. It is expected that teachers will provide meaningful and joyful learning experiences to the students by adopting variety of innovative pedagogies or instructional activities and go beyond textbooks. Schools are expected to track the attainment of Learning Outcomes by each learner and ensure that no child is left behind. CBSE will also come out



with suggestive mapping of learning outcomes with NCERT curriculum which can be adopted/ adapted by schools. CBSE will also map each learning outcomes with assessments to enable tracking of learning progress. Schools should also attempt this on their own.

2.5 Lesson/ Unit Plan

Specific Lesson Plans for the topics are to be prepared by the teachers. These plan may have the following parts:

- ❖ Specific Learning Outcomes;
- ❖ Pedagogical Strategies;
- ❖ Group activities/experiments/hands-on-learning;
- ❖ Interdisciplinary Linkages and infusion of Life-skills, Values, Gender sensitivity etc.;
- ❖ Resources (including ICT);
- ❖ Assessment items for measuring the attainment of the Learning Outcome
- ❖ Feedback and Remedial Teaching Plan.
- ❖ Inclusive Practices

2.6 Classroom and School Environment

School environment should be conducive for holistic development of the students. The school should focus on health and hygiene by adopting inclusive practices. As part of the policy the school should adopt practices which will promote mental health. In this direction, the schools may follow the guidelines issued by the Board on making the school a No-Anger Zone or Anger Free Zone. The board has developed school health manuals which are available on www.cbseacademic.nic.in. The time table in the school should take care of proper rest and intake of healthy foods and the children learn subjects with relaxation.

The surroundings and daily life activities and situations are the best experiential teachers for the students. Teachers must make efforts to draw examples and group activities from daily life observations within the classroom/within the school and surroundings, and encourage presentations and reflection by the students once the activity is completed, to develop the skills of critical thinking and communication.

Children learn a lot through peer learning. To promote peer learning, flexible seating arrangements may be made available during the classroom transactions. The seating should also take care the needs of the students with disabilities as well. Learning should focus on individual differences and promote collaborative learning. The classroom activities must be connected to the immediate environment of children. The Learning Outcomes must be clearly specified and the same may be achieved through right kind of interventions. The school should maintain connection with the parents and the progress of children should be communicated to the parents, and, if needed remedial measures be taken up for improving the learning outcomes.



2.7 Creating Cross-Curricular Linkages

Creating cross-curricular linkages are vital to learning as they help to connect prior knowledge with new information. For example, Mathematical data handling and interpretation can be effectively applied in geography and science. Children can write better-framed answers in history, geography and science when they have learnt how to write explanations/short descriptions in a language. Similarly, Life Skills like empathy, problem solving and interpersonal communications can be easily integrated with the study of literature and other areas. Universal Values, Life Skills and Constitutional Values with emphasis on realization of Fundamental Duties may be incorporated depending upon context in almost all the subjects.

2.8 Special emphasis on Integrating Arts in education:

The NCF 2005 has recommended “Art as a subject at all stages covering all four major spheres, i.e. music, dance, visual arts and theatre....We must bring the arts squarely into the domain of the curricular, infusing them in all areas of learning while giving them an identity of their own at relevant stages.” It also states that “the importance of India’s heritage crafts, both in terms of their economic and aesthetic values, should be recognized as being relevant to school education.”

All disciplines being pursued by students at all stages require creative thinking and problem-solving abilities. Therefore, when Art is integrated with education, it helps the child apply art-based enquiry, investigation and exploration, critical thinking and creativity for a deeper understanding of the concepts/topics. Secondly, Art Integrated learning is a strong contender for experiential learning, as it enables the student to derive meaning and understanding, directly from the learning experience. Thirdly, this kind of integration not only makes the teaching and learning process joyful, it also has a positive impact on the development of certain life skills, such as, communication skills, reflection and enquiry skills, unconditioning of the mind leading to higher confidence levels and self-esteem, appreciation for aesthetics and creativity, etc. Fourthly, this kind of integration broadens the mind of the student, and enables him/her to see the multi-disciplinary links between subjects, topics, and real life.

In view of the recommendations in the NCF-2005 document, NCERT’s recommendation, need for awareness of India’s vast and diverse art heritage, and the need for developing creative and critical thinking skills among students, the Board has decided to take up the integration of Art with the teaching learning process.

It must be understood that Art Education and Art Integrated Education may be mutually exclusive, but they build upon each other and strengthen each other. Art Education is not only relevant for developing creativity and appreciation of art among students, but is also necessary for inculcating art-based enquiry skills in the students. Art Education is a necessary precursor for the adoption of Art Integrated learning.



2.8.1 Art Education and Art Integration:

The following two-pronged approach will be followed during the current academic year:

- (i) Art education will continue to be an integral part of the curriculum, as a co-scholastic area at Secondary level. The schools may also promote and offer Visual and Performing Arts based subjects at the Secondary and Senior Secondary level.
- (ii) Art shall be integrated with the teaching and learning process of all academic subjects from classes 1 to 12, to promote active and experiential learning for “connecting knowledge to life outside the school, ensuring that learning shifts away from rote methods and for enriching the curriculum, so that it goes beyond textbooks.”

2.8.2 Art Integrated Pedagogy:

Art must be integrated with the teaching and learning process of all academic subjects from classes 1 to 12, to promote active/experiential learning for “connecting knowledge to life outside the school, ensuring that learning shifts away from rote methods and for enriching the curriculum, so that it goes beyond textbooks” .

The forms to be taught, methodology, processes, etc. can be different at different levels, as maybe decided by different schools. However, the interventions should be planned well by the schools. While preparing its annual pedagogical plan under the leadership of the Principal of the school, the school must plan out in detail the Art Education to be imparted at various levels, and how that Art can be integrated with classroom learning of various subjects. The focus must be on mutually reinforcing Art as a subject and Art as a tool for learning, with efforts towards seamless integration. Team teaching (combination of subject teachers and Art teachers) would also strengthen the integration. Arts-Integrated Learning will strengthen teachers for assessing application-skills of the students in their subjects.

For implementing this in classrooms, the subject teacher picks the topic/concept/idea that she wants to teach through integration of Art. The teacher can do this jointly with the Art teacher too. Then, the subject teacher collaborates with the Art teacher to align the pedagogy. Next, the teacher teaches the topic/concept/idea ensuring active learning and ensuring that both the subject and Art are integrated well and there is learning in both areas. Finally, the teacher prepares a rubric to assess the student in both the areas - that is, the topic taught and the Art used.

2.9 21st Century Skills:

There is an increased awareness among the educators of the need to integrate what are called as 21st Century skills in educational systems. There are three key 21st century skills;



Learning skills include:

- Critical Thinking
- Creativity
- Communication
- Collaboration

Literacy skills include:

- Information literacy
- Media literacy
- Technology literacy

Life skills include:

- Flexibility
- Leadership
- Initiative
- Productivity
- Self-awareness

The need of the hour is that schools must focus on enhancing the skills required for a successful adult life in 21st Century. It is important that the students are able to think scientifically, mathematically or artistically to face the real-life challenges in an information and technology driven world and enhance their inherent potential.



2.10: Inclusive Education:

Inclusive education approach gives the way of full participation without any discrimination; students with and without disabilities enjoy equal opportunity in both scholastic and co-scholastic areas. Inclusive attitude is crucial for successful inclusive education. Therefore, all the members of teaching and non-teaching staff should be sensitized on the issues of inclusive education. Students without disabilities should also be sensitized. Schools must organize these sensitization programmes with the support of experts from respective field of disabilities. Capacity Building Programmes on Inclusive Education may be organized in collaboration with the CBSE- Centres of Excellence. Board has made the appointment of special educator mandatory to all the schools affiliated to the CBSE. Special Educators must possess the qualification as prescribed by the Rehabilitation Council of India. (CBSE Circular No. 31/2015).

3. SCHEME OF STUDIES

Class XI and XII is an integrated course. Students need to take only those subjects in class XI which he/she intends to continue in class-XII. Students can offer a minimum of 5 or more subjects in class XI. They need to continue the same subjects in class XII also.

3.1 Combination of Subjects: Subjects can be offered as under:

Subject		Name of Subjects
Compulsory	Subject 1	Hindi Elective or Hindi Core or English Elective or English Core
	Subject 2	Any one Language from Subject Group - L not opted as Subject 1 OR Any one Subject from Academic Electives (Subject Group - A)
	Subject 3, Subject 4, and Subject 5	Any three Subjects from Academic Electives (Subjects Group - A) OR Any three Subjects from Skill Group - S OR Any three from Combination of Group - A and Group - S

Additional Subject Optional	Subject 6	Any one subject or Language from any subject group not opted as subjects 1-5
Subjects of Internal Assessment	Subject 7 to 9 (to be taken by all Regular Candidates)	*Work Experience Health and Physical Education General Studies

*Work experience is subsumed in Health and Physical Education

- a) Hindi or English must be one of the two languages to be studied in class XI and XII. Hindi and English can also be offered simultaneously. In Hindi and English, two courses have been provided for class XI and XII keeping in view the varying backgrounds of the students and a student may either opt for Hindi Elective (Code 002) or Hindi Core (Code 302) and English Elective (Code-001) or English Core (Code-301). However, the same language cannot be offered both at Core and Elective levels.
- In addition to above, the following combinations cannot be taken together;
- (i) Business Studies (Code 054) and Business Administration (Code 833)
 - (ii) Further, Out of three Computer Science/IT related subjects i.e. Informatics Practices (065), Computer Science (Code 083), and Information Technology (Code 802), a candidate can opt only for **one** subject.
 - (iii) Biology (Code 044) and Biotechnology (Code 045)
 - (iv) Mathematics (Code 041) and Applied Mathematics (Code 241)
- b) The first 5 subjects in the chronological order of filling the subjects in the online registration system/ Mark Sheet are considered as Main subjects.
- c) A candidate can also offer an additional elective which may either be a language at elective level or, any other elective subject.
- d) While transacting the Curriculum, due emphasis should be laid on National Identity and Values Education. Schools are expected to draw their own programmes in this area in accordance with the guidelines given from time to time by the Board. Likewise, programmes in General Studies and Health and Physical Education be planned in accordance with the guidelines brought out by the Board.



- e) For candidates who take 6 subjects (5 main and 1 additional subject) and pass in all 6 subjects, the percentage is to be calculated by the employer/institution/university according to the norms of employer/institution/university in which the candidate will be seeking admission.
- f) If a student has taken 6 subjects, and if he/she fails in any one of first five subjects, the same will be replaced by the 6th subject provided the candidate satisfies the scheme of studies i.e. after replacement either Hindi or English remains as one of the main five subjects.
- g) Skill electives can be offered along with any subject, as per the scheme of studies.
- h) Board is extending several exemptions/concessions to candidates with disabilities as defined in the "THE RIGHTS OF PERSONS WITH DISABILITIES ACT 2016". Exemptions/Concessions extended to Persons with Benchmark Disabilities for Class X & XII Examinations conducted by the Board and the Standard Operating Procedure for availing these concessions are available on :
<http://cbse.nic.in/newsite/attach/CWSN%20April%202019.pdf>
Schools and candidates may also refer to the circulars issued by the Board from time to time on this matter.
- i) For Regional Languages, the Board prescribes the textbooks being followed in classes XI and XII in the respective State Boards where the language is taught. Schools are also advised to bring to the notice of CBSE the changes, if any, brought out at the commencement of the academic session by the respective State Boards, in the textbooks of the language of their State. Schools are directed to strictly follow the textbooks prescribed by CBSE in its curriculum. Changes, if any, can be adopted only when CBSE notifies them. School will be responsible for any issue arising out of School not following Boards' directives.

3.2 Subjects Offered Under Academic and Skill Education

LIST OF SUBJECTS

LANGUAGES (GROUP - L)		
CODE	NAME	
001	ENGLISH ELECTIVE	Any One
301	ENGLISH CORE	
002	HINDI ELECTIVE	Any One
302	HINDI CORE	
003	URDU ELECTIVE	Any One

303	URDU CORE	
022	SANSKRIT ELECTIVE	Any One
322	SANSKRIT CORE	
104	PUNJABI	
105	BENGALI	
106	TAMIL	
107	TELUGU	
108	SINDHI	
109	MARATHI	
110	GUJARATI	
111	MANIPURI	
112	MALAYALAM	
113	ODIA	
114	ASSAMESE	
115	KANNADA	
116	ARABIC	
117	TIBETAN	
118	FRENCH	
120	GERMAN	
121	RUSSIAN	
123	PERSIAN	
124	NEPALI	
125	LIMBOO	
126	LEPCHA	
189	TELUGU TELANGANA	
192	BODO	
193	TANGKHUL	
194	JAPANESE	

195	BHUTIA	
196	SPANISH	
197	KASHMIRI	
198	MIZO	
ACADEMIC SUBJECTS(GROUP-A)		
CODE	NAME	
027	HISTORY	
028	POLITICAL SCIENCE	
029	GEOGRAPHY	
030	ECONOMICS	
031	CARNATIC MUSIC VOCAL	Any One
032	CARNATIC MUSIC MEL. INS.	
033	CARNATIC PER. INS. MRIDANGAM	
034	HINDUSTANI MUSIC VOCAL	
035	HINDUSTANI MUSIC MEL. INS.	
036	HINDUSTANI PER. INS.	
037	PSYCHOLOGY	
039	SOCIOLOGY	
041	MATHEMATICS	Any One
241*	APPLIED MATHEMATICS	
042	PHYSICS	
043	CHEMISTRY	
044	BIOLOGY	Any One
045	BIOTECHNOLOGY	
046	ENGINEERING GRAPHICS	
048	PHYSICAL EDUCATION	
049	PAINTING	Any one
050	GRAPHICS	

051	SCULPTURE	
052	APPLIED/ COMMERCIAL ART	
054	BUSINESS STUDIES	
055	ACCOUNTANCY	
056	KATHAK - DANCE	Any one
057	BHARATNATYAM - DANCE	
058	KUCHIPUDI - DANCE	
059	ODISSI - DANCE	
060	MANIPURI - DANCE	
061	KATHAKALI - DANCE	
064	HOME SCIENCE	
065	INFORMATICS PRACTICES	
083	COMPUTER SCIENCE	
066	ENTREPRENEURSHIP	
073	KNOWLEDGE TRADITION & PRACTICES OF INDIA	
074	LEGAL STUDIES	
076	NATIONAL CADET CORPS (NCC)	

LIST OF SKILL SUBJECTS (GROUP- S)	
CODE	NAME
802	INFORMATION TECHNOLOGY
803	WEB APPLICATION
804	AUTOMOTIVE
805	FINANCIAL MARKETS MANAGEMENT
806	TOURISM
807	BEAUTY & WELLNESS
808	AGRICULTURE
809	FOOD PRODUCTION



810	FRONT OFFICE OPERATIONS
811	BANKING
812	MARKETING
813	HEALTH CARE
814	INSURANCE
815 [#]	X-RAY TECHNICIAN (only for Class XII)
816	HORTICULTURE
817	TYPOGRAPHY & COMPUTER APPLICATION
818	GEOSPATIAL TECHNOLOGY
819	ELECTRICAL TECHNOLOGY
820	ELECTRONIC TECHNOLOGY
821	MEDIA
822	TAXATION
823	COST ACCOUNTING
824	OFFICE PROCEDURES & PRACTICES
825	SHORTHAND (ENGLISH)
826	SHORTHAND (HINDI)
827	AIR-CONDITIONING & REFRIGERATION
828	MEDICAL DIAGNOSTICS
829	TEXTILE DESIGN
830	DESIGN
831	SALESMANSHIP
832 [#]	MUSIC PRODUCTION (only for Class XII)
833	BUSINESS ADMINISTRATION
834	FOOD NUTRITION & DIETETICS
835	MASS MEDIA STUDIES
836	LIBRARY & INFORMATION SCIENCE
837	FASHION STUDIES

838 [#]	APPLIED PHYSICS (only for Class XII)
839 [#]	APPLIED CHEMISTRY (only for Class XII)
841	YOGA
842	EARLY CHILDHOOD EDUCATION
843	ARTIFICIAL INTELLIGENCE

* The earlier skill subject by the same name, that is, Applied Mathematics with Code No.840 will be discontinued from the Academic session 2020-21. Class XI students under Skill Education Scheme of Applied Mathematics in the academic session 2019-20, will now be allowed to opt only for Academic Elective subject of Applied Mathematics (Code 241) in the session 2020-21.

Also, Skill Electives **X-Ray Technician (Code no. 815)**, **Music Production (Code no. 832)**, **Applied Physics (Code no. 838)** and **Applied Chemistry (Code no. 839)** have been discontinued w.e.f. session 2020-2021. However, candidates who had opted for these Skill Electives in session 2019-2020 in class XI shall appear in the Board Examinations-2021 accordingly.

The curriculum and the study material for the Skill Electives are available on the CBSE academic website under the tab 'Skill Education' and can be accessed through the link: <http://cbseacademic.nic.in/skill-education.html>.

3.3. Medium of Instruction

The medium of instruction in general in all the schools affiliated with the Board shall either be Hindi or English.

4. STRUCTURE OF ASSESSMENT SCHEME

The Assessment scheme will have theory, internal assessment or practical components as per syllabus given for each subject. Board shall conduct Annual examinations for class XII

4.1 Annual examination:

For Class XII:

The Board Examination will cover the entire syllabus of Class-XII as per syllabus for each subject. Grades shall be awarded on the basis of 9-point grading system in each scholastic subject. For awarding the grades, the Board will put all the passed students in a rank order and will award the grades as follows:

A-1	Top 1/8th of the passed candidates
A-2	Next 1/8th of the passed candidates
B-1	Next 1/8th of the passed candidates

B-2	Next 1/8th of the passed candidates
C-1	Next 1/8th of the passed candidates
C-2	Next 1/8th of the passed candidates
D-1	Next 1/8th of the passed candidates
D-2	Next 1/8th of the passed candidates
E*	* The word/ phrase for this will be informed shortly.

Notes:-

- Minor variations in proportion of candidates to adjust ties will be made.
- In case of a tie, all the students getting the same score will get the same grade. If the number of students at a score point needs to be divided into two segments, the smaller segment will go with the larger.
- Method of grading will be used in subjects where the number of candidates who have passed is more than 500.
- In respect of subjects where the total number of candidates passing as subject is less than 500, the grading would be adopted on the pattern of grading and distribution in other similar subjects.

For Class XI:

The assessment scheme will be similar to class XII Board examination and shall be carried out at school level. However, the grading in class XI will be as follows:

Grading Scale for Scholastic Areas (Class-XI) (School will award grades as per the following grading scale)	
MARK RANGE	GRADE
91-100	A1
81-90	A2
71-80	B1
61-70	B2
51-60	C1
41-50	C2
33-40	D
32 and below	E*

* The word/ phrase for this will be informed shortly.



Absolute grading is suggested for class XI keeping in view the number of students appearing from any particular school as against positional grading used for class XII.

4.2 Internal Assessment: Internal Assessment in different subjects will be as per details given in the syllabus for each subject.

4.3 Assessment of Co-Scholastic Areas

Assessment of Co-scholastic Areas may be continuously done by collecting information, reflecting on and using that information to review children’s progress and to plan future learning experiences. The documented data, after interpretation, should be reflected in the Report Card of the children in the form of grades.

In the existing scheme of assessment, these activities will be graded on a 8-point grading scale (A1 to E) for classes XI -XII and will have no descriptive indicators. The students shall be assessed on three areas i.e. Health and Physical Education with Work Experience and General Studies. Work Experience is subsumed in the Health and Physical Education. No up scaling of grades will be done.

The concerned teacher would make an objective assessment of the level of performance/ participation demonstrated by a student throughout the academic year and finally assign grades.

Parameters of Assessment

Marks and grades on the basis of 9-point grading system may be awarded in each Co-scholastic area (General Studies, Health and Physical Education) for classes XI and XII as detailed below:

Grading for General Studies:

Grade	Description
A1	Top 1/8 th of the passed candidates
A2	Next 1/8 th of the passed candidates
B1	Next 1/8 th of the passed candidates
B2	Next 1/8 th of the passed candidates
C1	Next 1/8 th of the passed candidates
C2	Next 1/8 th of the passed candidates
D1	Next 1/8 th of the passed candidates
D2	Next 1/8 th of the passed candidates
E	*Others * The word/ phrase for this will be informed shortly.

Distribution of Periods/ Grades For Internal Assessment In Health and Physical Education (with Work Experience subsumed in it)

Strand	Periods (Approx.)	Grades*
1. GAMES A) Athletics/ Swimming B) Team Games C) Individual Games/ Activity D) Adventure Sports	90 periods	While filling online data, following grades may be filled against HPE : Class XI-XII: Grade (A-E) on 9-point scale (A1,A2,B1,B2,C1,C2,D1,D2,E)
2. Health and Fitness	50 periods	
3. SEWA	50 periods	While filling online data, following grades of SEWA shall be filled against Work Education / Work Experience: Class XI-XII: Grade (A-E) on 9-point scale (A1,A2,B1,B2,C1,C2,D1,D2,E)
4. Health and Activity Card	10 periods	- Enclosed separately
Total	200 Periods (Approx.)	-

* Refer the detailed HPE guidelines available on www.cbseacademic.nic.in with the amendment given above.

4.4 Design of the Question Paper for Board examination: To ensure flexibility in the assessment at Board examination, the detailed design of the paper is not included in the curriculum document. The details of design of the Q.P shall be subsequently notified. However the Board examination shall test as per weightage allocated to each area or unit given in the respective subject.

4.5 Development of competencies through Academic activities of the Board:

In the recent pas board has been organizing various activities for promoting various 21st century skills. Following are some such activities introduced with the intention of enhancement of the skills and values.



S. No.	Student Enrichment Activity	Skills/Values to be Enhanced
1	Story Telling Competition	<ul style="list-style-type: none"> • Thinking Skills: Creative, Analytical, Evaluative • Communication Skills • Linguistic Skills
2	Reading Week	
3	Fastest Reading Contest	
4	Aryabhata Ganit Challenge	<ul style="list-style-type: none"> • Reasoning Abilities • Problem Solving Skills • Critical thinking • Analytical thinking • Ability to manipulate precise and intricate ideas • Ability to construct logical arguments
5	CBSE Heritage India Quiz	<ul style="list-style-type: none"> • Values of respect for diversity and tolerance • Awareness about preserving Indian heritage and monuments • Critical thinking skills • Appreciation for rich heritage and diversity of the country
6	Science Exhibition	<ul style="list-style-type: none"> • Critical and Creative Thinking Skills • Problem Solving Skills • Scientific Temperament • Connecting Science to day to day life
7	Science Literacy Promotion Test	
8	Expression Series	<ul style="list-style-type: none"> • Creative Thinking Skills • Communication Skills
9	Eco-Club Activities	<ul style="list-style-type: none"> • Awareness about Environmental Conservation and Protection • Cleanliness Habits
10	Swachhata Abhiyan	
11	Ek Bharat Shrestha Bharat	<ul style="list-style-type: none"> • Spirit of Patriotism and Unity • Creative Skills
12	Rashtriya Ekta Diwas	
13	Inter School Band Competition	
14	Fit India School Week	<ul style="list-style-type: none"> • Healthy life style

15	CBSE Inter-School Sports & Games Competitions	<ul style="list-style-type: none"> • Attention and concentration powers
16	International Day of Yoga	
17	Matri bhasha Diwas	<ul style="list-style-type: none"> • Awareness of Linguistic and Cultural traditions • Values of Tolerance and Dialogue • Communication Skills

Schools are encouraged to participate in these activities of the Board for making the students future ready.

4.6 Rules regarding Admission and Examination

Regarding eligibility for Admission, Eligibility for Examination, Scheme of Examination and related information, please see the Examination Bye-Laws of CBSE available on www.cbse.nic.in



CENTRAL BOARD OF SECONDARY EDUCATION

Shiksha Sadan, 17, Institutional Area, Rouse Avenue, New Delhi-110 002

**ENGLISH (CORE)
(2020-21)**

Code - 301

Background

Students are expected to have acquired a reasonable degree of language proficiency in English Language by the time they come to class XI, and the course aims, essentially, at promoting the higher-order language skills.

For a large number of students, the higher secondary stage will be a preparation for the university, where a fairly high degree of proficiency in English may be required. But for another large group, the higher secondary stage may be a preparation for entry into the professional domain. The Core Course should cater to both groups by promoting the language skills required for academic study as well as the language skills required for the workplace.

Competencies to be focused on:

The general objectives at this stage are to:

- listen and comprehend live as well as record in writing oral presentations on a variety of topics;
- develop greater confidence and proficiency in the use of language skills necessary for social and academic purpose to participate in group discussions, interviews by making short oral presentation on given topics;
- perceive the overall meaning and organisation of the text (i.e., co-relation of the vital portions of the text);
- identify the central/main point and supporting details, etc., to build communicative competence in various lexicons of English;
- promote advanced language skills with an aim to develop the skills of reasoning, drawing inferences, etc. through meaningful activities;
- translate texts from mother tongue(s) into English and vice versa;
- develop ability and acquire knowledge required in order to engage in independent reflection and enquiry;
- read and comprehend extended texts (prescribed and non-prescribed) in the following genres: science fiction, drama, poetry, biography, autobiography, travel and sports literature, etc;
- text-based writing (i.e., writing in response to questions or tasks based on prescribed or unseen texts) understand and respond to lectures, speeches, etc.;

- write expository / argumentative essays, explaining or developing a topic, arguing a case, etc. write formal/informal letters and applications for different purposes;
- make use of contextual clues to infer meanings of unfamiliar vocabulary;
- select, compile and collate information for an oral presentation;
- produce unified paragraphs with adequate details and support;
- use grammatical structures accurately and appropriately;
- write items related to the workplace (minutes, memoranda, notices, summaries, reports etc.);
- filling up of forms, preparing CV, e-mail messages., making notes from reference materials, recorded talks etc.

The Core course draws upon the language items suggested for class IX-X and delve deeper into their usage and functions. Particular attention may, however, be given to the following areas of grammar:

- Use of passive forms in scientific and innovative writings.
- Convert one kind of sentence/clause into a different kind of structure as well as other items to exemplify stylistic variations in different discourses modal auxiliaries-uses based on semantic considerations.

A. Specific Objectives of Reading

Students are expected to develop the following study skills:

- skim for main ideas and scan for details
- refer to dictionaries, encyclopedia, thesaurus and academic reference material in any format
- select and extract relevant information, using reading skills of skimming and scanning
- understand the writer's purpose and tone
- comprehend the difference between the literal and the figurative
- differentiate between claims and realities, facts and opinions, form business opinions on the basis of latest trends available
- comprehend technical language as required in computer related fields, arrive at personal conclusion and logically comment on a given text
- specifically develop the ability to be original and creative in interpreting opinion, develop the ability to be logically persuasive in defending one's opinion and making notes based on a text.

Develop literary skills as enumerated below:

- respond to literary texts
- appreciate and analyse special features of languages that differentiate literary texts from non-literary ones, explore and evaluate features of character, plot, setting, etc.

- understand and appreciate the oral, mobile and visual elements of drama .Identify the elements of style such as humour, pathos, satire and irony, etc.
- make notes from various resources for the purpose of developing the extracted ideas into sustained pieces of writing

B. Listening and Speaking

Speaking needs a very strong emphasis and is an important objective leading to professional competence. Hence, testing of oral skills must be made an important component of the overall testing pattern. To this end, speaking and listening skills are overtly built into the material to guide the teachers in actualization of the skills.

I. Specific Objectives of Listening & Speaking

Students are expected to develop the ability to:

- take organized notes on lectures, talks and listening passages;
- listen to news bulletins and to develop the ability to discuss informally a wide ranging issues like current national and international affairs, sports, business, etc;
- respond in interviews and to participate in formal group discussions;
- make enquiries meaningfully and adequately and to respond to enquiries for the purpose of travelling within the country and abroad;
- listen to business news and to be able to extract relevant important information. develop the public speaking skills.

II. Guidelines for Assessment in Listening and Speaking Skills

i. Activities:

- Activities for listening and speaking available at www.cbseacademic.in can be used for developing listening and speaking skills of students.
- Subject teachers should also refer to books prescribed in the syllabus.
- In addition to the above, teachers may plan their own activities and create their own material for assessing the listening and speaking skills.

ii. Parameters for Assessment:

The listening and speaking skills are to be assessed on the following parameters:

- i. Interactive competence (Initiation & turn taking, relevance to the topic).
- ii. Fluency (cohesion, coherence and speed of delivery).
- iii. Pronunciation
- iv. Language (accuracy and vocabulary).

iii. Schedule:

- The practice of listening and speaking skills should be done throughout the academic year.
- The final assessment of the skills is to be done as per the convenience and schedule of the school.

III. Record Keeping:

The record of the activities done and the marks given must be kept for three months after the declaration of result, for any random checking by the Board.

No recording of speaking skills is to be sent to the Board.

C. Specific Objectives of Writing

The students will be able to:

- write letters to friends, relatives, etc. to write business and official letters.
- open accounts in post offices and banks. To fill in railway/airline reservation forms.
- draft notices, advertisements and design posters effectively and appropriately
- write on various issues to institutions seeking relevant information, lodge complaints, express gratitude or render apology.
- write applications, fill in application forms, prepare a personal bio-data for admission into colleges, universities, entrance tests and jobs.
- write informal reports as part of personal letters on functions, programmes and activities held in school (morning assembly, annual day, sports day, etc.)
- write formal reports for school magazines/events/processes/ or in local newspapers about events or occasions.
- express opinions, facts, arguments in the form of speech or debates, using a variety of accurate sentence structures
- draft papers to be presented in symposia.
- take down notes from talks and lectures.
- write examination answers according to the requirement of various subjects.
- summarise a text.

D. More About Reading

Inculcating good reading habits in children has always been a concern for all stakeholders in education. The purpose is to create independent thinking individuals with the ability to not only create their own knowledge but also critically interpret, analyse and

evaluate it with objectivity and fairness. This will also help students in learning and acquiring better language skills.

Creating learners for the 21st century involves making them independent learners who can learn, unlearn and relearn. If our children are in the habit of reading, they will learn to reinvent themselves and deal with the many challenges that lie ahead of them.

Reading is not merely decoding information or pronouncing words correctly. It is an interactive dialogue between the author and the reader in which the reader and the author share their experiences and knowledge with each other. Good readers are critical readers with an ability to arrive at a deeper understanding of not only the world presented in the book but also of the real world around them.

Consequently, they become independent thinkers capable of taking their own decisions in life rationally. Hence, a few activities are suggested below which teachers may use as a part of the reading project.

- Short review / dramatization of the story.
- Commentary on the characters.
- Critical evaluation of the plot, storyline and characters.
- Comparing and contrasting the characters within the story, with other characters in stories by the same author or by different authors.
- Extrapolating about the story read or life of characters after the story ends defending characters actions in the story.
- Making an audio story out of the novel/text to be read aloud.
- Interacting with the author.
- Holding a literature fest where students role-play as various characters to interact with each other.
- Role playing as authors/poets/dramatists, to defend their works and characters
- Symposiums and seminars for introducing a book, an author, or a theme.
- Creating graphic novels out of novel or short stories they read.
- Dramatizing incidents from a novel or a story.
- Creating their own stories.
- Books of one genre to be read by the whole class.

Teachers may select books and e-books suitable to the age and level of the learners. Care ought to be taken to choose books that are appropriate in terms of language, theme and content and which do not hurt the sensibilities of a child.

Teachers may later suggest books from other languages by dealing with the same themes as an extended activity. The Project should lead to independent learning/reading skills and hence the chosen book should not be taught in class, but may be introduced

through activities and be left for the students to read at their own pace. Teachers may, however, choose to assess a student's progress or success in reading the book by asking for verbal or written progress reports, looking at their diary entries, engaging in a discussion about the book, giving a short quiz or a work sheet about the book/short story. A befitting mode of assessment may be chosen by the teacher.

E. Methods and Techniques

The techniques used for teaching should promote habits of self-learning and reduce dependence on the teacher. In general, we recommend a multi-skill, learner-centred, activity based approach, of which there can be many variations. The core classroom activity is likely to be that of silent reading of prescribed/selected texts for comprehension, which can lead to other forms of language learning activities such as role-play, dramatization, group discussion, writing, etc., although many such activities could be carried out without the preliminary use of textual material. It is important that students be trained to read independently and intelligently, interacting actively with texts, with the use of reference materials (dictionary, thesaurus, etc.) where necessary. Some pre-reading activity will generally be required, and the course books should suggest suitable activities, leaving teachers free to devise other activities when desired. So also, the reading of texts should be followed by post reading activities. It is important to remember that students should be encouraged to interpret texts in different ways.

Group and pair activities can be resorted to when desired, although many useful language activities can be carried out individually. In general, teachers should encourage students to interact actively with texts and with each other. Oral activity (group discussion, etc.) should be encouraged.

ENGLISH CORE (CODE NO. 301)

CLASS – XI (2020-21)

SECTION – A (20 Marks)

READING COMPREHENSION

45 Periods

There shall be two unseen passages (including poems) with a variety of questions like Objective Type Questions, Short Answer Questions and Multiple Choice Questions, including 04 marks for vocabulary such as word formation and inferring meaning.

Multiple Choice Questions (1x6=6marks), Objective Type Questions (1x6= 6marks)

The range of the two passages including a poem or a stanza, should be 900-1000 words as per the following details:

1. The passage of 550-600 words in length will be used for note-making and summarizing. (Note making - 4 marks, Summarizing – 4 marks)
2. The passage of 350-400 words in length will be used to assess comprehension, interpretation and inference.

OR

3. An unseen poem of 28-35 lines to assess comprehension, interpretation and inference.

The passages as given above could be of any one of the following types:

Factual passages, e.g., illustrations, description, reports / discursive passages involving opinion, e.g., argumentative, persuasive/literary passages e.g. extracts from fiction, biography, autobiography, travelogue, etc. In the case of a poem, the text may be shorter than the prescribed word limit.

SECTION B (30 Marks)

WRITING SKILLS AND GRAMMAR

60 Periods

Writing

1. One Short Answer Question: Based on notice/ poster/ advertisement. Posters and advertisements should lead to creative rendering, provisions for which should be made in the marking scheme. 4 Marks

2. Two Long Answer Questions: Letters based on verbal/visual input. – (6x2=12 Marks)

It would cover all types of letters. Letter types may include:

- (a) business or official letters (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies)
 - (b) letters to the editor (giving suggestions/opinions on an issue) Provide realistic context in the form of newspaper report/article to which the students may respond.
 - (c) application for a job with a bio-data or résumé
 - (d) letter to the school or college authorities, regarding admissions, school issues, requirements / suitability of courses, etc.
3. Very Long Answer Question: Composition in the form of article/speech/report/narrative/debate writing. Contemporary topical issues to be a part of speech and debate writing. For example, 'Protests should not be permitted as a democratic right.' (8 Marks)

GRAMMAR (6 Objective Type Questions)

Different grammatical structures in meaningful contexts will be tested. Item types will include gap filling, sentence re-ordering, dialogue completion and sentence transformation. The grammar syllabus will include determiners, tenses, clauses, modals and Change of Voice. These grammar areas will be tested through 6 objective type questions on the following preferably contextualized grammar:

- A. Error Correction, editing tasks/cloze passages
- B. Re - ordering of sentences,
- C. Transformation of sentences

SECTION C (30 Marks)

LITERATURE

70 Periods

Questions from the prescribed texts to test comprehension at different levels, like literal, inferential and evaluative will be asked.

1. Two Objective Type Questions out of three - Based on an extract from poetry to assess reference to context comprehension and appreciation. Direct questions to be avoided. Reference to the lines to be made, to answer questions based on the given extract. (1x2=2 Marks)

2. Five Short Answer Questions out of six (3 questions should be from Hornbill) - Based on prose, poetry and plays from both the texts. Questions should elicit inferential responses through critical thinking. (2x5=10 marks)
3. One Long Answer Question out of two from Hornbill (to be answered in 120-150 words). Based on prescribed text to assess global comprehension and extrapolation beyond the texts. Questions to provide evaluative and analytical stimuli to the learners, using incidents, events, themes as reference points. 6 Marks
4. One Long Answer Questions out of two from Snapshots (to be answered in 120-150 words) -Based on incidents or events to test global comprehension and extrapolation beyond the texts. Questions to elicit creative responses and ability to form opinions. 6 Marks
5. One Long Answer Question out of two from Hornbill (to be answered in 120-150 words)- Questions to provide evaluative and analytical stimuli to the learners using incidents, events, themes as reference points. 6 Marks

Prescribed Textbook-

1. Hornbill: Textbook published by NCERT, New Delhi
2. Snapshots: Supplementary Reader published by NCERT, New Delhi .

INTERNAL ASSESSMENT

Assessment of Listening and Speaking Skills

45 Periods

Assessment of Listening and Speaking Skills will be for 20 marks. It is recommended that listening and speaking skills should be regularly practiced in the class.

Question Paper Design 2020-21

English CORE XI (Code No.301)

Marks -80+20=100

Section	Competencies	Total marks	% Weight age
Reading Comprehension	Conceptual understanding, decoding, Analyzing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarizing and using appropriate format/s	20	25%
Writing Skill and Grammar	Reasoning, appropriacy of style and tone, using and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity	30	37.50%
Literature Textbook and Supplementary Reading Text	Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency	30	37.50%
	TOTAL	80	100%
Assessment of Listening and Speaking Skills	-	20	-
	GRAND TOTAL	100	

ENGLISH CORE (CODE NO. 301)

CLASS – XII 2020-21

SECTION A

READING COMPREHENSION

20 Marks

Section A will have two passages.

A. One unseen passage with a variety of Objective Type Questions, including Multiple Choice questions and Short Answer Questions to assess comprehension, interpretation and inference. Vocabulary such as word formation and inference of meaning will also be assessed.

The total length of the passages will be between 800 - 900 words. Five Multiple Choice type question and Seven Objective Type Questions (total 12 Marks) shall be asked from this passage. The passage will include one of the following:

- a) Factual passages, e.g., instructions, descriptions, reports.
- b) Descriptive passages involving opinion, e.g., argumentative, persuasive or interpretative text.
- c) Literary passages, e.g., extract from fiction, drama, poetry, essay or biography.

B. The second passage will be of 400-500 words . Note-making and Abstraction will be assessed.

- i. Note making (4 Marks)
- ii. Summary (4 Marks).

SECTION B

WRITING SKILLS

30 Marks

- a. Advertisements and notices, designing or drafting posters, writing formal and informal invitations and replies. One question out of the two Short Answer Questions to be answered in 50 words. (4 Marks)
- b. Letters based on verbal / visual input.- One question out of the two Long Answer Questions to be answered in 120-150 words:6 Marks

Letter types include

- Business or official letters (for making enquiries, registering complaints, asking for and giving information, placing orders and sending replies)

- Letters to the editor (giving suggestions or opinion on issues of public interest). Provide realistic context in the form of newspaper report/article to which the students may respond.
 - Application for a job
- c. Two compositions based on visual or verbal inputs. May be descriptive or argumentative in nature such as an article/a debate/ a speech or a report

Two Very Long Answer Questions containing internal choice, to be answered in 150-200 words. Contemporary topical issues to be a part of speech and debate writing. (10x2=20 Marks)

SECTION C

Literature Textbooks

30 Marks

- Eight Objective Type Questions – 4 from one poetry and 4 from one prose extract to assess comprehension and appreciation. Avoid direct questions. Refer to the lines to answer questions based on the given extract. (8x1=8 Marks)
- Five out of Seven Short Answer Questions based on prose / drama / poetry from both texts. Question should elicit inferential responses through critical thinking (5x2=10 Marks)
- One out of two Long Answer Questions to be answered in 120-150 words to assess global comprehension and extrapolation beyond the text. Questions to provide evaluating and analytical responses using incidents, events, themes as reference points. (6marks) (Flamingo)
- One out of two Long Answer Questions to be answered in 120-150 words to assess global comprehension along with analysis and extrapolation beyond the texts. Questions to elicit creative responses and ability to form opinions. (6marks) (Vistas)

Prescribed Books

- Flamingo:** English Reader published by National Council of Education Research and Training, New Delhi
- Vistas:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

Flamingo:

Prose 1. The Last Lesson 2. Lost Spring 3. Deep Water	Poetry: 1. My Mother at Sixty Six 2. An Elementary School Classroom in a Slum
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4. The Rattrap 5. Indigo 6. Poets and Pancakes 7. The Interview 8. Going Places	3. Keeping Quiet 4. A Thing of Beauty 5. A Roadside Stand 6. Aunt Jennifer's Tigers
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Vistas:

1. The Third Level
2. The Tiger King
3. Journey to the End of the Earth
4. The Enemy
5. Should Wizard Hit Mommy
6. On the Face of It
7. Evans Tries an O-Level
8. Memories of Childhood
9. The Cutting of My Long Hair
10. We too are Human Beings

Question Paper Design 2020-21

English CORE XII (Code No. 301)

Marks-80+20=100

Section	Competencies	Total marks	% Weightage
Comprehension	Conceptual understanding, decoding, Analyzing, inferring, interpreting, appreciating, literary, conventions and vocabulary, summarizing and using appropriate format/s	20	25%
Writing Skills	Reasoning, appropriacy of style and tone, using appropriate format and fluency, inference, analysis, evaluation and creativity	30	37.5%
Literature Textbooks and Supplementary Reading Text	Recalling, reasoning, appreciating literary convention, inference, analysis, creativity with fluency	30	37.5%
	TOTAL	80	100%
Assessment of Listening and Speaking Skills		20	-
	GRAND TOTAL	100	

हिंदी (ऐच्छिक) कोडसंख्या - 002

कक्षा 11वीं - 12वीं (2020-21)

प्रस्तावना :

उच्चतर माध्यमिक स्तर में प्रवेश लेने वाला विद्यार्थी पहली बार सामान्य शिक्षा से विशेष अनुशासन की शिक्षा की ओर उन्मुख होता है। दस वर्षों में विद्यार्थी भाषा के कौशलों से परिचित हो जाता है। भाषा और साहित्य के स्तर पर उसका दायरा अब घर, पास-पड़ोस, स्कूल, प्रांत और देश से होता हुआ धीरे-धीरे विश्व तक फैल जाता है। वह इस उम्र में पहुँच चुका है कि देश की सांस्कृतिक, सामाजिक, राजनीतिक और आर्थिक समस्याओं पर विचार-विमर्श कर सके, एक जिम्मेदार नागरिक की तरह अपनी जिम्मेदारियों को समझ सके तथा देश और खुद को सही दिशा दे सकने में भाषा की ताकत को पहचान सके। ऐसे दृढ़ भाषिक और वैचारिक आधार के साथ जब विद्यार्थी आता है तो उसे विमर्श की भाषा के रूप में हिंदी की व्यापक समझ और प्रयोग में दक्ष बनाना सबसे पहला उद्देश्य होगा। किशोरावस्था से युवावस्था के इस नाजुक मोड़ पर किसी भी विषय का चुनाव करते समय बच्चे और उनके अभिभावक इस बात को लेकर सबसे अधिक चिंतित रहते हैं कि चयनित विषय उनके भविष्य और जीविका के अवसरों में मदद करेगा कि नहीं। इस उम्र के विद्यार्थियों में चिंतन और निर्णय करने की प्रवृत्ति भी प्रबल होती है। इसी आधार पर वे अपने मानसिक, सामाजिक, बौद्धिक और भाषिक विकास के प्रति भी सचेत होते हैं और अपने भावी अध्ययन की दिशा तय करते हैं। इस स्तर पर ऐच्छिक हिंदी का अध्ययन एक सृजनात्मक, साहित्यिक, सांस्कृतिक और विभिन्न प्रयुक्तियों की भाषा के रूप में होगा। इस बात पर भी बल दिया जाएगा कि निरंतर विकसित होती हिंदी के अखिल भारतीय स्वरूप से बच्चे का रिश्ता बन सके।

इस स्तर पर विद्यार्थियों में भाषा के लिखित प्रयोग के साथ-साथ उसके मौखिक प्रयोग की कुशलता और दक्षता का विकास भी जरूरी है। प्रयास यह भी होगा कि विद्यार्थी अपने बिखरे हुए विचारों और भावों की सहज और मौलिक अभिव्यक्ति की क्षमता हासिल कर सके।

इस पाठ्यक्रम के अध्ययन से :

1. विद्यार्थी अपनी रुचि और आवश्यकता के अनुरूप साहित्य का गहन और विशेष अध्ययन जारी रख सकेंगे।
2. विश्वविद्यालय स्तर पर निर्धारित हिंदी-साहित्य से संबंधित पाठ्यक्रम के साथ सहज संबंध स्थापित कर सकेंगे।
3. लेखन-कौशल के व्यावहारिक और सृजनात्मक रूपों की अभिव्यक्ति में सक्षम हो सकेंगे।
4. रोजगार के किसी भी क्षेत्र में जाने पर भाषा का प्रयोग प्रभावी ढंग से कर सकेंगे।
5. यह पाठ्यक्रम विद्यार्थी को जनसंचार तथा प्रकाशन जैसे विभिन्न-क्षेत्रों में अपनी क्षमता व्यक्त करने का अवसर प्रदान कर सकता है।

उद्देश्य :

- सृजनात्मक साहित्य की सराहना, उसका आनंद उठाना और उसके प्रति सृजनात्मक और आलोचनात्मक दृष्टि का विकास करना।
- साहित्य की विविध विधाओं (कविता, कहानी, निबंध आदि), महत्वपूर्ण कवियों और रचनाकारों, प्रमुख धाराओं और शैलियों का परिचय करवाना।

- भाषा की सृजनात्मक बारीकियों और व्यावहारिक प्रयोगों का बोध तथा संदर्भ और समय के अनुसार प्रभावशाली ढंग से उसकी मौखिक और लिखित अभिव्यक्ति करना।
- विभिन्न जानानुशासनों के विमर्श की भाषा के रूप में हिंदी की विशिष्ट प्रकृति एवं क्षमता का बोध करवाना।
- साहित्य की प्रभावशाली क्षमता का उपयोग करते हुए सभी प्रकार की विविधताओं (धर्म, जाति, लिंग, वर्ग, भाषा आदि) एवं अंतरों के प्रति सकारात्मक और संवेदनशील व्यवहार का विकास करना।
- देश-विदेश में प्रचलित हिंदी के रूपों से परिचित करवाना।
- संचार-माध्यमों (प्रिंट और इलेक्ट्रॉनिक) में प्रयुक्त हिंदी की प्रकृति से अवगत करवाना और नवीन विधियों के प्रयोग की क्षमता का विकास करना।
- साहित्य की व्यापक धारा के बीच रखकर विशिष्ट रचनाओं का विश्लेषण और विवेचन करने की क्षमता हासिल करना।
- विपरीत परिस्थितियों में भी भाषा का प्रयोग शांति के साथ करना।
- अमूर्त विषयों पर प्रयुक्त भाषा का विकास और कल्पनाशीलता और मौलिक चिंतन के लिए प्रयोग करना।

शिक्षण-युक्तियाँ :

इन कक्षाओं में उचित वातावरण-निर्माण में अध्यापकों की भूमिका सदैव उत्प्रेरक एवं सहायक की होनी चाहिए। उनको भाषा और साहित्य की पढ़ाई में इस बात पर ध्यान देने की जरूरत होगी कि-

- कक्षा का वातावरण संवादात्मक हो ताकि अध्यापक, विद्यार्थी और पुस्तक-तीनों के बीच एक रिश्ता बन सके।
- बच्चों को स्वतंत्र रूप से बोलने, लिखने और पढ़ने दिया जाए और फिर उनसे होने वाली भूलों की पहचान करवा कर अध्यापक अपनी पढ़ाने की शैली में परिवर्तन करे।
- ऐसे शिक्षण-बिंदुओं की पहचान की जाए, जिससे कक्षा में विद्यार्थी की सक्रिय भागीदारी रहे और अध्यापक भी उनका साथी बना रहे।
- भिन्न क्षमता वाले विद्यार्थियों के लिए उपयुक्त शिक्षण-सामग्री का उपयोग किया जाए तथा किसी भी प्रकार से उन्हें अन्य विद्यार्थियों से कमतर या अलग न समझा जाए।
- कक्षा में अध्यापक को हर प्रकार की विविधताओं (लिंग, धर्म, जाति, वर्ग आदि) के प्रति सकारात्मक और संवेदनशील वातावरण निर्मित करना चाहिए।
- सृजनात्मकता के अभ्यास के लिए विद्यार्थी से साल में कम से कम दो रचनाएँ लिखवाई जाएँ।

आंतरिक मूल्यांकन हेतु

श्रवण तथा वाचन परीक्षा हेतु दिशा निर्देश

श्रवण (सुनना) (5अंक) : वर्णित या पठित सामग्री को सुनकर अर्थग्रहण करना, वार्तालाप करना, वाद-विवाद, भाषण, कवितापाठ आदि को सुनकर समझना, मूल्यांकन करना और अभिव्यक्ति के ढंग को समझना।

वाचन (बोलना)(5अंक) : भाषण, सस्वर कविता-पाठ, वार्तालाप और उसकी औपचारिकता, कार्यक्रम-प्रस्तुति, कथा-कहानी अथवा घटना सुनाना, परिचय देना, भावानुकूल संवाद-वाचन।

टिप्पणी : वार्तालाप की दक्षताओं का मूल्यांकन निरंतरता के आधार पर परीक्षा के समय ही होगा। निर्धारित 10 अंकों में से 5 श्रवण (सुनना) कौशल के मूल्यांकन के लिए और 5 वाचन (बोलना) कौशल के मूल्यांकन के लिए होंगे।

वाचन (बोलना) एवं श्रवण (सुनना)कौशल का मूल्यांकन :

- परीक्षक किसी प्रासंगिक विषय पर एक अनुच्छेद का स्पष्ट वाचन करेगा। अनुच्छेद तथ्यात्मक या सुझावात्मक हो सकता है। अनुच्छेद लगभग 250 शब्दों का होना चाहिए।

या

परीक्षक 2-3 मिनट का श्रव्य अंश (ऑडियो क्लिप) सुनवाएगा। अंश रोचक होना चाहिए। कथ्य/घटना पूर्ण एवं स्पष्ट होनी चाहिए। वाचक का उच्चारण शुद्ध, स्पष्ट एवं विराम चिह्नों के उचित प्रयोग सहित होना चाहिए।

- परीक्षार्थी ध्यानपूर्वक परीक्षक/ऑडियो क्लिप को सुनने के पश्चात परीक्षक द्वारा पूछे गए प्रश्नों का अपनी समझ से मौखिक उत्तर देंगे।
- किसी निर्धारित विषय पर बोलना : जिससे विद्यार्थी अपने व्यक्तिगत अनुभवों का प्रत्यास्मरण कर सकें।
- कोई कहानी सुनाना या किसी घटना का वर्णन करना।
- परिचय देना।

(स्व/ परिवार/ वातावरण/ वस्तु/ व्यक्ति/ पर्यावरण/ कवि /लेखक आदि)

परीक्षकों के लिए अनुदेश :-

- परीक्षण से पूर्व परीक्षार्थी को तैयारी के लिए कुछ समय दिया जाए।
- विवरणात्मक भाषा में वर्तमान काल का प्रयोग अपेक्षित है।
- निर्धारित विषय परीक्षार्थी के अनुभव-जगत के हों।
- जब परीक्षार्थी बोलना आरंभ करते तो परीक्षक कम से कम हस्तक्षेप करें।

कौशलों के अंतरण का मूल्यांकन

(इस बात का निश्चय करना कि क्या विद्यार्थी में श्रवण और वाचन की निम्नलिखित योग्यताएँ हैं)

	श्रवण (सुनना)		वाचन (बोलना)
1	परिचित संदर्भों में प्रयुक्त शब्दों और पदों को समझने की सामान्य योग्यता है।	1	केवल अलग-अलग शब्दों और पदों के प्रयोग की योग्यता प्रदर्शित करता है।
2	छोटे सुसंबद्ध कथनों को परिचित संदर्भों में समझने की योग्यता है।	2	परिचित संदर्भों में केवल छोटे सुसंबद्ध कथनों का सीमित शुद्धता से प्रयोग करता है।
3	परिचित या अपरिचित दोनों संदर्भोंमें कथित सूचना को स्पष्ट समझने की योग्यता है।	3	अपेक्षाकृत दीर्घ भाषण में अधिक जटिल कथनों के प्रयोग की योग्यता प्रदर्शित करता है।

4	दीर्घ कथनों की शृंखला को पर्याप्त शुद्धता से समझने के ढंग और निष्कर्ष निकाल सकने की योग्यता है।	4	अपरिचित स्थितियों में विचारों को तार्किक ढंग से संगठित कर धारा-प्रवाह रूप में प्रस्तुत करता है।
5	जटिल कथनों के विचार-बिंदुओं को समझने की योग्यता प्रदर्शित करने की क्षमता है। वह उद्देश्य के अनुकूल सुनने की कुशलता प्रदर्शित करता है।	5	उद्देश्य और श्रोता के लिए उपयुक्त शैली को अपना सकता है, ऐसा करते समय वह केवल मामूली गलतियाँ करता है।

परियोजना कार्य - कुल अंक 10

विषय वस्तु -	5 अंक
भाषा एवं प्रस्तुती -	3 अंक
शोध एवं मौलिकता -	2 अंक

- हिंदी भाषा और साहित्य से जुड़े विविध विषयों/विद्याओं/साहित्यकारों/समकालीन लेखन/वादों/भाषा के तकनीकी पक्ष/प्रभाव/अनुप्रयोग/साहित्य के सामाजिक संदर्भों/जीवन-मूल्य संबंधी प्रभावों आदि पर परियोजना कार्य दिए जाने चाहिए।
- सत्र के प्रारंभ में ही विद्यार्थी को विषय चुनने का अवसर मिले ताकि उसे शोध, तैयारी और लेखन के लिए पर्याप्त समय मिल सके।
- वाचन - श्रवण कौशल एवं परियोजना कार्य का मूल्यांकन विद्यालय स्तर पर आंतरिक परीक्षक द्वारा ही किया जाएगा।

**हिंदी (ऐच्छिक)(कोड सं.002)
कक्षा -11वीं(वर्ष 2020-21)**

खंड	विषय	अंक
(क)	अपठित अंश	18
1	अपठित गद्यांश - बोध (गद्यांश पर आधारित बोध, प्रयोग, रचनांतरण, शीर्षक आदि पर 10 बहुविकल्पी/अति लघूत्तरात्मक प्रश्न 1 अंक (1 x 10)	10
2	अपठित काव्यांश पर आधारित बोध (काव्यांश पर आधारित बोध, प्रयोग, रचनांतरण, शीर्षक आदि पर 8 बहुविकल्पी/अति लघूत्तरात्मक प्रश्न 1 अंक (1 x 8)	08
(ख)	कार्यालयी हिंदी और रचनात्मक लेखन (‘अभिव्यक्ति और माध्यम’ पुस्तक के आधार पर)	22
3	दी गई स्थिति / घटना के आधार पर दृश्य लेखन (विकल्प सहित) (दीर्घउत्तरीय 4 अंकका प्रश्न)(4x1)	4
4	औपचारिक - पत्र/ स्ववृत् लेखन/ रोजगार संबंधी आवेदन पत्र (विकल्प सहित) (दीर्घउत्तरीय 4 अंकका प्रश्न)(4x1)	4
5	व्यावहारिक लेखन (प्रतिवेदन, प्रेस-विज्ञप्ति, परिपत्र, कार्यसूची, कार्यवृत् से संबंधित (विकल्प सहित) दोलघुउत्तरीय प्रश्न-एकतीनवएकदोअंकका (3X1)+(2X1)	5
6	शब्दकोश परिचय से संबंधित 5 बहुविकल्पी प्रश्न 1 अंक (1 x 5)	5
7	जनसंचार माध्यम और पत्रकारिता के विविध आयामों पर दोअंकोवाले दोलघुउत्तरीय प्रश्न (2X2)	4
(ग)	पाठ्यपुस्तकें	40
(1)	अंतरा भाग-1	30

	(अ)	काव्य भाग	15
8		एक काव्यांश की सप्रसंग व्याख्या (विकल्प सहित) (दीर्घउत्तरीय4 अंकका प्रश्न)(4x1)	04
9		कविताओं की विषयवस्तु पर आधारित दोलघुउत्तरीय-एकतीनवएकदोअंकका)) (विकल्प सहित) (3X1)+(2X1)	05
10		कविताओं के काव्य सौंदर्य पर तीनअंकोवालेदोलघुउत्तरीय प्रश्न (विकल्प सहित)(3X2)	06
	(ब)	गद्य भाग	15
11		एक गद्यांश की सप्रसंग व्याख्या (दीर्घउत्तरीय4 अंकका प्रश्न)(4x1)	04
12		पाठों की विषयवस्तु पर आधारित चारलघुउत्तरीय-एकतीनअंकोकावदोदोअंकोकेप्रश्न	07
13		किसी एक लेखक/ कवि का साहित्यिक परिचय (विकल्प सहित) (दीर्घउत्तरीय4 अंकका प्रश्न)(4x1)	04
	(2)	अंतराल भाग - 1	10
14		पाठों की विषयवस्तु पर आधारित चारलघुउत्तरीय-दोतीनअंकोकेवदो,दोअंकोकेप्रश्न(विकल्प सहित) (3x2) +(2x2)	10
	(घ)	(क) श्रवण तथा वाचन	10
		(ख) परियोजना	10
		कुल	100

प्रस्तावित पुस्तकें :

1. अंतरा, भाग-1, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
2. अंतराल, भाग-1, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
3. 'अभिव्यक्ति और माध्यम', एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित

नोट : गजानन माधव मुक्तिबोध (नए की जन्म कुंडली) को छोड़कर सभी से प्रश्न पूछे जाएंगे।

हिंदी (ऐच्छिक) (कोड सं. 002)

कक्षा -12वीं (2020-21)

खंड	विषय	अंक
(क)	अपठित अंश	18
1	अपठितगद्यांश-बोध (गद्यांशपरआधारितबोध, प्रयोग, रचनांत्रण, शीर्षकआदिपर10 बहुविकल्पी/अतिलघुत्तरात्मकप्रश्न1अंक(1 x 10)	10
2	अपठितकाव्यांशपरआधारितबोध (गद्यांशपरआधारितबोध, प्रयोग, रचनांत्रण, शीर्षकआदिपर8 बहुविकल्पी/अतिलघुत्तरात्मक प्रश्न1अंक(1 x 8)	08
(ख)	कार्यालयी हिंदी और रचनात्मक लेखन (अभिव्यक्ति और माध्यम पुस्तक के आधार पर)	22
3	दिए गए नए और अप्रत्याशित विषयों में से किसी एक विषय पर रचनात्मक लेखन(विकल्प सहित) (निबंधनात्मकप्रश्न) (दीर्घउत्तरीय4 अंककाप्रश्न)(4x1)	04
4	कार्यालयी पत्र (विकल्प सहित)(निबंधनात्मकप्रश्न) (दीर्घउत्तरीय4 अंककाप्रश्न)(4x1)	04
5	कविता / कहानी / नाटक की रचना प्रक्रिया पर आधारित/ समाचार लेखन (उल्टा पिरामिड शैली) परदोलघुउत्तरीयप्रश्न एकतीनवएकदोअंकका (3X1)+(2X1) (विकल्प सहित)	05
6	फीचर/आलेख लेखन पर एक प्रश्न (विकल्प सहित) (निबंधनात्मकप्रश्न)	04
7	विभिन्न माध्यमों के लिए पत्रकारीय लेखन और उसके विविध आयामों पर 5 बहुविकल्पीप्रश्न 1 अंक (1 x 5)	05
(ग)	पाठ्यपुस्तक	40
(1)	अंतरा भाग-2	30
	(अ) काव्य भाग	15
8	एक काव्यांश की सप्रसंग व्याख्या (विकल्प सहित) (दीर्घउत्तरीय4 अंककाप्रश्न)(4x1)	04

	9	कविताओं की विषयवस्तु पर आधारित दोलघुउत्तरीय-एकतीनवएकदोअंकका)) (विकल्प सहित) (3X1)+(2X1)	05
	10	कविताओं के काव्य सौन्दर्य पर तीनअंकोवालेदोलघुउत्तरीयप्रश्न (विकल्पसहित)(3X2)	06
	(ब)	गद्य भाग	15
	11	एक गद्यांश की सप्रसंग व्याख्या (विकल्प सहित) (दीर्घउत्तरीय4 अंककाप्रश्न) (4x1)	04
	12	पाठों की विषयवस्तु पर आधारित चारलघुउत्तरीय-एकतीनअंकोकावदो,दोअंकोकेप्रश्न	07
	13	एक लेखक/ कवि का साहित्यिक परिचय (विकल्प सहित) (दीर्घउत्तरीय4 अंककाप्रश्न) (4x1)	04
	(2)	अंतराल भाग - 2	10
	14	पाठोंकीविषयवस्तुपरआधारितचारलघुउत्तरीय-दोतीनअंकोकेवदो,दोअंकोकेप्रश्न (विकल्पसहित) (3x2) +(2x2)	10
(घ)	(क)	श्रवण एवं वाचन	10
	(ख)	परियोजना	10
		कुल	100

प्रस्तावित पुस्तकें :

1. अंतरा, भाग-2, एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
2. अंतराल, भाग-2, (विविध विधाओं का संकलन), एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित
3. 'अभिव्यक्ति और माध्यम', एन.सी.ई.आर.टी., नई दिल्ली द्वारा प्रकाशित

नोट :- अंतरा के पद्य भाग से पाठ 3 - (सच्चिदानंद हीरानंद वात्स्यायन अज्ञेय - यह दीप अकेला, मैंने देखा एक बूंद) व पाठ 10 - (केशवदास रामचंद्रचंद्रिका में से ही प्रश्न पूछे नहीं जाएंगे)।

गद्य के सभी पक्षों का आकलन होगा।

हिंदी (ऐच्छिक) (कोड सं 002)कक्षा 11 (2020 - 2021)

क्रम सं	खंड	दक्षता परीक्षण/ अधिगम परिणाम	ज्ञान और समझ	अनुप्रयोग			विश्लेषण ,मूल्यांकन एवं सृजनात्मकता				कुल योग 80 अंक	
			बहुविकल्पी /अति लघूत्तरात्मप्रश्न 1 अंक	बहुविकल्पी /अति लघूत्तरात्मप्रश्न 1 अंक	लघूत्तरात्मक 2 अंक	लघूत्तरात्मक 3 अंक	बहुविकल्पी /अति लघूत्तरात्मप्रश्न 1 अंक	लघूत्तरात्मक 2 अंक	लघूत्तरात्मक 3 अंक	निबंधात्मक 4अंक		
क	अपठित बोध (पठन कौशल)	अवधारणात्मक बोध, अर्थग्रहण, अनुमान लगाना, विश्लेषण करना, शब्द ज्ञान व भाषिक कौशल, सृजनात्मकता और मौलिकता	गद्यांश -1 x 5= 5 अंक पद्यांश- 1x4=4अंक	-	-			गद्यांश -1 x 5= 05 अंक पद्यांश-1x4=4 अंक			-	18 अंक
ख	पाठ्यपुस्तक एवं व्यावहारिक व्याकरण	प्रत्यासमरण, अर्थग्रहण (भावग्रहण) लेखक के मनोभावों को समझना, शब्दों का प्रसंगानुकूल अर्थ समझना, आलोचनात्मक चिंतन, तार्किकता, सराहना, साहित्यिक परम्पराओं के परिप्रेक्ष्य में मूल्यांकन, विश्लेषण, सृजनात्मकता, कल्पनाशीलता, कार्य-कारण संबंध स्थापित करना, साम्यता एवं अंतरों की पहचान, अभिव्यक्ति में मौलिकता एवं जीवन मूल्यों की पहचान।						2 x 5 = 10 अंक (01 प्रश्न अंतराके पद्य भाग से 02 प्रश्न अंतराके गद्य भाग से 02 प्रश्न अंतराल से)	3x 6 = 18 अंक (03 प्रश्न अंतराके पद्य भाग से 01 प्रश्नअंतराके गद्य भाग से व02 प्रश्न अंतराल से)	4x3=12 एक काव्यांश, से एक गद्यांश से वएक लेखक/ कवि का साहित्यिक परिचय		40अंक
ग	रचनात्मक लेखन	संकेत बिन्दुओं का विस्तार अपने मत की अभिव्यक्ति, सोदाहरण समझना, औचित्य निर्धारण, भाषा में प्रवाहमयता, सटीक शैली, उचित प्रारूप का प्रयोग, अभिव्यक्ति की मौलिकता, सजनात्मकता एवं तार्किकता		शब्दकोश से संबंधित सेसंबंधित 1x 5 = 5 अंक	2x3=6 (1 व्यावहारिक लेखनसे व 2 जनसंचार माध्यम और पत्रकारितासे)	3x1=3 (1 व्यावहारिक लेखनसे 1 प्रश्न)				4 x 2= 8 अंक घटना व पत्र पर एक एक प्रश्न		22 अंक

खण्ड क - ज्ञान और समझ पर आधारित - 09 अंक

खण्ड ख - अनुप्रयोग पर आधारित -14 अंक

खण्ड ग - विश्लेषण एवं सृजनात्मकता पर आधारित -57 अंक

हिंदी (ऐच्छिक) (कोड सं 002) कक्षा 12 (2020 - 2021)

क्रम सं	खंड	दक्षता परीक्षण/ अधिगम परिणाम	ज्ञान और समझ	अनुप्रयोग			विश्लेषण ,मूल्यांकन एवं सृजनात्मकता				कुल योग 80 अंक
			बहुविकल्पी /अति लघूत्तरात्मक प्रश्न 1 अंक	बहुविकल्पी प्रश्न/ अति लघूत्तरात्मक 1 अंक	लघूत्तरात्मक 2 अंक	लघूत्तरात्मक 3 अंक	बहुविकल्पी प्रश्न/ अति लघूत्तरात्मक 1 अंक	लघूत्तरात्मक 2 अंक	लघूत्तरात्मक 3 अंक	निबंधात्मक 4अंक	
क	अपठित बोध (पठन कौशल)	अवधारणात्मक बोध, अर्थग्रहण, अनुमान लगाना, विश्लेषण करना, शब्द ज्ञान व भाषिक कौशल, सृजनात्मकता और मौलिकता	गद्यांश -1 x 5= 5 अंक पद्यांश- 1x4=4अंक	-	-		गद्यांश -1 x 5= 05 अंक पद्यांश-1x4=4 अंक			-	18 अंक
	पाठ्यपुस्तक एवं व्यावहारिक व्याकरण	प्रत्यासमरण, अर्थग्रहण (भावग्रहण) लेखक के मनोभावों को समझना, शब्दों का प्रसंगानुकूल अर्थ समझना, आलोचनात्मक चिंतन, तार्किकता, सराहना, साहित्यिक परम्पराओं के परिप्रेक्ष्य में मूल्यांकन, विश्लेषण, सृजनात्मकता, कल्पनाशीलता, कार्य-कारण संबंध स्थापित करना, साम्यता एवं अंतरों की पहचान, अभिव्यक्ति में मौलिकता एवं जीवन मूल्यों की पहचान।					2 x 5 = 10 अंक (01 प्रश्न अंतराके पद्य भाग से 02 प्रश्न अंतराके गद्य भाग से व 02 प्रश्न अंतराल से)	3x 6 = 18 अंक (03 प्रश्न अंतराके पद्य भाग से 01 प्रश्न अंतराके गद्य भाग से व 02 प्रश्न अंतराल से)	4x3=12 एक काव्यांश, से एक गद्यांश से व एक लेखक/ कवि का साहित्यिक परिचय	40अंक	
	रचनात्मक लेखन	संकेत बिन्दुओं का विस्तार अपने मत की अभिव्यक्ति, सोदाहरण समझना, औचित्य निर्धारण, भाषा में प्रवाहमयता, सटीक शैली, उचित प्रारूप का प्रयोग, अभिव्यक्ति की मौलिकता, सजनात्मकता एवं तार्किकता		पत्रकारीय लेखन और उसके आयामों से संबंधित 1x 5 = 5 अंक	2x3=6 (1 व्यावहारिक लेखनसे व 2 जनसंचार माध्यम और पत्रकारितासे)	3x1=3 (1 व्यावहारिक लेखनसे 1 प्रश्न)			4 x 2= 8 अंक अप्रत्याशित विषय व पत्र पर एक एक प्रश्न	22 अंक	

खण्ड क - ज्ञान और समझ पर आधारित - 09 अंक

खण्ड ख - अनुप्रयोग पर आधारित -14 अंक

खण्ड ग - विश्लेषण एवं सृजनात्मकता पर आधारित -57 अंक

PHYSICS
Class XI-XII (Code No. 042)
(2020-21)

Senior Secondary stage of school education is a stage of transition from general education to discipline-based focus on curriculum. The present updated syllabus keeps in view the rigour and depth of disciplinary approach as well as the comprehension level of learners. Due care has also been taken that the syllabus is comparable to the international standards. Salient features of the syllabus include:

- Emphasis on basic conceptual understanding of the content.
- Emphasis on use of SI units, symbols, nomenclature of physical quantities and formulations as per international standards.
- Providing logical sequencing of units of the subject matter and proper placement of concepts with their linkage for better learning.
- Reducing the curriculum load by eliminating overlapping of concepts/content within the discipline and other disciplines.
- Promotion of process-skills, problem-solving abilities and applications of Physics concepts.

Besides, the syllabus also attempts to

- Strengthen the concepts developed at the secondary stage to provide firm foundation for further learning in the subject.
- Expose the learners to different processes used in Physics-related industrial and technological applications.
- Develop process-skills and experimental, observational, manipulative, decision making and investigatory skills in the learners.
- Promote problem solving abilities and creative thinking in learners.
- Develop conceptual competence in the learners and make them realize and appreciate the interface of Physics with other disciplines.

PHYSICS (Code No. 042)
COURSE STRUCTURE
Class XI – 2020-21 (Theory)

Time: 3 hrs.

Max Marks: 70

		No. of Periods	Marks
Unit-I	Physical World and Measurement	10	23
	Chapter-1: Physical World		
	Chapter-2: Units and Measurements		
Unit-II	Kinematics	24	
	Chapter-3: Motion in a Straight Line		
	Chapter-4: Motion in a Plane		
Unit-III	Laws of Motion	14	
	Chapter-5: Laws of Motion		
Unit-IV	Work, Energy and Power	12	
	Chapter-6: Work, Energy and Power		
Unit-V	Motion of System of Particles and Rigid Body	18	
	Chapter-7: System of Particles and Rotational Motion		
Unit-VI	Gravitation	12	
	Chapter-8: Gravitation		
Unit-VII	Properties of Bulk Matter	24	
	Chapter-9: Mechanical Properties of Solids		
	Chapter-10: Mechanical Properties of Fluids		
	Chapter-11: Thermal Properties of Matter	12	
Unit-VIII	Thermodynamics		
	Chapter-12: Thermodynamics		
Unit-IX	Behaviour of Perfect Gases and Kinetic Theory of Gases	08	
	Chapter-13: Kinetic Theory		
Unit-X	Oscillations and Waves	26	
	Chapter-14: Oscillations		
	Chapter-15: Waves		
Total		160	70

Unit I: Physical World and Measurement

10 Periods

Chapter–1: Physical World

Physics-scope and excitement; nature of physical laws; Physics, technology and society.

Chapter–2: Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.

Dimensions of physical quantities, dimensional analysis and its applications.

Unit II: Kinematics

24 Periods

Chapter–3: Motion in a Straight Line

Frame of reference, Motion in a straight line: Position-time graph, speed and velocity.

Elementary concepts of differentiation and integration for describing motion, uniform and non- uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs.

Relations for uniformly accelerated motion (graphical treatment).

Chapter–4: Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, relative velocity, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors.

Motion in a plane, cases of uniform velocity and uniform acceleration- projectile motion, uniform circular motion.

Unit III: Laws of Motion

14 Periods

Chapter–5: Laws of Motion

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion.

Law of conservation of linear momentum and its applications.

Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication.

Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).

Unit IV: Work, Energy and Power

12 Periods

Chapter–6: Work, Engery and Power

Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power.

Notion of potential energy, potential energy of a spring, conservative forces: conservation of mechanical energy (kinetic and potential energies); non-conservative forces: motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.

Unit V: Motion of System of Particles and Rigid Body

18 Periods

Chapter–7: System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod.

Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.

Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.

Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation). Statement of parallel and perpendicular axes theorems and their applications.

Unit VI: Gravitation**12 Periods****Chapter–8: Gravitation**

Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.

Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite, Geo-stationary satellites.

Unit VII: Properties of Bulk Matter**24 Periods****Chapter–9: Mechanical Properties of Solids**

Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity, Poisson's ratio; elastic energy.

Chapter–10: Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure.

Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its applications.

Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Chapter–11: Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p , C_v - calorimetry; change of state - latent heat capacity.

Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law, Greenhouse effect.

Unit VIII: Thermodynamics

12 Periods

Chapter–12: Thermodynamics

Thermal equilibrium and definition of temperature (zeroth law of thermodynamics), heat, work and internal energy. First law of thermodynamics, isothermal and adiabatic processes.

Second law of thermodynamics: reversible and irreversible processes, Heat engine and refrigerator.

Unit IX: Behaviour of Perfect Gases and Kinetic Theory of Gases

08 Periods

Chapter–13: Kinetic Theory

Equation of state of a perfect gas, work done in compressing a gas.

Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Unit X: Oscillations and Waves

26 Periods

Chapter–14: Oscillations

Periodic motion - time period, frequency, displacement as a function of time, periodic functions.

Simple harmonic motion (S.H.M) and its equation; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period. Free, forced and damped oscillations (qualitative ideas only), resonance.

Chapter–15: Waves

Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats, Doppler effect.

PRACTICALS

Total Periods: 60

The record, to be submitted by the students, at the time of their annual examination, has to include:

- Record of at least 12 Experiments [with 6 from each section], to be performed by the students.
- Record of at least 6 Activities [with 3 each from section A and section B], to be performed by the students.
- Report of the project to be carried out by the students.

EVALUATION SCHEME

Time Allowed: Three hours

Max. Marks: 30

Two experiments one from each section	7+7 Marks
Practical record (experiment and activities)	5 Marks
One activity from any section	3 Marks
Investigatory Project	3 Marks
Viva on experiments, activities and project	5 Marks
Total	30 Marks

SECTION–A

Experiments

1. To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume.
2. To measure diameter of a given wire and thickness of a given sheet using screw gauge.
3. To determine volume of an irregular lamina using screw gauge.
4. To determine radius of curvature of a given spherical surface by a spherometer.

5. To determine the mass of two different objects using a beam balance.
6. To find the weight of a given body using parallelogram law of vectors.
7. Using a simple pendulum, plot its $L-T^2$ graph and use it to find the effective length of second's pendulum.
8. To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.
9. To study the relationship between force of limiting friction and normal reaction and to find the co-efficient of friction between a block and a horizontal surface.
10. To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination θ by plotting graph between force and $\sin\theta$.

Activities

1. To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.
2. To determine mass of a given body using a metre scale by principle of moments.
3. To plot a graph for a given set of data, with proper choice of scales and error bars.
4. To measure the force of limiting friction for rolling of a roller on a horizontal plane.
5. To study the variation in range of a projectile with angle of projection.
6. To study the conservation of energy of a ball rolling down on an inclined plane (using a double inclined plane).
7. To study dissipation of energy of a simple pendulum by plotting a graph between square of amplitude and time.

SECTION-B

Experiments

1. To determine Young's modulus of elasticity of the material of a given wire.
2. To find the force constant of a helical spring by plotting a graph between load and extension.
3. To study the variation in volume with pressure for a sample of air at constant temperature by plotting graphs between P and V, and between P and $1/V$.
4. To determine the surface tension of water by capillary rise method.
5. To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.
6. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.
7. To determine specific heat capacity of a given solid by method of mixtures.
8. To study the relation between frequency and length of a given wire under constant tension using sonometer.
9. To study the relation between the length of a given wire and tension for constant frequency using sonometer.
10. To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.

Activities

1. To observe change of state and plot a cooling curve for molten wax.
2. To observe and explain the effect of heating on a bi-metallic strip.
3. To note the change in level of liquid in a container on heating and interpret the observations.
4. To study the effect of detergent on surface tension of water by observing capillary rise.
5. To study the factors affecting the rate of loss of heat of a liquid.
6. To study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.
7. To observe the decrease in pressure with increase in velocity of a fluid.

Practical Examination for Visually Impaired Students Class XI

Note: Same Evaluation scheme and general guidelines for visually impaired students as given for Class XII may be followed.

A. Items for Identification/Familiarity of the apparatus for assessment in practicals (All experiments)

Spherical ball, Cylindrical objects, vernier calipers, beaker, calorimeter, Screw gauge, wire, Beam balance, spring balance, weight box, gram and milligram weights, forceps, Parallelogram law of vectors apparatus, pulleys and pans used in the same 'weights' used, Bob and string used in a simple pendulum, meter scale, split cork, suspension arrangement, stop clock/stop watch, Helical spring, suspension arrangement used, weights, arrangement used for measuring extension, Sonometer, Wedges, pan and pulley used in it, 'weights' Tuning Fork, Meter scale, Beam balance, Weight box, gram and milligram weights, forceps, Resonance Tube, Tuning Fork, Meter scale, Flask/Beaker used for adding water.

B. List of Practicals

1. To measure diameter of a small spherical/cylindrical body using vernier calipers.
2. To measure the internal diameter and depth of a given beaker/calorimeter using vernier calipers and hence find its volume.
3. To measure diameter of given wire using screw gauge.
4. To measure thickness of a given sheet using screw gauge.
5. To determine the mass of a given object using a beam balance.
6. To find the weight of given body using the parallelogram law of vectors.
7. Using a simple pendulum plot $L-T$ and $L-T^2$ graphs. Hence find the effective length of second's pendulum using appropriate length values.
8. To find the force constant of given helical spring by plotting a graph between load and extension.

9. (i) To study the relation between frequency and length of a given wire under constant tension using a sonometer.
(ii) To study the relation between the length of a given wire and tension, for constant frequency, using a sonometer.
10. To find the speed of sound in air, at room temperature, using a resonance tube, by observing the two resonance positions.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Physics Part-I, Textbook for Class XI, Published by NCERT
2. Physics Part-II, Textbook for Class XI, Published by NCERT
3. Laboratory Manual of Physics, Class XI Published by NCERT
4. The list of other related books and manuals brought out by NCERT (consider multimedia also).

CLASS XII (2020-21)
(THEORY)

Time: 3 hrs.

Max Marks: 70

		No. of Periods	Marks
Unit-I	Electrostatics	24	16
	Chapter-1: Electric Charges and Fields		
	Chapter-2: Electrostatic Potential and Capacitance		
Unit-II	Current Electricity	18	
	Chapter-3: Current Electricity		
Unit-III	Magnetic Effects of Current and Magnetism	22	17
	Chapter-4: Moving Charges and Magnetism		
	Chapter-5: Magnetism and Matter		
Unit-IV	Electromagnetic Induction and Alternating Currents	20	
	Chapter-6: Electromagnetic Induction		
	Chapter-7: Alternating Current		
Unit-V	Electromagnetic Waves	04	
	Chapter-8: Electromagnetic Waves		
Unit-VI	Optics	27	18
	Chapter-9: Ray Optics and Optical Instruments		
	Chapter-10: Wave Optics		
Unit-VII	Dual Nature of Radiation and Matter	08	12
	Chapter-11: Dual Nature of Radiation and Matter		
Unit-VIII	Atoms and Nuclei	15	
	Chapter-12: Atoms		
	Chapter-13: Nuclei		
Unit-IX	Electronic Devices	12	
	Chapter-14: Semiconductor Electronics: Materials, Devices and Simple Circuits		
Total		150	70

Unit I: Electrostatics

24 Periods

Chapter–1: Electric Charges and Fields

Electric Charges; Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution.

Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field.

Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside).

Chapter–2: Electrostatic Potential and Capacitance

Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field.

Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor.

Unit II: Current Electricity

18 Periods

Chapter–3: Current Electricity

Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, Carbon resistors, colour code for carbon resistors; series and parallel combinations of resistors; temperature dependence of resistance.

Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's laws and simple applications, Wheatstone bridge, metre bridge.

Potentiometer - principle and its applications to measure potential difference and for comparing EMF of two cells; measurement of internal resistance of a cell.

Unit III: Magnetic Effects of Current and Magnetism

22 Periods

Chapter–4: Moving Charges and Magnetism

Concept of magnetic field, Oersted's experiment.

Biot - Savart law and its application to current carrying circular loop.

Ampere's law and its applications to infinitely long straight wire. Straight and toroidal solenoids (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields, Cyclotron.

Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.

Chapter–5: Magnetism and Matter

Current loop as a magnetic dipole and its magnetic dipole moment, magnetic dipole moment of a revolving electron, magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis, torque on a magnetic dipole (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; earth's magnetic field and magnetic elements.

Para-, dia- and ferro - magnetic substances, with examples. Electromagnets and factors affecting their strengths, permanent magnets.

Unit IV: Electromagnetic Induction and Alternating Currents **20 Periods**

Chapter–6: Electromagnetic Induction

Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Eddy currents. Self and mutual induction.

Chapter–7: Alternating Current

Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, power factor, wattless current.

AC generator and transformer.

Unit V: Electromagnetic waves **04 Periods**

Chapter–8: Electromagnetic Waves

Basic idea of displacement current, Electromagnetic waves, their characteristics, their Transverse nature (qualitative ideas only).

Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.

Unit VI: Optics **27 Periods**

Chapter–9: Ray Optics and Optical Instruments

Ray Optics: Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism.

Scattering of light - blue colour of sky and reddish appearance of the sun at sunrise and sunset.

Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.

Chapter–10: Wave Optics

Wave optics: Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for fringe width, coherent sources and sustained interference of light, diffraction due to a single slit, width of central maximum, resolving power of microscope and astronomical telescope, polarisation, plane polarised light, Brewster's law, uses of plane polarised light and Polaroids.

Unit VII: Dual Nature of Radiation and Matter

08 Periods

Chapter–11: Dual Nature of Radiation and Matter

Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light.

Experimental study of photoelectric effect

Matter waves-wave nature of particles, de-Broglie relation, Davisson-Germer experiment (experimental details should be omitted; only conclusion should be explained).

Unit VIII: Atoms and Nuclei

15 Periods

Chapter–12: Atoms

Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum.

Chapter–13: Nuclei

Composition and size of nucleus, Radioactivity, alpha, beta and gamma particles/rays and their properties; radioactive decay law, half life and mean life.

Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

Unit IX: Electronic Devices

12 Periods

Chapter–14: Semiconductor Electronics: Materials, Devices and Simple Circuits

Energy bands in conductors, semiconductors and insulators (qualitative ideas only)

Semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier;

Special purpose p-n junction diodes: LED, photodiode, solar cell and Zener diode and their characteristics, zener diode as a voltage regulator.

PRACTICALS

(Total Periods 60)

The record to be submitted by the students at the time of their annual examination has to include:

- Record of at least 12 Experiments [with 6 from each section], to be performed by the students.
- Record of at least 6 Activities [with 3 each from section A and section B], to be performed by the students.
- The Report of the project to be carried out by the students.

Evaluation Scheme

Time Allowed: Three hours

Max. Marks: 30

Two experiments one from each section	7+7 Marks
Practical record [experiments and activities]	5 Marks
One activity from any section	3 Marks

Investigatory Project	3 Marks
Viva on experiments, activities and project	5 Marks
Total	30 marks

Experiments

SECTION–A

1. To determine resistivity of two / three wires by plotting a graph for potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.
3. To verify the laws of combination (series) of resistances using a metre bridge.

OR

To verify the laws of combination (parallel) of resistances using a metre bridge.

4. To compare the EMF of two given primary cells using potentiometer.
5. To determine the internal resistance of given primary cell using potentiometer.
6. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
7. To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify the same.

OR

To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.

8. To find the frequency of AC mains with a sonometer.

Activities

1. To measure the resistance and impedance of an inductor with or without iron core.
2. To measure resistance, voltage (AC/DC), current (AC) and check continuity of a given circuit using multimeter.
3. To assemble a household circuit comprising three bulbs, three (on/off) switches, a

fuse and a power source.

4. To assemble the components of a given electrical circuit.
5. To study the variation in potential drop with length of a wire for a steady current.
6. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

SECTION-B

Experiments

1. To find the value of v for different values of u in case of a concave mirror and to find the focal length.
2. To find the focal length of a convex mirror, using a convex lens.
3. To find the focal length of a convex lens by plotting graphs between u and v or between $1/u$ and $1/v$.
4. To find the focal length of a concave lens, using a convex lens.
5. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
6. To determine refractive index of a glass slab using a travelling microscope.
7. To find refractive index of a liquid by using convex lens and plane mirror.
8. To draw the I-V characteristic curve for a p-n junction diode in forward bias and reverse bias.
9. To draw the characteristic curve of a zener diode and to determine its reverse breakdown voltage.

Activities

1. To identify a diode, an LED, a resistor and a capacitor from a mixed collection of such items.
2. Use of multimeter to see the unidirectional flow of current in case of a diode and an LED and check whether a given electronic component (e.g., diode) is in working order.
3. To study effect of intensity of light (by varying distance of the source) on an LDR.
4. To observe refraction and lateral deviation of a beam of light incident obliquely on a glass slab.
5. To observe polarization of light using two Polaroids.
6. To observe diffraction of light due to a thin slit.
7. To study the nature and size of the image formed by a (i) convex lens, (ii) concave mirror, on a screen by using a candle and a screen (for different distances of the candle from the lens/mirror).
8. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

Suggested Investigatory Projects

1. To study various factors on which the internal resistance/EMF of a cell depends.
2. To study the variations in current flowing in a circuit containing an LDR because of a variation in
 - (a) the power of the incandescent lamp, used to 'illuminate' the LDR (keeping all the lamps at a fixed distance).
 - (b) the distance of a incandescent lamp (of fixed power) used to 'illuminate' the LDR.
3. To find the refractive indices of (a) water (b) oil (transparent) using a plane mirror, an equi convex lens (made from a glass of known refractive index) and an adjustable object needle.
4. To design an appropriate logic gate combination for a given truth table.
5. To investigate the relation between the ratio of (i) output and input voltage and (ii) number of turns in the secondary coil and primary coil of a self-designed transformer.
6. To investigate the dependence of the angle of deviation on the angle of incidence using a hollow prism filled one by one, with different transparent fluids.
7. To estimate the charge induced on each one of the two identical styrofoam (or pith) balls suspended in a vertical plane by making use of Coulomb's law.
8. To study the factor on which the self-inductance of a coil depends by observing the effect of this coil, when put in series with a resistor/(bulb) in a circuit fed up by an A.C. source of adjustable frequency.
9. To study the earth's magnetic field using a tangent galvanometer.

**Practical Examination for Visually Impaired Students of
Classes XI and XII Evaluation Scheme**

Time Allowed: Two hours

Max. Marks: 30

Identification/Familiarity with the apparatus	5 marks
Written test (based on given/prescribed practicals)	10 marks
Practical Record	5 marks
Viva	10 marks
Total	30 marks

General Guidelines

- The practical examination will be of two hour duration.
- A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes duration.
- The question paper given to the students should be legibly typed. It should contain a total of 15 practical skill based very short answer type questions. A student would be required to answer any 10 questions.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question papers should be related to the listed practicals. Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- Questions may be generated jointly by the external/internal examiners and used for assessment.
- The viva questions may include questions based on basic theory/principle/concept, apparatus/ materials/chemicals required, procedure, precautions, sources of error etc.

Class XII

A. Items for Identification/ familiarity with the apparatus for assessment in practicals (All experiments)

Meter scale, general shape of the voltmeter/ammeter, battery/power supply, connecting wires, standard resistances, connecting wires, voltmeter/ammeter, meter bridge, screw gauge, jockey Galvanometer, Resistance Box, standard Resistance, connecting wires, Potentiometer, jockey, Galvanometer, Lechlanche cell, Daniell cell [simple distinction between the two vis-à-vis their outer (glass and copper) containers], rheostat connecting wires, Galvanometer, resistance box, Plug-in and tapping keys, connecting wires battery/power supply, Diode, Resistor (Wire-wound or carbon ones with two wires connected to two ends), capacitors (one or two types), Inductors, Simple electric/electronic bell, battery/power supply, Plug-in and tapping keys, Convex lens, concave lens, convex mirror, concave mirror, Core/hollow wooden cylinder, insulated wire, ferromagnetic rod, Transformer core, insulated wire.

B. List of Practicals

1. To determine the resistance per cm of a given wire by plotting a graph between voltage and current.
2. To verify the laws of combination (series/parallel combination) of resistances by Ohm's law.
3. To find the resistance of a given wire / standard resistor using a meter bridge.
4. To compare the e.m.f of two given primary cells using a potentiometer.
5. To determine the resistance of a galvanometer by half deflection method.
6. To identify a resistor, capacitor, inductor and diode from a mixed collection of such items.
7. To observe the difference between
 - (i) a convex lens and a concave lens
 - (ii) a convex mirror and a concave mirror and to estimate the likely difference between the power of two given convex /concave lenses.
8. To design an inductor coil and to know the effect of
 - (i) change in the number of turns

(ii) Introduction of ferromagnetic material as its core material on the inductance of the coil.

9. To design a (i) step up (ii) step down transformer on a given core and know the relation between its input and output voltages.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Physics, Class XI, Part -I and II, Published by NCERT.
2. Physics, Class XII, Part -I and II, Published by NCERT.
3. Laboratory Manual of Physics for class XII Published by NCERT.
4. The list of other related books and manuals brought out by NCERT (consider multimedia also).

QUESTION PAPER DESIGN

Theory (Class: XI/XII)

Maximum Marks: 70

Duration: 3 hrs.

S	Typology of Questions	Total Marks	Approximate Percentage
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	27	38 %
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	22	32%
3	<p>Analysing : Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p>Evaluating : Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	21	30%
	Total Marks	70	100

Practical: 30 Marks

Note:

- Internal Choice:** *There is no overall choice in the paper. However, there will be at least 33% internal choice.*
- The above template is only a sample. Suitable internal variations may be made for generating similar templates keeping the overall weightage to different form of questions and typology of questions same.*

8. CHEMISTRY (Code No. 043)

Rationale

Higher Secondary is the most crucial stage of school education because at this juncture specialized discipline based, content -oriented courses are introduced. Students reach this stage after 10 years of general education and opt for Chemistry with a purpose of pursuing their career in basic sciences or professional courses like medicine, engineering, technology and study courses in applied areas of science and technology at tertiary level. Therefore, there is a need to provide learners with sufficient conceptual background of Chemistry, which will make them competent to meet the challenges of academic and professional courses after the senior secondary stage.

The new and updated curriculum is based on disciplinary approach with rigour and depth taking care that the syllabus is not heavy and at the same time it is comparable to the international level. The knowledge related to the subject of Chemistry has undergone tremendous changes during the past one decade. Many new areas like synthetic materials, bio -molecules, natural resources, industrial chemistry are coming in a big way and deserve to be an integral part of chemistry syllabus at senior secondary stage. At international level, new formulations and nomenclature of elements and compounds, symbols and units of physical quantities floated by scientific bodies like IUPAC and CGPM are of immense importance and need to be incorporated in the updated syllabus. The revised syllabus takes care of all these aspects. Greater emphasis has been laid on use of new nomenclature, symbols and formulations, teaching of fundamental concepts, application of concepts in chemistry to industry/ technology, logical sequencing of units, removal of obsolete content and repetition, etc.

Objectives

The curriculum of Chemistry at Senior Secondary Stage aims to:

- promote understanding of basic facts and concepts in chemistry while retaining the excitement of chemistry.
- make students capable of studying chemistry in academic and professional courses (such as medicine, engineering, technology) at tertiary level.
- expose the students to various emerging new areas of chemistry and apprise them with their relevance in future studies and their application in various spheres of chemical sciences and technology.
- equip students to face various challenges related to health, nutrition, environment, population, weather, industries and agriculture.
- develop problem solving skills in students.
- expose the students to different processes used in industries and their technological applications.
- apprise students with interface of chemistry with other disciplines of science such as physics, biology, geology, engineering etc.
- acquaint students with different aspects of chemistry used in daily life.
- develop an interest in students to study chemistry as a discipline.
- integrate life skills and values in the context of chemistry.

**COURSE STRUCTURE
CLASS-XI (THEORY) (2020-21)**

Total Periods (Theory 160 + Practical60)
Total Marks70

Time:3Hours

Unit No.	Title	No. of Periods	Marks
Unit I	Some Basic Concepts of Chemistry	12	11
Unit II	Structure of Atom	14	
Unit III	Classification of Elements and Periodicity in Properties	08	04
Unit IV	Chemical Bonding and Molecular Structure	14	21
Unit V	States of Matter: Gases and Liquids	12	
Unit VI	Chemical Thermodynamics	16	
Unit VII	Equilibrium	14	
Unit VIII	Redox Reactions	06	16
Unit IX	Hydrogen	08	
Unit X	s -Block Elements	10	
Unit XI	Some p -Block Elements	14	
Unit XII	Organic Chemistry: Some basic Principles and Techniques	14	18
Unit XIII	Hydrocarbons	12	
Unit XIV	Environmental Chemistry	06	
	Total	160	70

Unit I: Some Basic Concepts of Chemistry

12 Periods

General Introduction: Importance and scope of Chemistry.

Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules.

Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

Unit II: Structure of Atom

14 Periods

Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.

- Unit III: Classification of Elements and Periodicity in Properties** **08 Periods**
 Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.
- Unit IV: Chemical Bonding and Molecular Structure** **14 Periods**
 Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules, molecular orbital theory of homonuclear diatomic molecules(qualitative idea only), Hydrogen bond.
- Unit V: States of Matter: Gases and Liquids** **12 Periods**
 Three states of matter, intermolecular interactions, types of bonding, melting and boiling points, role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles law, Gay Lussac's law, Avogadro's law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation. Deviation from ideal behaviour, liquefaction of gases, critical temperature, kinetic energy and molecular speeds (elementary idea), Liquid State- vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations)
- Unit VI: Chemical Thermodynamics** **16 Periods**
 Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions.
 First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of ΔU and ΔH , Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction)
 Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium.
 Third law of thermodynamics (brief introduction).
- Unit VII: Equilibrium** **14 Periods**
 Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility product, common ion effect (with illustrative examples).
- Unit VIII: Redox Reactions** **06 Periods**
 Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.
- Unit IX: Hydrogen** **08 Periods**
 Position of hydrogen in periodic table, occurrence, isotopes, preparation, properties and uses of hydrogen, hydrides-ionic covalent and interstitial; physical and chemical properties of water, heavy water, hydrogen peroxide -preparation, reactions and structure and use; hydrogen as a fuel

- Unit X: s-Block Elements (Alkali and Alkaline Earth Metals) 10 Period**
 Group 1 and Group 2 Elements
 General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen, water, hydrogen and halogens, uses.
Preparation and Properties of Some Important Compounds:
 Sodium Carbonate, Sodium Chloride, Sodium Hydroxide and Sodium Hydrogen carbonate, Biological importance of Sodium and Potassium.
 Calcium Oxide and Calcium Carbonate and their industrial uses, biological importance of Magnesium and Calcium.
- Unit XI: Some p-Block Elements 14Periods**
General Introduction to p -Block Elements
Group 13 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group, Boron - physical and chemical properties, some important compounds: Borax, Boric acid, Boron Hydrides, Aluminium: Reactions with acids and alkalies, uses.
Group 14 Elements: General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first elements. Carbon-catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides. Important compounds of Silicon and a few uses: Silicon Tetrachloride, Silicones, Silicates and Zeolites, their uses.
- Unit XII: Organic Chemistry -Some Basic Principles and Techniques 14 Periods**
 General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation. Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.
- Unit XIII: Hydrocarbons 12 Periods**
Classification of Hydrocarbons
Aliphatic Hydrocarbons:
 Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.
 Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.
 Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.
Aromatic Hydrocarbons:
 Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity.

Unit XIV: Environmental Chemistry**06 Periods**

Environmental pollution - air, water and soil pollution, chemical reactions in atmosphere, smog, major atmospheric pollutants, acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming- pollution due to industrial wastes, green chemistry as an alternative tool for reducing pollution, strategies for control of environmental pollution.

PRACTICALS

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
Total	30

PRACTICAL SYLLABUS**Total Periods: 60**

Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.

A. Basic Laboratory Techniques

1. Cutting glass tube and glass rod
2. Bending a glass tube
3. Drawing out a glass jet
4. Boring a cork

B. Characterization and Purification of Chemical Substances

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.
3. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid.

C. Experiments based on pH

- a) Any one of the following experiments:
 - Determination of pH of some solutions obtained from fruit juices, solution of known and varied concentrations of acids, bases and salts using pH paper or universal indicator.
 - Comparing the pH of solutions of strong and weak acids of same concentration.
 - Study the pH change in the titration of a strong base using universal indicator.
- b) Study the pH change by common-ion in case of weak acids and weak bases.

D. Chemical Equilibrium

One of the following experiments:

- a) Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either of the ions.

- b) Study the shift in equilibrium between $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

E. Quantitative Estimation

- i. Using a mechanical balance/electronic balance.
- ii. Preparation of standard solution of Oxalic acid.
- iii. Determination of strength of a given solution of Sodium hydroxide by titrating it against standard solution of Oxalic acid.
- iv. Preparation of standard solution of Sodium carbonate.
- v. Determination of strength of a given solution of hydrochloric acid by titrating it against standard Sodium Carbonate solution.

F. Qualitative Analysis

a) Determination of one anion and one cation in a given salt

Cations- Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Ni^{2+} , Zn^{2+} , Co^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions – $(\text{CO}_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^- , Cl^- , Br^- , I^- , PO_4^{3-} , $\text{C}_2\text{O}_4^{2-}$, CH_3COO^-
(Note: Insoluble salts excluded)

b) Detection of -Nitrogen, Sulphur, Chlorine in organic compounds.

c) PROJECTS

Scientific investigations involving laboratory testing and collecting information from other sources.

A few suggested Projects

- Checking the bacterial contamination in drinking water by testing sulphide ion
- Study of the methods of purification of water
- Testing the hardness, presence of Iron, Fluoride, Chloride, etc., depending upon the regional variation in drinking water and study of causes of presence of these ions above permissible limit (if any).
- Investigation of the foaming capacity of different washing soaps and the effect of addition of Sodium carbonate on it
- Study the acidity of different samples of tea leaves.
- Determination of the rate of evaporation of different liquids
- Study the effect of acids and bases on the tensile strength of fibers.
- Study of acidity of fruit and vegetable juices.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

Practical Examination for Visually Impaired Students Class XI

Note: Same Evaluation scheme and general guidelines for visually impaired students as given for Class XII may be followed.

A. List of apparatus for identification for assessment in practicals (All experiments)

Beaker, tripod stand, wire gauze, glass rod, funnel, filter paper, Bunsen burner, test tube, test tube stand, dropper, test tube holder, ignition tube, china dish, tongs, standard flask, pipette, burette, conical flask, clamp stand, dropper, wash bottle

- Odour detection in qualitative analysis
- Procedure/Setup of the apparatus

B. List of Experiments

A. Characterization and Purification of Chemical Substances

1. Crystallization of an impure sample of any one of the following: copper sulphate, benzoic acid

B. Experiments based on pH

1. Determination of pH of some solutions obtained from fruit juices, solutions of known and varied concentrations of acids, bases and salts using pH paper
2. Comparing the pH of solutions of strong and weak acids of same concentration.

C. Chemical Equilibrium

1. Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either ions.
2. Study the shift in equilibrium between $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

D. Quantitative estimation

1. Preparation of standard solution of oxalic acid.
2. Determination of molarity of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.

E. Qualitative Analysis

1. Determination of one anion and one cation in a given salt
2. Cations - NH_4^+
Anions - $(\text{CO}_3)^{2-}$, S^{2-} , $(\text{SO}_3)^{2-}$, Cl^- , CH_3COO^-
(Note: insoluble salts excluded)
3. Detection of Nitrogen in the given organic compound.
4. Detection of Halogen in the given organic compound.

Note : The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Chemistry Part – I, Class-XI, Published by NCERT.
2. Chemistry Part – II, Class-XI, Published by NCERT.

**CLASS XII (2020-21)
(THEORY)**

Total Periods (Theory 160 + Practical 60)

Time : 3 Hours

70 Marks

Unit No.	Title	No. of Periods	Marks
Unit I	Solid State	10	23
Unit II	Solutions	10	
Unit III	Electrochemistry	12	
Unit IV	Chemical Kinetics	10	
Unit V	Surface Chemistry	08	
Unit VI	General Principles and Processes of Isolation of Elements	08	19
Unit VII	p -Block Elements	12	
Unit VIII	d -and f -Block Elements	12	
Unit IX	Coordination Compounds	12	28
Unit X	Haloalkanes and Haloarenes	10	
Unit XI	Alcohols, Phenols and Ethers	10	
Unit XII	Aldehydes, Ketones and Carboxylic Acids	10	
Unit XIII	Amines	10	
Unit XIV	Biomolecules	12	
Unit XV	Polymers	08	
Unit XVI	Chemistry in Everyday Life	06	
	Total	160	70

Unit I: Solid State

10 Periods

Classification of solids based on different binding forces: molecular, ionic, covalent and metallic solids, amorphous and crystalline solids (elementary idea). Unit cell in two dimensional and three dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties.

Band theory of metals, conductors, semiconductors and insulators and n and p type semiconductors.

Unit II: Solutions

10 Periods

Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, Raoult's law, colligative properties - relative lowering of vapour pressure, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using colligative properties, abnormal molecular mass, Van't Hoff factor.

Unit III: Electrochemistry

12 Periods

Redox reactions, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, conductance in electrolytic solutions, specific and molar conductivity, variations of conductivity with concentration, Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, fuel cells, corrosion.

Unit IV: Chemical Kinetics**10 Periods**

Rate of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment), activation energy, Arrhenius equation.

Unit V: Surface Chemistry**08 Periods**

Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, catalysis: homogenous and heterogenous, activity and selectivity of solid catalysts; enzyme catalysis, colloidal state: distinction between true solutions, colloids and suspension; lyophilic, lyophobic, multi-molecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation, emulsion - types of emulsions.

Unit VI: General Principles and Processes of Isolation of Elements**08 Periods**

Principles and methods of extraction - concentration, oxidation, reduction - electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.

Unit VII: p-Block Elements**12 Periods**

Group -15 Elements: General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; Nitrogen preparation properties and uses; compounds of Nitrogen: preparation and properties of Ammonia and Nitric Acid, Oxides of Nitrogen (Structure only); Phosphorus - allotropic forms, compounds of Phosphorus: Preparation and properties of Phosphine, Halides and Oxoacids (elementary idea only).

Group 16 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties, dioxygen: preparation, properties and uses, classification of Oxides, Ozone, Sulphur -allotropic forms; compounds of Sulphur: preparation properties and uses of Sulphur-dioxide, Sulphuric Acid: industrial process of manufacture, properties and uses; Oxoacids of Sulphur (Structures only).

Group 17 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of Chlorine and Hydrochloric acid, interhalogen compounds, Oxoacids of halogens (structures only).

Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.

Unit VIII: d and f Block Elements**12 Periods**

General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the first row transition metals – metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$.

Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences.

Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids.

Unit IX: Coordination Compounds**12 Periods**

Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT; structure and stereoisomerism, importance of coordination compounds (in qualitative analysis, extraction of metals and biological system).

Unit X: Haloalkanes and Haloarenes.**10 Periods**

Haloalkanes: Nomenclature, nature of C–X bond, physical and chemical properties, optical rotation mechanism of substitution reactions.

Haloarenes: Nature of C–X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only).

Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.

Unit XI: Alcohols, Phenols and Ethers**10 Periods**

Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol.

Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols.

Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Unit XII: Aldehydes, Ketones and Carboxylic Acids**10 Periods**

Aldehydes and Ketones: Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses.

Carboxylic Acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

Unit XIII: Amines**10 Periods**

Amines: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines.

Diazonium salts: Preparation, chemical reactions and importance in synthetic organic chemistry.

Unit XIV: Biomolecules**12 Periods**

Carbohydrates - Classification (aldoses and ketoses), monosaccharides (glucose and fructose), D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates.

Proteins -Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones - Elementary idea excluding structure.

Vitamins - Classification and functions.

Nucleic Acids: DNA and RNA.

Unit XV: Polymers

08 Period

Classification - natural and synthetic, methods of polymerization (addition and condensation), copolymerization, some important polymers: natural and synthetic like polythene, nylon polyesters, bakelite, rubber. Biodegradable and non-biodegradable polymers.

Unit XVI: Chemistry in Everyday life

06 Periods

Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.

Chemicals in food - preservatives, artificial sweetening agents, elementary idea of antioxidants.

Cleansing agents- soaps and detergents, cleansing action.

PRACTICALS

Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
Total	30

PRACTICAL SYLLABUS

60Periods

Micro-chemical methods are available for several of the practical experiments. Wherever possible, such techniques should be used.

A. Surface Chemistry

(a) Preparation of one lyophilic and one lyophobic sol

Lyophilic sol - starch, egg albumin and gum

Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.

(b) Dialysis of sol-prepared in (a) above.

(c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

B. Chemical Kinetics

(a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.

(b) Study of reaction rates of any one of the following:

- (i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.
- (ii) Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na_2SO_3) using starch solution as indicator (clock reaction).

C. Thermochemistry

Any one of the following experiments

- i) Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.
- ii) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
- iii) Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

D. Electrochemistry

Variation of cell potential in $\text{Zn}/\text{Zn}^{2+} \parallel \text{Cu}^{2+}/\text{Cu}$ with change in concentration of electrolytes (CuSO_4 or ZnSO_4) at room temperature.

E. Chromatography

- i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values.
- ii) Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in R_f values to be provided).

F. Preparation of Inorganic Compounds

Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
Preparation of Potassium Ferric Oxalate.

G. Preparation of Organic Compounds

Preparation of any one of the following compounds

- i) Acetanilide
- ii) Di-benzalAcetone
- iii) p-Nitroacetanilide
- iv) Aniline yellow or 2 - Naphthol Anilinedye.

H. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

J. Determination of concentration/ molarity of KMnO_4 solution by titrating it against a standard solution of:

- i) Oxalic acid,
 - ii) Ferrous Ammonium Sulphate
- (Students will be required to prepare standard solutions by weighing themselves).

K. Qualitative analysis

Determination of one cation and one anion in a given salt.

Cation : Pb^{2+} , Cu^{2+} , As^{3+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Zn^{2+} , Cu^{2+} , Ni^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , NH_4^+

Anions: $(\text{CO}_3)^{2-}$, S^{2-} , $(\text{SO}_3)^{2-}$, $(\text{NO}_2)^-$, $(\text{SO}_4)^{2-}$, Cl^- , Br^- , I^- , PO_4^{3-} , $(\text{C}_2\text{O}_4)^{2-}$, CH_3COO^- , NO_3^-
(Note: Insoluble salts excluded)

PROJECT

Scientific investigations involving laboratory testing and collecting information from other sources

A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study of quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric powder, chilli powder and pepper.

Note: Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

Practical Examination for Visually Impaired Students of Classes XI and XII Evaluation Scheme

Time Allowed: Two hours

Max. Marks:30

Identification/Familiarity with the apparatus	5 marks
Written test (based on given/prescribed practicals)	10 marks
Practical Record	5 marks
Viva	10 marks
Total	30 marks

General Guidelines

- The practical examination will be of two hour duration.
- A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes duration.

- The question paper given to the students should be legibly typed. It should contain a total of 15 practical skill based very short answer type questions. A student would be required to answer any 10 questions.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question papers should be related to the listed practicals. Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- Questions may be generated jointly by the external/internal examiners and used for assessment.
- The viva questions may include questions based on basic theory/principle/concept, apparatus/materials/ chemicals required, procedure, precautions, sources of error etc.

A. Items for Identification/Familiarity of the apparatus for assessment in practical (All experiments)

Beaker, glass rod, tripod stand, wire gauze, Bunsen burner, Whatman filter paper, gas jar, capillary tube, pestle and mortar, test tubes, tongs, test tube holder, test tube stand, burette, pipette, conical flask, standard flask, clamp stand, funnel, filter paper

Hands-on Assessment

- Identification/familiarity with the apparatus
- Odour detection in qualitative analysis

B. List of Practicals

The experiments have been divided into two sections: Section A and Section B. The experiments mentioned in Section B are mandatory.

SECTION- A

A Surface Chemistry

- (1) Preparation of one lyophilic and one lyophobic sol
Lyophilic sol - starch, egg albumin and gum
- (2) Preparation of one lyophobic sol
Lyophobic sol – Ferric hydroxide

B Chromatography

- (1) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of R_f values (distance values may be provided).

C Tests for the functional groups present in organic compounds:

- (1) Alcoholic and Carboxylic groups.
- (2) Aldehydic and Ketonic

D Characteristic tests of carbohydrates and proteins in the given foodstuffs.

E Preparation of Inorganic Compounds- Potash Alum

SECTION-B (Mandatory)

F Quantitative analysis

- (1) (a) Preparation of the standard solution of Oxalic acid of a given volume
(b) Determination of molarity of KMnO_4 solution by titrating it against a standard solution of Oxalic acid.
- (2) The above exercise [F 1 (a) and (b)] to be conducted using Ferrous ammonium sulphate (Mohr's salt)

G Qualitative analysis:

- (1) Determination of one cation and one anion in a given salt. Cation – NH_4^+
Anions – CO_3^{2-} , S^{2-} , SO_3^{2-} , Cl^- , CH_3COO^-
(Note: Insoluble salts excluded)

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Chemistry Part -I, Class-XII, Published by NCERT.
2. Chemistry Part -II, Class-XII, Published by NCERT.

CHEMISTRY (Code No. 043) QUESTION PAPER DESIGN CLASSES –XI and XII (2020-21)

S	Domains	Total Marks	%
1	Remembering and Understanding: Exhibit memory of previously learned material by recalling facts, terms, basic concepts and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	28	40
2	Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	21	30
3	Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	21	30

1. No chapter wise weightage. Care to be taken to cover all the chapters.
2. Suitable *internal variations may be made for generating various templates.*

Choice(s):

- There will be no overall choice in the question paper.
- However, 33% internal choices will be given in all the sections.

MATHEMATICS (XI-XII)

(Code No. 041)

Session – 2020-21

The Syllabus in the subject of Mathematics has undergone changes from time to time in accordance with growth of the subject and emerging needs of the society. Senior Secondary stage is a launching stage from where the students go either for higher academic education in Mathematics or for professional courses like Engineering, Physical and Biological science, Commerce or Computer Applications. The present revised syllabus has been designed in accordance with National Curriculum Framework 2005 and as per guidelines given in Focus Group on Teaching of Mathematics 2005 which is to meet the emerging needs of all categories of students. Motivating the topics from real life situations and other subject areas, greater emphasis has been laid on application of various concepts.

Objectives

The broad objectives of teaching Mathematics at senior school stage intend to help the students:

- to acquire knowledge and critical understanding, particularly by way of motivation and visualization, of basic concepts, terms, principles, symbols and mastery of underlying processes and skills.
- to feel the flow of reasons while proving a result or solving a problem.
- to apply the knowledge and skills acquired to solve problems and wherever possible, by more than one method.
- to develop positive attitude to think, analyze and articulate logically.
- to develop interest in the subject by participating in related competitions.
- to acquaint students with different aspects of Mathematics used in daily life.
- to develop an interest in students to study Mathematics as a discipline.
- to develop awareness of the need for national integration, protection of environment, observance of small family norms, removal of social barriers, elimination of gender biases.
- to develop reverence and respect towards great Mathematicians for their contributions to the field of Mathematics.

COURSE STRUCTURE
CLASS XI (2020-21)

One Paper

Total Period–240 [35 Minutes Each]

Three Hours

Max Marks: 80

No.	Units	No. of Periods	Marks
I.	Sets and Functions	60	23
II.	Algebra	70	30
III.	Coordinate Geometry	40	10
IV.	Calculus	30	05
V.	Mathematical Reasoning	10	02
VI.	Statistics and Probability	30	10
	Total	240	80
	Internal Assessment		20

*No chapter/unit-wise weightage. Care to be taken to cover all the chapters.

Unit-I: Sets and Functions

1. Sets

(20) Periods

Sets and their representations. Empty set. Finite and Infinite sets. Equal sets. Subsets. Subsets of a set of real numbers especially intervals (with notations). Power set. Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement.

2. Relations & Functions

(20) Periods

Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (upto $R \times R \times R$). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions.

3. Trigonometric Functions

(20) Periods

Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x . Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$ and their simple applications. Deducing identities like the following:

$$\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$$

$$\sin \alpha \pm \sin \beta = 2 \sin \frac{1}{2}(\alpha \pm \beta) \cos \frac{1}{2}(\alpha \mp \beta)$$

$$\cos \alpha + \cos \beta = 2 \cos \frac{1}{2}(\alpha + \beta) \cos \frac{1}{2}(\alpha - \beta)$$

$$\cos \alpha - \cos \beta = -2 \sin \frac{1}{2}(\alpha + \beta) \sin \frac{1}{2}(\alpha - \beta)$$

Identities related to $\sin 2x$, $\cos 2x$, $\tan 2x$, $\sin 3x$, $\cos 3x$ and $\tan 3x$. General solution of trigonometric equations of the type $\sin y = \sin a$, $\cos y = \cos a$ and $\tan y = \tan a$.

Unit-II: Algebra

1. Principle of Mathematical Induction

(10) Periods

Process of the proof by induction, motivating the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications.

2. Complex Numbers and Quadratic Equations

(15) Periods

Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane and polar representation of complex numbers. Statement of Fundamental Theorem of Algebra, solution of quadratic equations (with real coefficients) in the complex number system. Square root of a complex number.

3. Linear Inequalities

(15) Periods

Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Graphical method of finding a solution of system of linear inequalities in two variables.

4. Permutations and Combinations

(10) Periods

Fundamental principle of counting. Factorial n . ($n!$) Permutations and combinations, derivation of Formulae for n_{p_r} and n_{c_r} and their connections, simple applications.

5. Binomial Theorem

(10) Periods

Historical perspective, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, General and middle term in binomial expansion, simple applications.

6. Sequence and Series

(10) Periods

Sequence and Series. Arithmetic Progression (A. P.). Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of n terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M. Formulae for the following special sums.

$$\sum_{k=1}^n k, \sum_{k=1}^n k^2 \text{ and } \sum_{k=1}^n k^3$$

Unit-III: Coordinate Geometry

1. Straight Lines

(10) Periods

Brief recall of two dimensional geometry from earlier classes. Shifting of origin. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form and normal form. General equation of a line. Equation of family of lines passing through the point of intersection of two lines. Distance of a point from a line.

2. Conic Sections

(20) Periods

Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

3. Introduction to Three-dimensional Geometry

(10) Periods

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.

Unit-IV: Calculus

1. Limits and Derivatives

(30) Periods

Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions. Definition of derivative relate it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Unit-V: Mathematical Reasoning

1. Mathematical Reasoning

(10) Periods

Mathematically acceptable statements. Connecting words/ phrases - consolidating the understanding of "if and only if (necessary and sufficient) condition", "implies", "and/or", "implied by", "and", "or", "there exists" and their use through variety of examples related to real life and Mathematics. Validating the statements involving the connecting words, difference among contradiction, converse and contrapositive.

Unit-VI: Statistics and Probability

1. Statistics

(15) Periods

Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data. Analysis of frequency distributions with equal means but different variances.

2. Probability

(15) Periods

Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events.

MATHEMATICS
QUESTION PAPER DESIGN
CLASS – XI (2020-21)

Time : 3 Hours

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weight age
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	20	25
3	<p>Analysing : Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p>Evaluating: Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	16	20
	Total	80	100

- No chapter wise weightage. Care to be taken to cover all the chapters*
- Suitable internal variations may be made for generating various templates keeping the overall weightage to different form of questions and typology of questions same.*

Choice(s):

There will be no overall choice in the question paper.

However, 33% internal choices will be given in all the sections

INTERNAL ASSESSMENT	20 MARKS
Periodic Tests (Best 2 out of 3 tests conducted)	10 Marks
Mathematics Activities	10 Marks

Note: Please refer the guidelines given under XII Mathematics Syllabus:

CLASS-XII
(2020-21)

One Paper

Max Marks:80

No.	Units	No. of Periods	Marks
I.	Relations and Functions	30	08
II.	Algebra	50	10
III.	Calculus	80	35
IV.	Vectors and Three - Dimensional Geometry	30	14
V.	Linear Programming	20	05
VI.	Probability	30	08
	Total	240	80
	Internal Assessment		20

Unit-I: Relations and Functions

1. Relations and Functions

15 Periods

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function.

2. Inverse Trigonometric Functions

15 Periods

Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions.

Unit-II: Algebra

1. Matrices

25 Periods

Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).

2. Determinants

25 Periods

Determinant of a square matrix (up to 3 x 3 matrices), properties of determinants, minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.

Unit-III: Calculus

1. Continuity and Differentiability

20 Periods

Continuity and differentiability, derivative of composite functions, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. Concept of exponential and logarithmic functions.

Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives. Rolle's and Lagrange's Mean Value Theorems (without proof) and their geometric interpretation.

2. Applications of Derivatives

10 Periods

Applications of derivatives: rate of change of bodies, increasing/decreasing functions, tangents and normals, use of derivatives in approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations).

3. Integrals

20 Periods

Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them.

$$\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^2 + bx + c}}$$
$$\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^2 + bx + c}} dx, \int \sqrt{a^2 \pm x^2} dx, \int \sqrt{x^2 - a^2} dx$$
$$\int \sqrt{ax^2 + bx + c} dx, \int (px + q)\sqrt{ax^2 + bx + c} dx$$

Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals.

4. Applications of the Integrals

15 Periods

Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only), Area between any of the two above said curves (the region should be clearly identifiable).

5. Differential Equations

15 Periods

Definition, order and degree, general and particular solutions of a differential equation.formation of differential equation whose general solution is given.Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type:

$$\frac{dy}{dx} + py = q, \text{ where } p \text{ and } q \text{ are functions of } x \text{ or constants.}$$
$$\frac{dx}{dy} + px = q, \text{ where } p \text{ and } q \text{ are functions of } y \text{ or constants.}$$

Unit-IV: Vectors and Three-Dimensional Geometry

1. Vectors

15 Periods

Vectors and scalars, magnitude and direction of a vector.Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors, scalar triple product of vectors.

2. Three - dimensional Geometry

15 Periods

Direction cosines and direction ratios of a line joining two points.Cartesian equation and vector equation of a line, coplanar and skew lines, shortest distance between two lines.Cartesian and vector equation of a plane.Angle between (i) two lines, (ii) two planes, (iii) a line and a plane.Distance of a point from a plane.

Unit-V: Linear Programming

1. Linear Programming

20 Periods

Introduction, related terminology such as constraints, objective function, optimization, different types of linear programming (L.P.) problems, mathematical formulation of L.P. problems, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

Unit-VI: Probability

1. Probability

30 Periods

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean and variance of random variable. Binomial probability distribution.

Prescribed Books:

- 1) Mathematics Textbook for Class XI, NCERT Publications
- 2) Mathematics Part I - Textbook for Class XII, NCERT Publication
- 3) Mathematics Part II - Textbook for Class XII, NCERT Publication
- 4) Mathematics Exemplar Problem for Class XI, Published by NCERT
- 5) Mathematics Exemplar Problem for Class XII, Published by NCERT
- 6) Mathematics Lab Manual class XI, published by NCERT
- 7) Mathematics Lab Manual class XII, published by NCERT

MATHEMATICS (Code No. - 041)
QUESTION PAPER DESIGN CLASS - XII
(2020 - 21)

Time: 3 hours

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weightage
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	20	25
3	<p>Analysing : Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p> <p>Evaluating: Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>	16	20
Total		80	100

- No chapter wise weightage. Care to be taken to cover all the chapters*
- Suitable internal variations may be made for generating various templates keeping the overall weightage to different form of questions and typology of questions same.*

Choice(s):

There will be no overall choice in the question paper.

However, 33% internal choices will be given in all the sections

INTERNAL ASSESSMENT	20 MARKS
Periodic Tests (Best 2 out of 3 tests conducted)	10 Marks
Mathematics Activities 10 Marks	

Note: For activities NCERT Lab Manual may be referred

Conduct of Periodic Tests:

Periodic Test is a Pen and Paper assessment which is to be conducted by the respective subject teacher. The format of periodic test must have questions items with a balance mix, such as, very short answer (VSA), short answer (SA) and long answer (LA) to effectively assess the knowledge, understanding, application, skills, analysis, evaluation and synthesis. Depending on the nature of subject, the subject teacher will have the liberty of incorporating any other types of questions too. The modalities of the PT are as follows:

- a) **Mode:** The periodic test is to be taken in the form of pen-papertest.
- b) **Schedule:** In the entire Academic Year, three Periodic Tests in each subject may be conducted as follows:

Test	Pre Mid-term (PT-I)	Mid-Term (PT-II)	Post Mid-Term (PT-III)
Tentative Month	July-August	November	December-January

This is only a suggestive schedule and schools may conduct periodic tests as per their convenience. The winter bound schools would develop their own schedule with similar time gaps between two consecutive tests.

- c) **Average of Marks:** Once schools complete the conduct of all the three periodic tests, they will convert the weightage of each of the three tests into ten marks each for identifying best two tests. The best two will be taken into consideration and the average of the two shall be taken as the final marks for PT.
- d) The school will ensure simple documentation to keep a record of performance as suggested in detail circular no.Acad-05/2017.
- e) **Sharing of Feedback/Performance:** The students' achievement in each test must be shared with the students and their parents to give them an overview of the level of learning that has taken place during different periods. Feedback will help parents formulate interventions (conducive ambience, support materials, motivation and morale-boosting) to further enhance learning. A teacher, while sharing the feedback with student or parent, should be empathetic, non-judgmental and motivating. It is recommended that the teacher share best examples/performances of IA with the class to motivate all learners.

Assessment of Activity Work:

Through out the year any 10 activities shall be performed by the student from the activities given in the NCERT Laboratory Manual for the respective class (XI or XII) which is available on the link : <http://www.ncert.nic.in/exemplar/labmanuals.html> a record of the same may be kept by the student. Any year end test on the activity may be conducted

The weightage are as under:

- The activities performed by the student through out the year and record keeping : 5 marks
- Assessment of the activity performed during the year end test: 3 marks
- Viva-voce : 2 marks

Syllabus
Course Title: Applied Mathematics
(Code-241)
Grade XI-XII

Applied Mathematics

Grade XI-XII

Secondary School Education prepares students to explore future career options after graduating from the school. Mathematics is an important subject helps students to choose various fields of their choices. Mathematics is widely used in higher studies in the field of Economics, Commerce, Social Sciences and many other. It has been observed that the syllabus of Mathematics meant for Science subjects may not be appropriate for the students pursuing Commerce or Social Science-based subjects in university education. By keeping this in mind, one more elective course in Mathematics syllabus is developed for Sr. Secondary classes with an aim to provide students relevant experience in Mathematics which can be used in the fields other than Physical Sciences.

This course is designed to develop substantial mathematical skills and methods needing in other subject areas. Topics covered in two years aim to enable students to use mathematical knowledge in the field of business, economic and social sciences. It aims to promote appreciation of mathematical power and simplicity for its countless applications in diverse fields. The course continues to develop mathematical language and symbolism to communicate and relate everyday experiences mathematically. In addition, it reinforces the logical reasoning skills of formulating and validating mathematical arguments, framing examples, finding counter examples. It encourages students to engage in mathematical investigations and to build connections within mathematical topics and with other disciplines. The course prepares students to use algebraic methods as a means of representation and as a problem-solving tool. It also enables students to interpret two dimensional geometrical figures using algebra and to further deduce properties of geometrical figures in coordinate system. The course content will help students to develop sound understanding of descriptive and inferential statistics which they can use to describe and analysis a give set of data and to further make meaningful inferences out of it. Data based case studies from the field of business, economics, psychology, education, biology and census data will be used to appreciate the power of data in contemporary society.

It is expected that the subject is taught connecting concepts to the application in various fields. The objectives of the course areas are as follows:

Objectives:

- a) To develop an understanding of basic mathematical and statistical tools and their applications in the field of commerce (business/finance/economics) and social sciences;
- b) To model real world experiences/problems into mathematical expressions using numerical/algebraic/graphical representation;
- c) To make sense from the data by organizing, representing, interpreting, analysing, and to make meaningful inferences from the real-world situations;
- d) To develop logical reasoning skills and apply the same in simple problem solving;

- e) To reinforce mathematical communication by formulating conjectures, validating logical arguments and testing hypothesis;
- f) To make connections between Mathematics and other disciplines.

Grade XI

One Paper
Each)

Total Period–240 (35 Minutes

Three Hours

Max Marks: 80

No.	Units	No. of Periods	Marks
I.	Numbers, Quantification and Numerical Applications	20	09
II.	Algebra	35	10
III.	Mathematical Reasoning	15	06
IV.	Calculus	30	10
V.	Probability	30	10
VI.	Descriptive Statistics	35	12
VII	Basics of Financial Mathematics	55	18
VIII	Coordinate Geometry	20	05
	Total	240	80
	Internal Assessment		20

Unit I Numbers, Quantification and Numerical Applications

- Prime Numbers, Encryptions using Prime Numbers
- Binary Numbers
- Complex Numbers (Preliminary idea only)
- Indices, Logarithm and Antilogarithm
- Laws and properties of logarithms
- Simple applications of logarithm and antilogarithm
- Numerical problems on averages, calendar, clock, time, work and distance, mensuration, seating arrangement

Unit II Algebra

- Sets
- Types of sets
- Venn diagram
- De Morgan's laws
- Problem solving using Venn diagram

- Relations and types of relations
- Introduction of Sequences, Series
- Arithmetic and Geometric progression
- Relationship between AM and GM
- Basic concepts of Permutations and Combinations
- Permutations, Circular Permutations, Permutations with restrictions
- Combinations with standard results

Unit III Mathematical and Logical Reasoning

- Mathematically acceptable statements
- Connecting words/ phrases in Mathematical statement consolidating the understanding of "if and only if (necessary and sufficient) condition", "implies", "and/or", "implied by", "and", "or", "there exists" and their use through variety of examples related to real life and Mathematics
- Problems based on logical reasoning (coding-decoding, odd man out, blood relation, syllogism etc)

Unit IV Calculus

- Introducing functions
- Domain and Range of a function
- Types of functions (Polynomial function; Rational function; Composite function; Logarithm function; Exponential function; Modulus function; Greatest Integer function, Signum function)
- Graphical representation of functions
- Concept of limits and continuity of a function
- Instantaneous rates of change
- Differentiation as a process of finding derivative
- Derivatives of algebraic functions using Chain rule
- Tangent line and equations of tangents

Unit V Probability

- Random experiment, sample space, events, mutually exclusive events
- Independent and Dependent Events
- Law of Total Probability
- Bayes' Theorem

Unit VI Descriptive Statistics

- Types of data (raw data, univariate data, bivariate and multi-variate data)
- Data on various scales (nominal, ordinal, interval and ratio scale)
- Data representation and visualization
- Data interpretation (central tendency, dispersion, deviation, variance, skewness and kurtosis)
- Percentile rank and quartile rank
- Correlation (Pearson and Spearman method of correlation)
- Applications of descriptive statistics using real time data

Unit VII Basics of Financial Mathematics

- Interest and interest rate
- Accumulation with simple and compound interest
- Simple and compound interest rates with equivalency
- Effective rate of interest
- Present value, net present value and future value
- Annuities, calculating value of regular annuity
- Simple applications of regular annuities (up to 3 period)
- Tax, calculation of tax and simple applications of tax calculation in Goods and service tax, Income Tax
- Bills, tariff rates, fixed charge, surcharge, service charge
- Calculation and interpretation of electricity bill, water supply bill and other supply bills

(Comparing interest rates on various types of savings; calculating income tax; electricity bills, water bill; service surcharge using realistic data)

Unit VIII Coordinate Geometry

- Straight Line
- Circles
- Parabola
(only standard forms and graphical representation on two-dimensional plane)

Practical: Use of spread sheet

Calculating average, interest (simple and compound), creating pictographs, drawing pie chart, bar graphs, calculating central tendency; visualizing graphs (straight line, circles and parabola using real time data)

Suggested practical using spread sheet

1. Plot the graph of functions on excel; study the nature of function at various points, drawing lines of tangents;
2. Create budget of income and spending;
3. Create compare sheet of price, features to buy a product;
4. Prepare best option plan to buy a product by comparing cost, shipping charges, tax and other hidden cost;
5. Smart purchasing during sale season;
6. Prepare a report card using scores of last four exams and compare the performance;
7. Collect the data on weather, price, inflation, and pollution. Sketch different types of graphs.

Grade XII

One Paper
Each)

Total Period–240 (35 Minutes

Three Hours

Max Marks: 80

No.	Units	No. of Periods	Marks
I.	Numbers, Quantification and Numerical Applications	20	06
II.	Algebra	20	10
III.	Inferential Statistics	10	06
IV.	Index Numbers and Time-based data	30	10
V.	Calculus	60	15
VI.	Financial Mathematics	40	15
VII	Linear Programming	25	08
VIII	Probability	35	10
	Total	240	80
	Internal Assessment		20

Unit I Numbers, Quantification and Numerical Applications

- Modulo Arithmetic
- Congruence modulo
- Simple arithmetic functions
- Allegation or Mixture
- Numerical problems on boats and streams; partnership; pipes and cistern; races and games, scheduling
- Numerical inequalities

Unit II Algebra

- Solution of simultaneous linear equations using elimination method (up to 3 variables)
- Matrices and types of matrices
- Algebra of matrices
- Determinants
- Inverse of a matrix
- Cramer's rule and its application

- Simple applications of matrices and determinants including Leontiff input output model for two variables

Unit III Calculus

- Application of derivatives
- Increasing/Decreasing functions
- Maxima and Minima
- Marginal cost and marginal revenue using derivatives
- Integration
- Indefinite integral as family of curves
- Definite integral as area under the curve
- Integration of simple algebraic functions (primitive, by substitution, by parts)
- Application of Integration (consumer surplus-producer surplus)
- Differential equation (definition, order, degree)
- Formulating and solving linear differential equation
- Application of differential equation (Growth and Decay Model)

Unit IV Probability

- Probability Distribution
- Mathematical Expectation
- Variance
- Binomial Distribution
- Poisson distribution
- Normal distribution
- Basic applications and inferences

Unit V Inferential Statistics

- Population and sample
- Parameter, statistic and statistical inferences
- t-Test (one sample t-test and two independent groups t-test)

Unit VI Index numbers and Time-based data

- Index numbers, uses of index numbers
- Construction of index numbers (simple and weighted)
- Tests of adequacy of index numbers (unit test and time reversal test)
- Time series, Time series analysis for univariant data sets
- Trend analysis by moving average method
- Trend analysis by fitting of linear trend line using least squares

Unit VII Financial Mathematics

- Perpetuity, Sinking funds
- Valuation of Bonds (Present value approach and Relative price approach)
- Calculation of EMI

- Calculation of returns, nominal rate of return, effective rate of interest
- Compound annual growth rate
- Stock, shares and debentures
- Linear method of depreciation

Unit VIII Linear Programming

- Introduction and related terminologies (constraints, objective function, optimization)
- Mathematical formulation of linear programming problems
- Different types of linear programming problems (Transportation and assignment problem)
- Graphical method of solution for problems in two variables
- Feasible and infeasible regions (bounded and unbounded)
- Feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints)

Practical: Use of spread sheet

Graphs of exponential function, demand and supply functions on Excel and study the nature of function at various points, maxima/minima

Matrix operations using Excel

Suggested practical using the spreadsheet

1. Plot the graphs of functions on excel and study the graph to find out point of maxima/minima;
2. Probability and dice roll simulation;
3. Matrix multiplication and inverse of a matrix;
4. Stock Market data sheet on excel;
5. Collect the data on weather, price, inflation, and pollution; analyze the data and make meaningful inferences;
6. Collect data from newspapers on traffic, sports activities and on market trends and use excel to study future trends.

List of Suggested projects (class XI /XII)

Use of prime numbers in coding and decoding of messages;

Prime numbers and divisibility rules;

Logarithms for financial calculations such as interest, present value, future value, profit/loss etc with large values);

Cardinality of a set and orders of infinity;

Comparing sets of Natural numbers, rational numbers, real numbers and others;

Use of Venn Diagram in solving practical problems;

Fibonacci Sequence: Its' history and presence in nature;

Testing the validity of mathematical statements and framing truth tables;

Investigating graphs of functions for their properties;

Visit the census site of India

[http://www.censusindia.gov.in/Census_Data_2001/Census_Data_Online/Language/State ment3.htm](http://www.censusindia.gov.in/Census_Data_2001/Census_Data_Online/Language/State%20ment3.htm) Depict the information given there in a pictorial form;

Prepare a questionnaire to collect information about money spent by your friends in a month on activities like traveling, movies, recharging of the mobiles, etc. and draw interesting conclusions;

Check out the local newspaper and cut out examples of information depicted by graphs. Draw your own conclusions from the graph and compare it with the analysis given in the report;

Analysis of population migration data – positive and negative influence on urbanization;

Each day newspaper tells us about the maximum temperature, minimum temperature, humidity. Collect the data for a period of 30 days and represent it graphically. Compare it with the data available for the same time period for the previous year;

Analysis career graph of a cricketer (batting average for a batsman and bowling average for a bowler). Conclude the best year of his career. It may be extended for other players also – tennis, badminton, athlete;

Vehicle registration data – correlating with pollution and number of accidents;

Visit a village near Delhi and collect data of various crops over past few years from the farmers. Also collect data about temperature variation and rain over the period for a particular crop. Try to find the effect of temperature and rain variations on various crops;

Choose any week of your ongoing semester. Collect data for the past 10 – 15 years for the amount of rainfall received in Delhi during that week. Predict amount of rainfall for the current year;

Weather prediction (prediction of monsoon from past data);

Visit Kirana shops near your home and collect the data of sale of certain commodities over a month. Try to figure out the stock of a particular commodity which should be in the store in order to maximize the profit;

Stock price movement ;

Risk assessments by insurance firms from data;

Predicting stock market crash;

Predicting outcome of election – exit polls;

Predicting mortality of infants.

Assessment Plan

1. Overall Assessment of the course is out of 100 marks.
2. Assessment plan consists of External Exam and Internal Assessment.
3. External Exam will be of 03 hours duration Paper/Pencil Test consisting of 80 marks.
4. Weightage of Internal Assessment is of 20 marks. Internal Assessment can be a combination of activities spread throughout semester/ academic year. Internal Assessment activities include, projects and excel based practical. Teachers can choose activities from the suggested list of practical or they can plan activities of similar nature. For data based practical, teachers are encouraged to use data from local sources to make it more relevant for students.
5. Weightage for each area of internal assessment may be as under:

Sr.No.	Area and weightage	Assessment Area	Marks allocated
1	Project work (10 marks)	Project work and record	5
		Year End Presentation/Viva of the Project	5
2	Practical work (10 marks)	Performance of practical and record	5
		Yearend test of any one practical	5
Total			20

BIOLOGY (Code No. 044)

2020-21

The present curriculum provides the students with updated concepts along with an extended exposure to contemporary areas of the subject. The curriculum also aims at emphasizing the underlying principles that are common to animals, plants and microorganisms as well as highlighting the relationship of Biology with other areas of knowledge. The format of the curriculum allows a simple, clear, sequential flow of concepts. It relates the study of biology to real life through the use of technology. It links the discoveries and innovations in biology to everyday life such as environment, industry, health and agriculture. The updated curriculum focuses on understanding and application of scientific principles, while ensuring that ample opportunities and scope for learning and appreciating basic concepts continue to be available within its framework. The curriculum is expected to:

- promote understanding of basic principles of Biology
- encourage learning of emerging knowledge and its relevance to individual and society
- promote rational/scientific attitude towards issues related to population, environment and development
- enhance awareness about environmental issues, problems and their appropriate solutions
- create awareness amongst the learners about diversity in the living organisms and developing respect for other living beings
- appreciate that the most complex biological phenomena are built on essentially simple processes

It is expected that the students would get an exposure to various branches of Biology in the curriculum in a more contextual and systematic manner as they study its various units.

BIOLOGY (Code No. 044)

COURSE STRUCTURE

CLASS XI (2020 -21) (THEORY)

Time:3 Hours

Max. Marks: 70

Unit	Title	No. of Periods	Marks
I	Diversity of Living Organisms	27	12
II	Structural Organization in Plants and Animals	27	12
III	Cell: Structure and Function	26	12
IV	Plant Physiology	40	17
V	Human Physiology	40	17
	Total	160	70

Unit-I Diversity of Living Organisms

Chapter-1: The Living World

What is living? Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature; tools for study of taxonomy- museums, zoological parks, herbaria, botanical gardens, keys for identification.

Chapter-2: Biological Classification

Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

Chapter-3: Plant Kingdom

Salient features and classification of plants into major groups - Algae, Bryophyta, Pteridophyta, Gymnospermae and Angiospermae (salient and distinguishing features and a few examples of each category); Angiosperms - classification up to class, characteristic features and examples.

Chapter-4: Animal Kingdom

Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and distinguishing features of a few examples of each category). (No live animals or specimen should be displayed.)

Unit-II Structural Organization in Animals and Plants

Chapter-5: Morphology of Flowering Plants

Morphology and modifications: Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of families: Fabaceae, Solanaceae and Liliaceae (to be dealt along with the relevant experiments of the Practical Syllabus).

Chapter-6: Anatomy of Flowering Plants

Anatomy and functions of different tissues and tissue systems in dicots and monocots. Secondary growth.

Chapter-7: Structural Organisation in Animals

Animal tissues; Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of an insect-cockroach (a brief account only).

Unit-III Cell: Structure and Function

Chapter-8: Cell-The Unit of Life

Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

Chapter-9: Biomolecules

Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Enzymes- types, properties, enzyme action.

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Unit-IV Plant Physiology

Chapter-11: Transport in Plants

Movement of water, gases and nutrients; cell to cell transport, diffusion, facilitated diffusion, active transport; plant-water relations, imbibition, water potential, osmosis, plasmolysis; long distance transport of water - Absorption, apoplast, symplast, transpiration pull, root pressure and guttation; transpiration, opening and closing of stomata; Uptake and translocation of mineral nutrients - Transport of food, phloem transport, mass flow hypothesis.

Chapter-12: Mineral Nutrition

Essential minerals, macro- and micronutrients and their role; deficiency symptoms; mineral toxicity; elementary idea of hydroponics as a method to study mineral nutrition; nitrogen metabolism, nitrogen cycle, biological nitrogen fixation.

Chapter-13: Photosynthesis in Higher Plants

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

Chapter-14: Respiration in Plants

Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

Chapter-15: Plant - Growth and Development

Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA; seed dormancy; vernalisation; photoperiodism.

Unit-V Human Physiology

Chapter-16: Digestion and Absorption

Alimentary canal and digestive glands, role of digestive enzymes and gastrointestinal hormones; Peristalsis, digestion, absorption and assimilation of proteins, carbohydrates and fats; calorific values of proteins, carbohydrates and fats; egestion; nutritional and digestive disorders - PEM, indigestion, constipation, vomiting, jaundice, diarrhoea.

Chapter-17: Breathing and Exchange of Gases

Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

Chapter-18: Body Fluids and Circulation

Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation; regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure.

Chapter-19: Excretory Products and their Elimination

Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

Chapter-20: Locomotion and Movement

Types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

Chapter-21: Neural Control and Coordination

Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse; reflex action; sensory perception; sense organs; elementary structure and functions of eye and ear

Chapter-22: Chemical Coordination and Integration

Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goiter, diabetes, Addison's disease.

Note: Diseases related to all the human physiological systems to be taught in brief.

PRACTICALS

Time Allowed : Three hours

Max. Marks: 30

Evaluation Scheme	Marks	
One Major Experiment Part A (Experiment No- 1,3,7,8)	5	
One Minor Experiment Part A (Experiment No- 6,9,10,11,12,13)	4	
Slide Preparation Part A (Experiment No- 2,4,5)	5	
Spotting Part B	7	
Practical Record + Viva Voce	Credit to the students' work over the academic session may be given	4
Project Record + Viva Voce		5
Total	30	

A: List of Experiments

1. Study and describe three locally available common flowering plants, one from each of the families Solanaceae, Fabaceae and Liliaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams). Types of root (Tap and adventitious); types of stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound).
2. Preparation and study of T.S. of dicot and monocot roots and stems (primary).
3. Study of osmosis by potato osmometer.
4. Study of plasmolysis in epidermal peels (e.g. Rhoeo/lily leaves or flashy scale leaves of onion bulb).
5. Study of distribution of stomata in the upper and lower surfaces of leaves.
6. Comparative study of the rates of transpiration in the upper and lower surface of leaves.
7. Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.
8. Separation of plant pigments through paper chromatography.
9. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
10. Test for presence of urea in urine.
11. Test for presence of sugar in urine.
12. Test for presence of albumin in urine.
13. Test for presence of bile salts in urine.

B. Study/Observer of the following (spotting)

1. Parts of a compound microscope.
2. Specimens/slides/models and identification with reasons - Bacteria, *Oscillatoria*, *Spirogyra*, *Rhizopus*, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.
3. Virtual specimens/slides/models and identifying features of - *Amoeba*, *Hydra*, liverfluke, *Ascaris*, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.
4. Tissues and diversity in shape and size of plant cells (palisade cells, guard cells,

parenchyma, collenchyma, sclerenchyma, xylem and phloem) through temporary and permanent slides.

5. Tissues and diversity in shape and size of animal cells (squamous epithelium, smooth, skeletal and cardiac muscle fibers and mammalian blood smear) through temporary/permanent slides.
6. Mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.
7. Different modifications in roots, stems and leaves.
8. Different types of inflorescence (cymose and racemose).
9. Human skeleton and different types of joints with the help of virtual images/models only.

Practical Examination for Visually Impaired Students Class XI

Note: The 'Evaluation schemes' and 'General Guidelines' for visually impaired students as given for Class XII may be followed.

A. Items for Identification/Familiarity with the apparatus / equipments/animal and plant material / chemicals etc. for assessment in practicals (All experiments)

Plants of –

Solanaceae- Brinjal, Petunia, any other Fabaceae- Rice, Wheat, any other Liliaceae- Any of the Lilies.

A compound microscope, seeds of monocot and dicot- maize and gram or any other Model of Human skeleton to show –

Ball and socket joints of girdles and limbs Rib cage

Test tube, honey comb, Mollusc shell, Models of Pigeon and Star fish, mushroom, petridish, succulents such as *Aloe vera*/kalenchoe, raisins, beaker, potatoes, scalpel, chromatography paper, chromatography chamber, alcohol, specimen/model of cockroach.

B. List of Practical

1. Study three locally available common flowering plants of the families – Solanaceae, Fabaceae, Liliaceae and identify:
2. Types of stems as Herbaceous or Woody, Types of leaves as Compound or Simple
3. Study the parts of a compound microscope- eye piece and objective lens, mirror, stage, coarse and fine adjustment knobs.
4. Differentiate between monocot and dicot plants on the basis of venation patterns.
5. Study the following parts of human skeleton (Model): Ball and socket joints of thigh and shoulder
6. Rib cage
7. Study honey-bee/butterfly, snail shell, Starfish, Pigeon (through models).
8. Identify the given specimen of a fungus – Mushroom, gymnosperm- pine cone
9. Identify and relate the experimental set up with the aim of experiment:
For Potato Osmometer/ endosmosis in raisins.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Biology Class-XI, Published by NCERT
2. Other related books and manuals brought out by NCERT (including multimedia)

CLASS XII (2018-19) (THEORY)**Time:3 Hours****Max. Marks:70**

Unit	Title	No. of Periods	Marks
VI	Reproduction	30	14
VII	Genetics and Evolution	40	18
VIII	Biology and Human Welfare	30	14
IX	Biotechnology and its Applications	30	10
X	Ecology and Environment	30	14
	Total	160	70

Unit-VI Reproduction**Chapter-1: Reproduction in Organisms**

Reproduction, a characteristic feature of all organisms for continuation of species; modes of reproduction

- asexual and sexual reproduction; asexual reproduction - binary fission, sporulation, budding, gemmule formation, fragmentation; vegetative propagation in plants.

Chapter-2: Sexual Reproduction in Flowering Plants

Flower structure; development of male and female gametophytes; pollination - types, agencies and examples; outbreeding devices; pollen-pistil interaction; double fertilization; post fertilization events - development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; Significance of seed dispersal and fruit formation.

Chapter-3: Human Reproduction

Male and female reproductive systems; microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis; menstrual cycle; fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (elementary idea); parturition (elementary idea); lactation (elementary idea).

Chapter-4: Reproductive Health

Need for reproductive health and prevention of Sexually Transmitted Diseases (STDs); birth control - need and methods, contraception and medical termination of pregnancy (MTP); amniocentesis; infertility and assisted reproductive technologies - IVF, ZIFT, GIFT (elementary idea for general awareness).

Unit-VII Genetics and Evolution

Chapter-5: Principles of Inheritance and Variation

Heredity and variation: Mendelian inheritance; deviations from Mendelism – incomplete dominance, co-dominance, multiple alleles and inheritance of blood groups, pleiotropy; elementary idea of polygenic inheritance; chromosome theory of inheritance; chromosomes and genes; Sex determination - in human being, birds and honey bee; linkage and crossing over; sex linked inheritance - haemophilia, colour blindness; Mendelian disorders in humans -thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes.

Chapter-6: Molecular Basis of Inheritance

Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication; Central Dogma; transcription, genetic code, translation; gene expression and regulation - lac operon; Genome, Human and rice genome projects; DNA fingerprinting.

Chapter-7: Evolution

Origin of life; biological evolution and evidences for biological evolution (paleontology, comparative anatomy, embryology and molecular evidences); Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution - variation (mutation and recombination) and natural selection with examples, types of natural selection; Gene flow and genetic drift; Hardy - Weinberg's principle; adaptive radiation; human evolution.

Unit-VIII Biology and Human Welfare

Chapter-8: Human Health and Diseases

Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control; Basic concepts of immunology - vaccines; cancer, HIV and AIDS; Adolescence - drug and alcohol abuse.

Chapter-9: Strategies for Enhancement in Food Production

Animal husbandry, Plant breeding, tissue culture, single cell protein.

Chapter-10: Microbes in Human Welfare

Microbes in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and bio-fertilizers. Antibiotics; production and judicious use.

Unit-IX Biotechnology and its Applications

Chapter-11: Biotechnology - Principles and Processes

Genetic Engineering (Recombinant DNA Technology).

Chapter-12: Biotechnology and its Application

Application of biotechnology in health and agriculture: Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organisms - Bt crops; transgenic animals; biosafety issues, biopiracy and patents.

Unit-X Ecology and Environment

Chapter-13: Organisms and Populations

Organisms and environment: Habitat and niche, population and ecological adaptations; population interactions - mutualism, competition, predation, parasitism; population attributes - growth, birth rate and death rate, age distribution.

Chapter-14: Ecosystem

Ecosystems: Patterns, components; productivity and decomposition; energy flow; pyramids of number, biomass, energy; nutrient cycles (carbon and phosphorous); ecological succession; ecological services - carbon fixation, pollination, seed dispersal, oxygen release (in brief).

Chapter-15: Biodiversity and its Conservation

Biodiversity - Concept, patterns, importance; loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red Data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.

Chapter-16: Environmental Issues

Air pollution and its control; water pollution and its control; agrochemicals and their effects; solid waste management; radioactive waste management; greenhouse effect and climate change impact and mitigation; ozone layer depletion; deforestation; case study exemplifying success story addressing environmental issue(s).

PRACTICALS

Time allowed: 3 Hours

Max. Marks: 30

Evaluation Scheme		Marks
One Major Experiment	5, 6, 8, 9	5
One Minor Experiment	2, 3, 4	4
Slide Preparation	1, 7	5
Spotting		7
Practical Record + Viva Voce	} Credit to the students' work over the academic session may be given	4
Investigatory Project and its Project and its Record + Viva Voce		5
Total		30

A. List of Experiments**60 Periods**

1. Prepare a temporary mount to observe pollen germination.
2. Collect and study soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity. Correlate with the kinds of plants found in them.
3. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism.
4. Study the presence of suspended particulate matter in air at two widely different sites.
5. Study the plant population density by quadrat method.
6. Study the plant population frequency by quadrat method.
7. Prepare a temporary mount of onion root tip to study mitosis.
8. Study the effect of different temperatures and three different pH on the activity of salivary amylase on starch.
9. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.

B. Study/observation of the following (Spotting)

1. Flowers adapted to pollination by different agencies (wind, insects, birds).
2. Pollen germination on stigma through a permanent slide or scanning electron micrograph.
3. Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).
4. Meiosis in onion bud cell or grasshopper testis through permanent slides.
5. T.S. of blastula through permanent slides (Mammalian).
6. Mendelian inheritance using seeds of different colour/sizes of any plant.
7. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colourblindness.
8. Controlled pollination - emasculation, tagging and bagging.
9. Common disease causing organisms like *Ascaris*, *Entamoeba*, *Plasmodium*, any fungus causing ringworm through permanent slides, models or virtual images. Comment on symptoms of diseases that they cause.
10. Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.
11. Two plants and two animals (models/virtual images) found in aquatic conditions. Comment upon their morphological adaptations.

**Practical Examination for Visually Impaired Students of Classes XI and XII
Evaluation Scheme**

Time Allowed: Two hours**Max. Marks: 30**

Topic	Marks
Identification/Familiarity with the apparatus	5
Written test (Based on given / prescribed practicals)	10
Practical Records	5
Viva	10
Total	30

General Guidelines

- The practical examination will be of two hour duration. A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes duration.
- The question paper given to the students should be legibly typed. It should contain a total of 15 practical skill based very short answer type questions. A student would be required to answer any 10 questions.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question paper should be related to the listed practicals. Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- Questions may be generated jointly by the external/internal examiners and used for assessment.
- The viva questions may include questions based on basic theory / principle / concept, apparatus / materials / chemicals required, procedure, precautions, sources of error etc.

Class XII

A. Items for Identification/ familiarity with the apparatus for assessment in practicals (All experiments) Beaker, flask, petri plates, soil from different sites- sandy, clayey, loamy, small potted plants, aluminium foil, paint brush, test tubes, starch solution, iodine, ice cubes, Bunsen burner/spirit lamp/water bath, large flowers, Maize inflorescence, model of developmental stages highlighting morula and blastula of frog, beads/seeds of different shapes/size/texture *Ascaris*, Cactus/*Opuntia* (model).

B. List of Practicals

1. Study of the soil obtained from at least two different sites for their texture.
2. Study of flowers adapted to pollination by different agencies (wind, insects).
3. Identification of T.S of morula or blastula of frog (model).
4. Study of Mendelian inheritance pattern using beads/seeds of different sizes/texture.
5. Preparation of pedigree charts of genetic traits such as rolling of tongue, colour blindness.
6. Study of emasculation, tagging and bagging by trying out an exercise on controlled pollination.
7. Identify common disease causing organisms like *Ascaris* (Model) and learn some common symptoms of the disease that they cause.
8. Comment upon the morphological adaptations of plants found in xerophytic conditions.

Note: The above practicals may be carried out in an experiential manner rather than recording observations.

Prescribed Books:

1. Biology, Class-XII, Published by NCERT
2. Other related books and manuals brought out by NCERT (including multimedia)
3. Biology Supplementary Material (Revised). Available on CBSE website.

Assessment Areas (Theory) 2020-21
Class XII
Biology (044)

Time : 3 hrs.

Maximum Marks: 70 Marks

Competencies	
Demonstrate Knowledge and Understanding	50%
Application of Knowledge / Concepts	30%
Analyse, Evaluate and Create	20%

Note:

- Typology of questions: VSA including MCQs, Assertion – Reasoning type questions; SA; LA-I; LA-II; Source-based/ Case-based/ Passage-based/ Integrated assessment questions.
- An internal choice of approximately 33% would be provided.

Suggestive verbs for various competencies

- **Demonstrate, Knowledge and Understanding**
State, name, list, identify, define, suggest, describe, outline, summarize, etc.
- **Application of Knowledge/Concepts**
Calculate, illustrate, show, adapt, explain, distinguish, etc.
- **Analyze, Evaluate and Create**
Interpret, analyse, compare, contrast, examine, evaluate, discuss, construct, etc.

ACCOUNTANCY (Code No. 055)

(2020-21)

Rationale

The course in accountancy is introduced at plus two stage of senior second of school education, as the formal commerce education is provided after ten years of schooling. With the fast changing economic scenario, accounting as a source of financial information has carved out a place for itself at the senior secondary stage. Its syllabus content provide students a firm foundation in basic accounting concepts and methodology and also acquaint them with the changes taking place in the preparation and presentation of financial statements in accordance to the applicable accounting standards and the Companies Act 2013.

The course in accounting put emphasis on developing basic understanding about accounting as an information system. The emphasis in Class XI is placed on basic concepts and process of accounting leading to the preparation of accounts for a sole proprietorship firm. The students are also familiarized with basic calculations of Goods and Services Tax (GST) in recording the business transactions. The accounting treatment of GST is confined to the syllabus of class XI.

The increased role of ICT in all walks of life cannot be overemphasized and is becoming an integral part of business operations. The learners of accounting are introduced to Computerized Accounting System at class XI and XII. Computerized Accounting System is a compulsory component which is to be studied by all students of commerce in class XI; whereas in class XII it is offered as an optional subject to Company Accounts and Analysis of Financial Statements. This course is developed to impart skills for designing need based accounting database for maintaining book of accounts.

The complete course of Accountancy at the senior secondary stage introduces the learners to the world of business and emphasize on strengthening the fundamentals of the subject.

Objectives:

1. To familiarize students with new and emerging areas in the preparation and presentation of financial statements.
2. To acquaint students with basic accounting concepts and accounting standards.
3. To develop the skills of designing need based accounting database.
4. To appreciate the role of ICT in business operations.
5. To develop an understanding about recording of business transactions and preparation of financial statements.
6. To enable students with accounting for Not-for-Profit organizations, accounting for Partnership Firms and company accounts.

Accountancy (Code No.055)

Course Structure

Class-XI (2020-21)

Theory: 80 Marks

3 Hours

Project: 20 Marks

Units	Periods	Marks
Part A: Financial Accounting-1		
Unit-1: Theoretical Framework	25	12
Unit-2: Accounting Process	105	40
Part B: Financial Accounting-II		
Unit-3: Financial Statements of Sole Proprietorship from Complete and Incomplete Records	55	20
Unit-4: Computers in Accounting	15	08
Part C: Project Work		
	20	20

PART A: FINANCIAL ACCOUNTING - I

Unit-1: Theoretical Frame Work

Units/Topics	Learning Outcomes
Introduction to Accounting <ul style="list-style-type: none">Accounting- concept, objectives, advantages and limitations, types of accounting information; users of accounting information and their needs. Qualitative Characteristics of Accounting Information. Role of Accounting in Business.Basic Accounting Terms- Business Transaction, Capital, Drawings. Liabilities (Non Current and Current). Assets (Non Current, Current); Fixed assets (Tangible and Intangible), Expenditure (Capital and Revenue), Expense, Income, Profit, Gain, Loss, Purchase, Sales, Goods, Stock, Debtor, Creditor, Voucher, Discount (Trade discount and Cash Discount)	After going through this Unit, the students will be able to: <ul style="list-style-type: none">describe the meaning, significance, objectives, advantages and limitations of accounting in the modern economic environment with varied types of business and non-business economic entities.identify / recognise the individual(s) and entities that use accounting information for serving their needs of decision making.explain the various terms used in accounting and differentiate between different related terms like current and non-current, capital and revenue.give examples of terms like business transaction, liabilities, assets, expenditure and purchases.

<p>Theory Base of Accounting</p> <ul style="list-style-type: none"> • Fundamental accounting assumptions: GAAP: Concept • Business Entity, Money Measurement, Going Concern, Accounting Period, Cost Concept, Dual Aspect, Revenue Recognition, Matching, Full Disclosure, Consistency, Conservatism, Materiality and Objectivity • System of Accounting. Basis of Accounting: cash basis and accrual basis • Accounting Standards: Applicability in IndAS • Goods and Services Tax (GST): Characteristics and Objective. 	<ul style="list-style-type: none"> • explain that sales/purchases include both cash and credit sales/purchases relating to the accounting year. • differentiate among income, profits and gains. • state the meaning of fundamental accounting assumptions and their relevance in accounting. • describe the meaning of accounting assumptions and the situation in which an assumption is applied during the accounting process. • explain the meaning and objectives of accounting standards. • appreciate that various accounting standards developed nationally and globally are in practice for bringing parity in the accounting treatment of different items. • acknowledge the fact that recording of accounting transactions follows double entry system. • explain the bases of recording accounting transaction and to appreciate that accrual basis is a better basis for depicting the correct financial position of an enterprise. • Understand the need of IFRS • Explain the meaning, objective and characteristic of GST.
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Unit-2: Accounting Process

Units/Topics	Learning Outcomes
<p>Recording of Business Transactions</p> <ul style="list-style-type: none"> • Voucher and Transactions: Source documents and Vouchers, Preparation of Vouchers, Accounting Equation Approach: Meaning and Analysis, Rules of Debit and Credit. • Recording of Transactions: Books of Original 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • explain the concept of accounting equation and appreciate that every transaction affects either both the sides of the equation or a positive effect on one item and a negative effect on another item on the same side of

<p>Entry- Journal</p> <ul style="list-style-type: none"> • Special Purpose books: • Cash Book: Simple, cash book with bank column and petty cashbook • Purchases book • Sales book • Purchases return book • Sales return book <p>Note: Including trade discount, freight and cartage expenses for simple GST calculation.</p> <ul style="list-style-type: none"> • Ledger: Format, Posting from journal and subsidiary books, Balancing of accounts <p>Bank Reconciliation Statement:</p> <ul style="list-style-type: none"> • Need and preparation, Bank Reconciliation Statement with Adjusted Cash Book <p>Depreciation, Provisions and Reserves</p> <ul style="list-style-type: none"> • Depreciation: Concept, Features, Causes, factors • Other similar terms: Depletion and Amortisation • Methods of Depreciation: <ul style="list-style-type: none"> i. Straight Line Method (SLM) ii. Written Down Value Method (WDV) <p>Note: Excluding change of method</p> <ul style="list-style-type: none"> • Difference between SLM and WDV; Advantages of SLM and WDV • Accounting treatment of depreciation <ul style="list-style-type: none"> i. Charging to asset account ii. Creating provision for depreciation/accumulated depreciation account iii. Treatment for disposal of asset • Provisions and Reserves: Difference • Types of Reserves: <ul style="list-style-type: none"> i. Revenue reserve ii. Capital reserve iii. General reserve iv. Specific reserve 	<p>accounting equation.</p> <ul style="list-style-type: none"> • explain the effect of a transaction (increase or decrease) on the assets, liabilities, capital, revenue and expenses. • appreciate that on the basis of source documents, accounting vouchers are prepared for recording transaction in the books of accounts. • develop the understanding of recording of transactions in journal and the skill of calculating GST. • explain the purpose of maintaining a Cash Book and develop the skill of preparing the format of different types of cash books and the method of recording cash transactions in Cash book. • describe the method of recording transactions other than cash transactions as per their nature in different subsidiary books . • appreciate that at times bank balance as indicated by cash book is different from the bank balance as shown by the pass book / bank statement and to reconcile both the balances, bank reconciliation statement is prepared. • develop understanding of preparing bank reconciliation statement. • appreciate that for ascertaining the position of individual accounts, transactions are posted from subsidiary books and journal proper into the concerned accounts in the ledger and develop the skill of ledger posting. • explain the necessity of providing depreciation and develop the skill of using different methods for computing depreciation. • understand the accounting treatment of providing depreciation directly to the concerned asset account or by creating provision for depreciation account.
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<p>v. Secret Reserve</p> <ul style="list-style-type: none"> • Difference between capital and revenue reserve <p>Accounting for Bills of Exchange</p> <ul style="list-style-type: none"> • Bill of exchange and Promissory Note: Definition, Specimen, Features, Parties. • Difference between Bill of Exchange and Promissory Note • Terms in Bill of Exchange: <ul style="list-style-type: none"> i. Term of Bill ii. Accommodation bill (concept) iii. Days of Grace iv. Date of maturity v. Discounting of bill vi. Endorsement of bill vii. Bill after due date viii. Negotiation ix. Bill sent for collection x. Dishonour of bill xi. Retirement of bill xii. Renewal of bill • Accounting Treatment <p>Note: excluding accounting treatment for accommodation bill</p> <p>Trial balance and Rectification of Errors</p> <ul style="list-style-type: none"> • Trial balance: objectives and preparation <p>(Scope: Trial balance with balance method only)</p> <ul style="list-style-type: none"> • Errors: types-errors of omission, commission, principles, and compensating; their effect on Trial Balance. • Detection and rectification of errors; preparation of suspense account. 	<ul style="list-style-type: none"> • appreciate the method of asset disposal through the concerned asset account or by preparing asset disposal account. • appreciate the need for creating reserves and also making provisions for events which may belong to the current year but may happen in next year. • appreciate the difference between reserve and reserve fund. • acquire the knowledge of using bills of exchange and promissory notes for financing business transactions; • understand the meaning and distinctive features of these instruments and develop the skills of their preparation. • state the meaning of different terms used in bills of exchange and their implication in accounting. • explain the method of recording of bill transactions. • state the need and objectives of preparing trial balance and develop the skill of preparing trial balance. • appreciate that errors may be committed during the process of accounting. • understand the meaning of different types of errors and their effect on trial balance. • develop the skill of identification and location of errors and their rectification and preparation of suspense account.
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Part B: Financial Accounting - II

Unit 3: Financial Statements of Sole Proprietorship

Units/Topics	Learning Outcomes
<p>Financial Statements</p> <p>Meaning, objectives and importance; Revenue and Capital Receipts; Revenue and Capital Expenditure; Deferred Revenue expenditure.</p> <p>Trading and Profit and Loss Account: Gross Profit, Operating profit and Net profit. Preparation.</p> <p>Balance Sheet: need, grouping and marshalling of assets and liabilities. Preparation.</p> <p>Adjustments in preparation of financial statements with respect to closing stock, outstanding expenses, prepaid expenses, accrued income, income received in advance, depreciation, bad debts, provision for doubtful debts, provision for discount on debtors, Abnormal loss, Goods taken for personal use/staff welfare, interest on capital and managers commission.</p> <p>Preparation of Trading and Profit and Loss account and Balance Sheet of a sole proprietorship with adjustments.</p> <p>Incomplete Records</p> <p>Features, reasons and limitations.</p> <p>Ascertainment of Profit/Loss by Statement of Affairs method.</p> <p>Difference between accounts from incomplete records and Statement of Affairs. Preparation of Trading , Profit and Loss account and Balance Sheet.</p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> state the meaning of financial statements the purpose of preparing financial statements. state the meaning of gross profit, operating profit and net profit and develop the skill of preparing trading and profit and loss account. explain the need for preparing balance sheet. understand the technique of grouping and marshalling of assets and liabilities. appreciate that there may be certain items other than those shown in trial balance which may need adjustments while preparing financial statements. develop the understanding and skill to do adjustments for items and their presentation in financial statements like depreciation, closing stock, provisions, abnormal loss etc. develop the skill of preparation of trading and profit and loss account and balance sheet. state the meaning of incomplete records and their uses and limitations. develop the understanding and skill of computation of profit / loss using the statement of affairs method.

Unit 4: Computers in Accounting

Units/Topics	Learning Outcomes
<ul style="list-style-type: none"> Introduction to computer and accounting information system {AIS}: Introduction to computers (elements, capabilities, limitations of computer system) Introduction to operating software, utility software and application software. 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> state the meaning of a computer, describe its components, capabilities and limitations. state the meaning of accounting information system.

<p>Introduction to accounting information system (AIS) as a part of Management Information System.</p> <ul style="list-style-type: none"> Automation of accounting process: meaning Stages in automation: (a) Accounting process in a computerised environment; comparison between manual accounting process and computerised accounting process, (b) Sourcing of accounting software; kinds of software: readymade software; customised software and tailor-made software; generic considerations before sourcing accounting software (c) creation of account groups and hierarchy (d) generation of reports - trial balance, profit and loss account and balance sheet <p>Scope:</p> <p><i>(i) The scope of the unit is to understand accounting as an information system for the generation of accounting information and preparation of accounting reports.</i></p> <p><i>(ii) It is presumed that the working knowledge of any appropriate accounting software will be given to the students to help them learn basic accounting operations on computers.</i></p>	<ul style="list-style-type: none"> appreciate the need for use of computers in accounting for preparing accounting reports. develop the understanding of comparing the manual and computerized accounting process and appreciate the advantages and limitations of automation. understand the different kinds of accounting software.
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Part C: Project Work (Any One)

1. Collection of source documents, preparation of vouchers, recording of transactions with the help of vouchers.
2. Preparation of Bank Reconciliation Statement with the given cash book and the pass book with twenty to twenty-five transactions.
3. Comprehensive project of any sole proprietorship business. This may state with journal entries and their ledgering, preparation of Trial balance. Trading and Profit and Loss Account and Balance Sheet. Expenses, incomes and profit (loss), assets and liabilities are to be depicted using pie chart / bar diagram.

PROJECT WORK

It is suggested to undertake this project after completing the unit on preparation of financial statements. The student(s) will be allowed to select any business of their choice or develop the transaction of imaginary business. The project is to run through the chapters and make the project an interesting process. The amounts should emerge as more realistic and closer to reality.

Specific Guidelines for Teachers

Give a list of options to the students to select a business form. You can add to the given list:

- | | | |
|-------------------------|-------------------------------|--------------------------|
| 1. A beauty parlour | 10. Men's wear | 19. A coffee shop |
| 2. Men's saloon | 11. Ladies wear | 20. A music shop |
| 3. A tailoring shop | 12. Kiddies wear | 21. A juice shop |
| 4. A canteen | 13. A Saree shop | 22. A school canteen |
| 5. A cake shop | 14. Artificial jewellery shop | 23. An ice cream parlour |
| 6. A confectionery shop | 15. A small restaurant | 24. A sandwich shop |
| 7. A chocolate shop | 16. A sweet shop | 25. A flower shop |
| 8. A dry cleaner | 17. A grocery shop | |
| 9. A stationery shop | 18. A shoe shop | |

After selection, advise the student(s) to visit a shop in the locality (this will help them to settle on a realistic amounts different items. The student(s) would be able to see the things as they need to invest in furniture, decor, lights, machines, computers etc.

A suggested list of different item is given below.

- | | |
|--|---|
| 1. Rent | 19. Wages and Salary |
| 2. Advance rent [approximately three months] | 20. Newspaper and magazines |
| 3. Electricity deposit | 21. Petty expenses |
| 4. Electricity bill | 22. Tea expenses |
| 5. Electricity fitting | 23. Packaging expenses |
| 6. Water bill | 24. Transport |
| 7. Water connection security deposit | 25. Delivery cycle or a vehicle purchased |
| 8. Water fittings | 26. Registration |
| 9. Telephone bill | 27. Insurance |
| 10. Telephone security deposit | 28. Auditors fee |
| 11. Telephone instrument | 29. Repairs & Maintenance |
| 12. Furniture | 30. Depreciations |
| 13. Computers | 31. Air conditioners |
| 14. Internet connection | 32. Fans and lights |
| 15. Stationery | 33. Interior decorations |
| 16. Advertisements | 34. Refrigerators |
| 17. Glow sign | 35. Purchase and sales |
| 18. Rates and Taxes | |

At this stage, performas of bulk of originality and ledger may be provided to the students and they may be asked to complete the same.

In the next step the students are expected to prepare the trial balance and the financial statements.

**Suggested Question Paper Design
Accountancy (Code No. 055)
Class XI (2020-21)**

**Theory: 80 Marks
Project: 20 Marks**

3 hrs.

S N	Typology of Questions	Marks	Percentage
1	<p>Remembering and Understanding: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55%
3	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	19	23.75%
4	<p>Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	17	21.25%
TOTAL		80	100%

Accountancy (Code No. 055)

Class-XII (2020-21)

Theory: 80 Marks

3 Hours

Project: 20 Marks

Units		Periods	Marks
Part A	Accounting for Not-for-Profit Organizations, Partnership Firms and Companies		
	Unit 1. Financial Statements of Not-for-Profit Organizations	25	10
	Unit 2. Accounting for Partnership Firms	90	30
	Unit 3. Accounting for Companies	35	20
		150	60
Part B	Financial Statement Analysis		
	Unit 4. Analysis of Financial Statements	30	12
	Unit 5. Cash Flow Statement	20	8
		50	20
Part C	Project Work	20	20
	Project work will include:		
	Project File	4 Marks	
	Written Test	12 Marks (One Hour)	
	Viva Voce	4 Marks	
Or			
Part B	Computerized Accounting		
	Unit 4. Computerized Accounting	50	20
Part C	Practical Work	20	20
	Practical work will include:		
	Practical File	4 Marks	
	Practical Examination	12 Marks (One Hour)	
	Viva Voce	4 Marks	

Part A: Accounting for Not-for-Profit Organizations, Partnership Firms and Companies

Unit 1: Financial Statements of Not-for-Profit Organizations

Units/Topics	Learning Outcomes
<ul style="list-style-type: none"> Not-for-profit organizations: concept. Receipts and Payments Account: features and preparation. Income and Expenditure Account: features, preparation of income and expenditure account and balance sheet from the given receipts and payments account with additional information. <p>Scope:</p> <p><i>(i) Adjustments in a question should not exceed 3 or 4 in number and restricted to subscriptions, consumption of consumables and sale of assets/ old material.</i></p> <p><i>(ii) Entrance/admission fees and general donations are to be treated as revenue receipts.</i></p> <p><i>(iii) Trading Account of incidental activities is not to be prepared.</i></p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> state the meaning of a Not-for-profit organisation and its distinction from a profit making entity. state the meaning of receipts and payments account, and understanding its features. develop the understanding and skill of preparing receipts and payments account. state the meaning of income and expenditure account and understand its features. develop the understanding and skill of preparing income and expenditure account and balance sheet of a not-for-profit organisation with the help of given receipts and payments account and additional information.

Unit 2: Accounting for Partnership Firms

Units/Topics	Learning Outcomes
<ul style="list-style-type: none"> Partnership: features, Partnership Deed. Provisions of the Indian Partnership Act 1932 in the absence of partnership deed. Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriation account- division of profit among partners, guarantee of profits. Past adjustments (relating to interest on capital, interest on drawing, salary and profit sharing ratio). Goodwill: nature, factors affecting and methods of valuation - average profit, super profit and capitalization. <p>Note: <i>Interest on partner's loan is to be treated as a</i></p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> state the meaning of partnership, partnership firm and partnership deed. describe the characteristic features of partnership and the contents of partnership deed. discuss the significance of provision of Partnership Act in the absence of partnership deed. differentiate between fixed and fluctuating capital, outline the process and develop the understanding and skill of preparation of Profit and Loss Appropriation Account. develop the understanding and skill of

charge against profits.

Goodwill to be adjusted through partners capital/ current account or by raising and writing off goodwill (AS 26)

Accounting for Partnership firms - Reconstitution and Dissolution.

- **Change in the Profit Sharing Ratio** among the existing partners - sacrificing ratio, gaining ratio, accounting for revaluation of assets and reassessment of liabilities and treatment of reserves and accumulated profits. Preparation of revaluation account and balance sheet.
- **Admission of a partner** - effect of admission of a partner on change in the profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and re-assessment of liabilities, treatment of reserves and accumulated profits, adjustment of capital accounts and preparation of balance sheet.
- **Retirement and death of a partner:** effect of retirement / death of a partner on change in profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, adjustment of accumulated profits and reserves, adjustment of capital accounts and preparation of balance sheet. Preparation of loan account of the retiring partner.
- Calculation of deceased partner's share of profit till the date of death. Preparation of deceased partner's capital account and his executor's account.
- **Dissolution of a partnership firm:** meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlement of accounts - preparation of realization

preparation profit and loss appropriation account involving guarantee of profits.

- develop the understanding and skill of making past adjustments.
- state the meaning, nature and factors affecting goodwill
- develop the understanding and skill of valuation of goodwill using different methods.
- state the meaning of sacrificing ratio, gaining ratio and the change in profit sharing ratio among existing partners.
- develop the understanding of accounting treatment of revaluation assets and reassessment of liabilities and treatment of reserves and accumulated profits by preparing revaluation account and balance sheet.
- explain the effect of change in profit sharing ratio on admission of a new partner.
- develop the understanding and skill of treatment of goodwill as per AS-26, treatment of revaluation of assets and re-assessment of liabilities, treatment of reserves and accumulated profits, adjustment of capital accounts and preparation of balance sheet of the new firm.
- explain the effect of retirement / death of a partner on change in profit sharing ratio.
- develop the understanding of accounting treatment of goodwill, revaluation of assets and re-assessment of liabilities and adjustment of accumulated profits and reserves on retirement / death of a partner and capital adjustment.
- develop the skill of calculation of deceased partner's share till the time of his death and prepare deceased partner's executor's account.
- discuss the preparation of the capital

<p>account, and other related accounts: capital accounts of partners and cash/bank a/c (excluding piecemeal distribution, sale to a company and insolvency of partner(s)).</p> <p>Note:</p> <p>(i) The realized value of each asset must be given at the time of dissolution.</p> <p>(ii) In case, the realization expenses are borne by a partner, clear indication should be given regarding the payment thereof.</p>	<p>accounts of the remaining partners and the balance sheet of the firm after retirement / death of a partner.</p> <ul style="list-style-type: none"> • understand the situations under which a partnership firm can be dissolved. • develop the understanding of preparation of realisation account and other related accounts.
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Unit-3 Accounting for Companies

Units/Topics	Learning Outcomes
<p>Accounting for Share Capital</p> <ul style="list-style-type: none"> • Share and share capital: nature and types. • Accounting for share capital: issue and allotment of equity and preferences shares. Public subscription of shares - over subscription and under subscription of shares; issue at par and at premium, calls in advance and arrears (excluding interest), issue of shares for consideration other than cash. • Concept of Private Placement and Employee Stock Option Plan (ESOP). • Accounting treatment of forfeiture and re-issue of shares. • Disclosure of share capital in the Balance Sheet of a company. <p>Accounting for Debentures</p> <ul style="list-style-type: none"> • Debentures: Issue of debentures at par, at a premium and at a discount. Issue of debentures for consideration other than cash; Issue of debentures with terms of redemption; debentures as collateral security-concept, interest on debentures. Writing off discount / loss on issue of debentures. 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • state the meaning of share and share capital and differentiate between equity shares and preference shares and different types of share capital. • understand the meaning of private placement of shares and Employee Stock Option Plan. • explain the accounting treatment of share capital transactions regarding issue of shares. • develop the understanding of accounting treatment of forfeiture and re-issue of forfeited shares. • describe the presentation of share capital in the balance sheet of the company as per schedule III part I of the Companies Act 2013. • explain the accounting treatment of different categories of transactions related to issue of debentures. • develop the understanding and skill of writing off discount / loss on issue of debentures. • understand the concept of collateral security and its presentation in balance sheet. • develop the skill of calculating interest on

<p>Note: Discount or loss on issue of debentures to be written off in the year debentures are allotted from Security Premium Reserve (if it exists) and then from Statement of Profit and Loss as Financial Cost (AS 16).</p> <ul style="list-style-type: none"> • Redemption of debentures-Methods: Lump sum, draw of lots. • Creation of Debenture Redemption Reserve. <p><i>Note: Related sections of the Companies Act, 2013 will apply.</i></p>	<p>debentures and its accounting treatment.</p> <ul style="list-style-type: none"> • state the meaning of redemption of debentures. • develop the understanding of accounting treatment of transactions related to redemption of debentures by lump sum, draw of lots and Creation of Debenture Redemption Reserve.
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Part B: Financial Statement Analysis

Unit 4: Analysis of Financial Statements

Units/Topics	Learning Outcomes
<p>Financial statements of a Company: Statement of Profit and Loss and Balance Sheet in prescribed form with major headings and sub headings (as per Schedule III to the Companies Act, 2013)</p> <p>Note: <i>Exceptional items, extraordinary items and profit (loss) from discontinued operations are excluded.</i></p> <ul style="list-style-type: none"> • Financial Statement Analysis: Objectives, importance and limitations. • Tools for Financial Statement Analysis: Comparative statements, common size statements, cash flow analysis, ratio analysis. • Accounting Ratios: Meaning, Objectives, classification and computation. • Liquidity Ratios: Current ratio and Quick ratio. • Solvency Ratios: Debt to Equity Ratio, Total Asset to Debt Ratio, Proprietary Ratio and Interest Coverage Ratio. • Activity Ratios: Inventory Turnover Ratio, Trade Receivables Turnover Ratio, Trade 	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • develop the understanding of major headings and sub-headings (as per Schedule III to the Companies Act, 2013) of balance sheet as per the prescribed norms / formats. • state the meaning, objectives and limitations of financial statement analysis. • discuss the meaning of different tools of 'financial statements analysis'. • develop the understanding and skill of preparation of comparative and common size financial statements. • state the meaning, objectives and significance of different types of ratios. • develop the understanding of computation of current ratio and quick ratio. • develop the skill of computation of debt equity ratio, total asset to debt ratio, proprietary ratio and interest coverage ratio. • develop the skill of computation of inventory turnover ratio, trade receivables and trade payables ratio and working capital turnover

Payables Turnover Ratio and Working Capital Turnover Ratio. <ul style="list-style-type: none"> • Profitability Ratios: Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment. 	ratio. <ul style="list-style-type: none"> • develop the skill of computation of gross profit ratio, operating ratio, operating profit ratio, net profit ratio and return on investment.
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Note: Net Profit Ratio is to be calculated on the basis of profit before and after tax.

Unit 5: Cash Flow Statement

Units/Topics	Learning Outcomes
<ul style="list-style-type: none"> • Meaning, objectives and preparation (as per AS 3 (Revised) (Indirect Method only) <p>Note:</p> <p><i>(i) Adjustments relating to depreciation and amortization, profit or loss on sale of assets including investments, dividend (both final and interim) and tax.</i></p> <p><i>(ii) Bank overdraft and cash credit to be treated as short term borrowings.</i></p> <p><i>(iii) Current Investments to be taken as Marketable securities unless otherwise specified.</i></p>	<p>After going through this Unit, the students will be able to:</p> <ul style="list-style-type: none"> • state the meaning and objectives of cash flow statement. • develop the understanding of preparation of Cash Flow Statement using indirect method as per AS 3 with given adjustments.

Note: Previous years' Proposed Dividend to be given effect, as prescribed in AS-4, Events occurring after the Balance Sheet date. Current years' Proposed Dividend will be accounted for in the next year after it is declared by the shareholders.

Project Work

Note: Kindly refer to the Guidelines published by the CBSE.
The comprehensive project may contain simple GST calculations.

OR

Part B: Computerised Accounting

Unit 3: Computerised Accounting

Overview of Computerised Accounting System

- Introduction: Application in Accounting.
- Features of Computerised Accounting System.
- Structure of CAS.
- Software Packages: Generic; Specific; Tailored.

Accounting Application of Electronic Spreadsheet.

- Concept of electronic spreadsheet.
- Features offered by electronic spreadsheet.
- Application in generating accounting information - bank reconciliation statement; asset accounting; loan repayment of loan schedule, ratio analysis
- Data representation- graphs, charts and diagrams.

Using Computerized Accounting System.

- Steps in installation of CAS, codification and Hierarchy of account heads, creation of accounts.
- Data: Entry, validation and verification.
- Adjusting entries, preparation of balance sheet, profit and loss account with closing entries and opening entries.
- Need and security features of the system.

Database Management System (DBMS)

- Concept and Features of DBMS.
- DBMS in Business Application.
- Generating Accounting Information - Payroll.

Part C: Practical Work

Please refer to the guidelines published by CBSE.

Prescribed Books:

Financial Accounting -I	Class XI	NCERT Publication
Accountancy -II	Class XI	NCERT Publication
Accountancy -I	Class XII	NCERT Publication
Accountancy -II	Class XII	NCERT Publication
Accountancy – Computerised Accounting System	Class XII	NCERT Publication

Guidelines for Project Work in Accounting and Practical work in computerised Accounting Class XII CBSE Publication

Suggested Question Paper Design
Accountancy (Code No. 055)
Class XII (2020-21)

Theory: 80 Marks
Project: 20 Marks

3 hrs.

S N	Typology of Questions	Marks	Percentage
1	<p>Remembering and Understanding: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55%
3	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	19	23.75%
4	<p>Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	17	21.25%
TOTAL		80	100%

BUSINESS STUDIES (Code No. 054) 2020-21

Rationale

The courses in Business Studies and Accountancy are introduced at + 2 stage of Senior Secondary Education as formal commerce education is provided after first ten years of schooling. Therefore, it becomes necessary that instructions in these subjects are given in such a manner that students have a good understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society.

Business is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. To understand the framework in which a business operates, a detailed study of the organisation and management of business processes and its interaction with the environment is required. Globalisation has changed the way organizations transact their business.

Information Technology is becoming a part of business operations in more and more organisations. Computerised systems are fast replacing other systems. E-business and other related concepts are picking up fast which need to be emphasized in the curriculum.

The course in Business Studies prepares students to analyse, manage, evaluate and respond to changes which affect business. It provides a way of looking at and interacting with the business environment. It recognizes the fact that business influences and is influenced by social, political, legal and economic forces.

It allows students to appreciate that business is an integral component of society and develops an understanding of many social and ethical issues.

Therefore, to acquire basic knowledge of the business world, a course in Business Studies would be useful. It also informs students of a range of study and work options and bridges the gap between school and work.

Objectives:

- To inculcate business attitude and develop skills among students to pursue higher education, world of work including self employment.
- To develop students with an understanding of the processes of business and its environment;
- To acquaint students with the dynamic nature and inter-dependent aspects of business;
- To develop an interest in the theory and practice of business, trade and industry;
- To familiarize students with theoretical foundations of the process of organizing and managing the operations of a business firm;
- To help students appreciate the economic and social significance of business activity and the social cost and benefits arising there from;
- To acquaint students with the practice of managing the operations and resources of business;
- To enable students to act more effectively and responsibly as consumers, employers, employees and citizens;

BUSINESS STUDIES (Code No. 054)
CLASS–XI (2020-21)

Theory: 80 Marks

3 Hours

Project: 20 Marks

Units		Periods	Marks
Part A	Foundations of Business		
1	Nature and Purpose of Business	18	16
2	Forms of Business Organisations	24	
3	Public, Private and Global Enterprises	18	14
4	Business Services	18	
5	Emerging Modes of Business	10	10
6	Social Responsibility of Business and Business Ethics	12	
	Total	100	40
Part B	Finance and Trade		
7	Sources of Business Finance	30	20
8	Small Business	16	
9	Internal Trade	30	20
10	International Business	14	
	Total	90	40
	Project Work	30	20

Part A: Foundation of Business

Concept includes meaning and features

Unit 1: Evolution and Fundamentals of Business

Content	After going through this unit, the student/ learner would be able to:
History of Trade and Commerce in India: Indigenous Banking System, Rise of Intermediaries, Transport, Trading Communities: Merchant Corporations, Major Trade Centres, Major Imports and Exports, Position of Indian Sub-Continent in the World Economy.	<ul style="list-style-type: none"> To acquaint the History of Trade and Commerce in India
Business – meaning and characteristics	<ul style="list-style-type: none"> Understand the meaning of business with special reference to economic and non-economic activities. Discuss the characteristics of business.
Business, profession and employment-Concept	<ul style="list-style-type: none"> Understand the concept of business, profession and employment. Differentiate between business, profession and employment.

Objectives of business	<ul style="list-style-type: none"> • Appreciate the economic and social objectives of business. • Examine the role of profit in business.
Classification of business activities - Industry and Commerce	<ul style="list-style-type: none"> • Understand the broad categories of business activities- industry and commerce.
Industry-types: primary, secondary, tertiary Meaning and subgroups	<ul style="list-style-type: none"> • Describe the various types of industries.
Commerce-trade: (types-internal, external; wholesale and retail) and auxiliaries to trade; (banking, insurance, transportation, warehousing, communication, and advertising) – meaning	<ul style="list-style-type: none"> • Discuss the meaning of commerce, trade and auxiliaries to trade. • Discuss the meaning of different types of trade and auxiliaries to trade. • Examine the role of commerce-trade and auxiliaries to trade.
Business risk-Concept	<ul style="list-style-type: none"> • Understand the concept of risk as a special characteristic of business. • Examine the nature and causes of business risks.

Unit 2: Forms of Business organizations

Sole Proprietorship-Concept, merits and limitations.	<ul style="list-style-type: none"> • List the different forms of business organizations and understand their meaning. • Identify and explain the concept, merits and limitations of Sole Proprietorship.
Partnership-Concept, types, merits and limitation of partnership, registration of a partnership firm, partnership deed. Types of partners	<ul style="list-style-type: none"> • Identify and explain the concept, merits and limitations of a Partnership firm. • Understand the types of partnership on the basis of duration and on the basis of liability. • State the need for registration of a partnership firm. • Discuss types of partners –active, sleeping, secret, nominal and partner by estoppel.
Hindu Undivided Family Business: Concept	<ul style="list-style-type: none"> • Understand the concept of Hindu Undivided Family Business.
Cooperative Societies-Concept, merits, and limitations.	<ul style="list-style-type: none"> • Identify and explain the concept, merits and limitations of Cooperative Societies. • Understand the concept of consumers, producers, marketing, farmers, credit and housing co-operatives.

Company - Concept, merits and limitations; Types: Private, Public and One Person Company – Concept	<ul style="list-style-type: none"> • Identify and explain the concept, merits and limitations of private and public companies. • Understand the meaning of one person company. • Distinguish between a private company and a public company.
Formation of company - stages, important documents to be used in formation of a company	<ul style="list-style-type: none"> • Highlight the stages in the formation of a company. • Discuss the important documents used in the various stages in the formation of a company.
Choice of form of business organization	<ul style="list-style-type: none"> • Distinguish between the various forms of business organizations. • Explain the factors that influence the choice of a suitable form of business organization.

Unit 3: Public, Private and Multinational Company

Public sector and private sector enterprises – Concept	<ul style="list-style-type: none"> • Develop an understanding of Public sector and private sector enterprises
Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company.	<ul style="list-style-type: none"> • Identify and explain the features, merits and limitations of different forms of public sector enterprises
Multinational Company – Feature. Joint ventures, Public private partnership – concept	<ul style="list-style-type: none"> • Develop an understanding of multinational company, joint ventures and public private partnership by studying their meaning and features.

Unit 4: Business Services

Business services – meaning and types. Banking: Types of bank accounts - savings, current, recurring, fixed deposit and multiple option deposit account	<ul style="list-style-type: none"> • Understand the meaning and types of business services. • Discuss the meaning and types of Business service Banking • Develop an understanding of difference types of bank account.
Banking services with particular reference to Bank Draft, Bank Overdraft, Cash credit. E-Banking meaning, Types of digital payments	<ul style="list-style-type: none"> • Develop an understanding of the different services provided by banks
Insurance – Principles. Types – life, health, fire and marine insurance – concept	<ul style="list-style-type: none"> • Recall the concept of insurance • Understand Utmost Good Faith, Insurable Interest, Indemnity, Contribution, Doctrine of Subrogation and Causa Proxima as principles of insurance

	<ul style="list-style-type: none"> • Discuss the meaning of different types of insurance-life, health, fire, marine insurance.
Postal Service - Mail, Registered Post, Parcel, Speed Post, Courier - meaning	<ul style="list-style-type: none"> • Understand the utility of different telecom services

Unit 5: Emerging Modes of Business

E - business: concept, scope and benefits	<ul style="list-style-type: none"> • Give the meaning of e-business. • Discuss the scope of e-business. • Appreciate the benefits of e-business • Distinguish e-business from traditional business.
Business Process Outsourcing (BPO): Concept, need and scope	<ul style="list-style-type: none"> • Understand the concept of outsourcing. • Examine the scope of outsourcing, appreciate the need of outsourcing. • Discuss the meaning of Business Process Outsourcing and Knowledge Process Outsourcing

Unit 6: Social Responsibility of Business and Business Ethics

Concept of social responsibility	<ul style="list-style-type: none"> • State the concept of social responsibility.
Case of social responsibility	<ul style="list-style-type: none"> • Examine the case for social responsibility.
Responsibility towards owners, investors, consumers, employees, government and community.	<ul style="list-style-type: none"> • Identify the social responsibility towards different interest groups.
Role of business in environment protection	<ul style="list-style-type: none"> • Appreciate the role of business in environment protection.
Business Ethics - Concept and Elements	<ul style="list-style-type: none"> • State the concept of business ethics. • Describe the elements of business ethics.

Part B: Finance and Trade

Unit 7: Sources of Business Finance

Concept of business finance	<ul style="list-style-type: none"> • State the meaning, nature and importance of business finance.
Owners' funds- equity shares, preferences share, retained earnings, Global Depository receipt (GDR), American Depository Receipt (ADR) and International Depository Receipt (IDR) – concept	<ul style="list-style-type: none"> • Classify the various sources of funds into owners' funds. • State the meaning of owners' funds. • Understand the meaning of Global Depository receipts, American

	Depository Receipts and International Depository Receipts.
Borrowed funds: debentures and bonds, loan from financial institution and commercial banks, public deposits, trade credit, Inter Corporate Deposits (ICD).	<ul style="list-style-type: none"> • State the meaning of borrowed funds. • Discuss the concept of debentures, bonds, loans from financial institutions and commercial banks, Trade credit and inter corporate deposits. • Distinguish between owners' funds and borrowed funds.

Unit 8: Small Business and Enterprises

Entrepreneurship Development (ED): Concept, Characteristics and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund start-up. Intellectual Property Rights and Entrepreneurship	<ul style="list-style-type: none"> • Understand the concept of Entrepreneurship Development (ED), Intellectual Property Rights
Small scale enterprise as defined by MSMED Act 2006 (Micro, Small and Medium Enterprise Development Act)	<ul style="list-style-type: none"> • Understand the meaning of small business
Role of small business in India with special reference to rural areas	<ul style="list-style-type: none"> • Discuss the role of small business in India
Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) with special reference to rural, backward areas	<ul style="list-style-type: none"> • Appreciate the various Government schemes and agencies for development of small scale industries. NSIC and DIC with special reference to rural, backward area.

Unit 9: Internal Trade

Internal trade - meaning and types services rendered by a wholesaler and a retailer	<ul style="list-style-type: none"> • State the meaning and types of internal trade. • Appreciate the services of wholesalers and retailers.
Types of retail-trade-Itinerant and small scale fixed shops retailers	<ul style="list-style-type: none"> • Explain the different types of retail trade.
Large scale retailers-Departmental stores, chain stores - concept	<ul style="list-style-type: none"> • Highlight the distinctive features of departmental stores, chain stores and mail order business.
GST (Goods and Services Tax): Concept and key-features	<ul style="list-style-type: none"> • Understand the concept of GST

Unit 10: International Trade

International trade: concept and benefits	<ul style="list-style-type: none">• Understand the concept of international trade.• Describe the scope of international trade to the nation and business firms.
Export trade – Meaning and procedure	<ul style="list-style-type: none">• State the meaning and objectives of export trade.• Explain the important steps involved in executing export trade.
Import Trade - Meaning and procedure	<ul style="list-style-type: none">• State the meaning and objectives of import trade.• Discuss the important steps involved in executing import trade.
Documents involved in International Trade; indent, letter of credit, shipping order, shipping bills, mate's receipt (DA/DP)	<ul style="list-style-type: none">• Develop an understanding of the various documents used in international trade.• Identify the specimen of the various documents used in international trade.• Highlight the importance of the documents needed in connection with international trade transactions
World Trade Organization (WTO) meaning and objectives	<ul style="list-style-type: none">• State the meaning of World Trade Organization.• Discuss the objectives of World Trade Organization in promoting international trade.

Unit 11: Project Work

As per CBSE guidelines.

**Suggested Question Paper Design
Business Studies (Code No. 054)
Class XI (2020-21)
March 2021 Examination**

Marks: 80

Duration: 3 hrs.

SN	Typology of Questions	Marks	Percentage
1	<p>Remembering and Understanding: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55%
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way</p>	19	23.75%
3	<p>Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	17	21.25%
	Total	80	100%

Business Studies
CLASS–XII (2020-21)

Theory: 80 Marks
Project: 20 Marks

3 Hours

Units		Periods	Marks
Part A	Principles and Functions of Management		
1.	Nature and Significance of Management	12	16
2	Principles of Management	14	
3	Business Environment	12	
4	Planning	14	14
5	Organising	15	
6	Staffing	16	20
7	Directing	15	
8	Controlling	12	
	Total	110	50
Part B	Business Finance and Marketing		
9	Financial Management	20	15
10	Financial Markets	18	
11	Marketing Management	30	15
12	Consumer Protection	12	
	Total	80	30
Part C	Project Work (One)	30	20

Part A: Principles and Functions of Management

Unit 1: Nature and Significance of Management

Concept	After going through this unit, the student/ learner would be able to:
Management - concept, objectives, and importance	<ul style="list-style-type: none"> • Understand the concept of management. • Explain the meaning of 'Effectiveness and Efficiency. • Discuss the objectives of management. • Describe the importance of management.
Management as Science, Art and Profession	<ul style="list-style-type: none"> • Examine the nature of management as a science, art and profession.
Levels of Management	<ul style="list-style-type: none"> • Understand the role of top, middle and lower levels of management
Management functions-planning, organizing, staffing, directing and controlling	<ul style="list-style-type: none"> • Explain the functions of management
Coordination- concept and importance	<ul style="list-style-type: none"> • Discuss the concept and

	<p>characteristics of coordination.</p> <ul style="list-style-type: none"> • Explain the importance of coordination.
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Unit 2: Principles of Management

Principles of Management- concept and significance	<ul style="list-style-type: none"> • Understand the concept of principles of management. • Explain the significance of management principles.
Fayol's principles of management	<ul style="list-style-type: none"> • Discuss the principles of management developed by Fayol.
Taylor's Scientific management- principles and techniques	<ul style="list-style-type: none"> • Explain the principles and techniques of 'Scientific Management'. • Compare the contributions of Fayol and Taylor.

Unit 3: Business Environment

Business Environment- concept and importance	<ul style="list-style-type: none"> • Understand the concept of 'Business Environment'. • Describe the importance of business environment
Dimensions of Business Environment- Economic, Social, Technological, Political and Legal	<ul style="list-style-type: none"> • Describe the various dimensions of 'Business Environment'. • Understand the concept of demonetization
Demonetization - concept and features	
Impact of Government policy changes on business with special reference to liberalization, privatization and globalization in India	<ul style="list-style-type: none"> • Examine the impact of government policy changes on business in India with reference to liberalisation, privatization and globalisation since 1991. • Discuss the managerial response to changes in business environment.

Unit 4: Planning

Concept, importance and limitation	<ul style="list-style-type: none"> • Understand the concept of planning. • Describe the importance of planning. • Understand the limitations of planning.
Planning process	<ul style="list-style-type: none"> • Describe the steps in the process of planning.
Single use and standing plans. Objectives, Strategy, Policy, Procedure, method Rule, budget and Programme	<ul style="list-style-type: none"> • Develop an understanding of single use and standing plans • Describe objectives, policies,

	strategy, procedure, method, rule, budget and programme as types of plans.
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Unit 5: Organising

Concept and importance	<ul style="list-style-type: none"> • Understand the concept of organizing as a structure and as a process. • Explain the importance of organising.
Organising Process	<ul style="list-style-type: none"> • Describe the steps in the process of organizing
Structure of organisation- functional and divisional concept. Formal and informal organisation- concept	<ul style="list-style-type: none"> • Describe functional and divisional structures of organisation. • Explain the advantages, disadvantages and suitability of functional and divisional structure. • Understand the concept of formal and informal organisation. • Discuss the advantages, disadvantages of formal and informal organisation.
Delegation: concept, elements and importance	<ul style="list-style-type: none"> • Understand the concept of delegation. • Describe the elements of delegation. • Appreciate the importance of Delegation.
Decentralization: concept and importance	<ul style="list-style-type: none"> • Understand the concept of decentralisation. • Explain the importance of decentralisation. • Differentiate between delegation and decentralisation.

Unit 6: Staffing

Concept and importance of staffing	<ul style="list-style-type: none"> • Understand the concept of staffing. • Explain the importance of staffing
Staffing as a part of Human Resource Management concept	<ul style="list-style-type: none"> • Understand the specialized duties and activities performed by Human Resource Management
Staffing process	<ul style="list-style-type: none"> • Describe the steps in the process of staffing
Recruitment process	<ul style="list-style-type: none"> • Understand the meaning of recruitment. • Discuss the sources of recruitment. • Explain the merits and demerits of

	internal and external sources of recruitment.
Selection - process	<ul style="list-style-type: none"> • Understand the meaning of selection. • Describe the steps involved in the process of selection.
Training and Development - Concept and importance, Methods of training - on the job and off the job - vestibule training, apprenticeship training and internship training	<ul style="list-style-type: none"> • Understand the concept of training and development. • Appreciate the importance of training to the organisation and to the employees. • Discuss the meaning of induction training, vestibule training, apprenticeship training and internship training. • Differentiate between training and development. • Discuss on the job and off the job methods of training.

Unit 7: Directing

Concept and importance	<ul style="list-style-type: none"> • Describe the concept of directing. • Discuss the importance of directing
Elements of Directing	<ul style="list-style-type: none"> • Describe the various elements of directing
Motivation - concept, Maslow's hierarchy of needs, Financial and non-financial incentives	<ul style="list-style-type: none"> • Understand the concept of motivation. • Develop an understanding of Maslow's Hierarchy of needs. • Discuss the various financial and non-financial incentives.
Leadership - concept, styles - authoritative, democratic and laissez faire	<ul style="list-style-type: none"> • Understand the concept of leadership. • Understand the various styles of leadership.
Communication - concept, formal and informal communication; barriers to effective communication, how to overcome the barriers	<ul style="list-style-type: none"> • Understand the concept of communication • Understand the elements of the communication process. • Discuss the concept of formal and informal communication. • Discuss the various barriers to effective communication. • Suggest measures to overcome barriers to communication.

Unit 8: Controlling

Controlling - Concept and importance	<ul style="list-style-type: none">• Understand the concept of controlling.• Explain the importance of controlling.
Relationship between planning and controlling	<ul style="list-style-type: none">• Describe the relationship between planning and controlling
Steps in process of control	<ul style="list-style-type: none">• Discuss the steps in the process of controlling.

Part B: Business Finance and Marketing

Unit 9: Financial Management

Concept, role and objectives of Financial Management	<ul style="list-style-type: none">• Understand the concept of financial management.• Explain the role of financial management in an organisation.• Discuss the objectives of financial management
Financial decisions: investment, financing and dividend- Meaning and factors affecting	<ul style="list-style-type: none">• Discuss the three financial decisions and the factors affecting them.
Financial Planning - concept and importance	<ul style="list-style-type: none">• Describe the concept of financial planning and its objectives.• Explain the importance of financial planning.
Capital Structure – concept and factors affecting capital structure	<ul style="list-style-type: none">• Understand the concept of capital structure.• Describe the factors determining the choice of an appropriate capital structure of a company.
Fixed and Working Capital - Concept and factors affecting their requirements	<ul style="list-style-type: none">• Understand the concept of fixed and working capital.• Describe the factors determining the requirements of fixed and working capital.

Unit 10: Financial Markets

Financial Markets: Concept, Functions and types	<ul style="list-style-type: none">• Understand the concept of financial market.• Explain the functions of financial market.• Understand capital market and money market as types of financial markets.
Money market and its instruments	<ul style="list-style-type: none">• Understand the concept of money

	<p>market.</p> <ul style="list-style-type: none"> Describe the various money market instruments.
Capital market and its types (primary and secondary), methods of floatation in the primary market	<ul style="list-style-type: none"> Discuss the concept of capital market. Explain primary and secondary markets as types of capital market. Differentiate between capital market and money market. Discuss the methods of floating new issues in the primary market. Distinguish between primary and secondary markets.
Stock Exchange - Functions and trading procedure	<ul style="list-style-type: none"> Give the meaning of a stock exchange. Explain the functions of a stock exchange. Discuss the trading procedure in a stock exchange. Give the meaning of depository services and demat account as used in the trading procedure of securities.
Securities and Exchange Board of India (SEBI) - objectives and functions	<ul style="list-style-type: none"> State the objectives of SEBI. Explain the functions of SEBI.

Unit 11: Marketing

Marketing – Concept, functions and philosophies	<ul style="list-style-type: none"> Understand the concept of marketing. Explain the features of marketing. Discuss the functions of marketing. Explain the marketing philosophies.
Marketing Mix – Concept and elements	<ul style="list-style-type: none"> Understand the concept of marketing mix. Describe the elements of marketing mix.
Product - branding, labelling and packaging – Concept	<ul style="list-style-type: none"> Understand the concept of product as an element of marketing mix. Understand the concept of branding, labelling and packaging.
Price - Concept, Factors determining price	<ul style="list-style-type: none"> Understand the concept of price as an element of marketing mix. Describe the factors determining price of a product.
Physical Distribution – concept, components and channels of distribution	<ul style="list-style-type: none"> Understand the concept of physical distribution. Explain the components of physical distribution.

	<ul style="list-style-type: none"> • Describe the various channels of distribution.
Promotion – Concept and elements; Advertising, Personal Selling, Sales Promotion and Public Relations	<ul style="list-style-type: none"> • Understand the concept of promotion as an element of marketing mix. • Describe the elements of promotion mix. • Understand the concept of advertising. • Understand the concept of sales promotion. • Discuss the concept of public relations.

Unit 12: Consumer Protection

Concept and importance of consumer protection	<ul style="list-style-type: none"> • Understand the concept of consumer protection. • Describe the importance of consumer protection. • Discuss the scope of Consumer Protection Act, 1986
Consumer Protection Act 1986: Meaning of consumer Rights and responsibilities of consumers Who can file a complaint? Redressal machinery Remedies available	<ul style="list-style-type: none"> • Understand the concept of a consumer according to the Consumer protection Act 1986. • Explain the consumer rights • Understand the responsibilities of consumers • Understand who can file a complaint and against whom? • Discuss the legal redressal machinery under Consumer protection Act 1986. • Examine the remedies available to the consumer under Consumer protection Act 1986.
Consumer awareness - Role of consumer organizations and Non-Governmental Organizations (NGOs)	<ul style="list-style-type: none"> • Describe the role of consumer organizations and NGOs in protecting consumers' interests.

Unit 13: Project Work

PROJECT WORK IN BUSINESS STUDIES FOR CLASS XI AND XII

Introduction

The course in Business Studies is introduced at Senior School level to provide students with a sound understanding of the principles and practices bearing in business (trade and industry) as well as their relationship with the society. Business is a dynamic process that brings together technology, natural resources and human initiative in a constantly changing global environment. With the purpose to help them understand the framework within which a business operates, and its interaction with the social, economic, technological and legal environment, the CBSE has introduced Project Work in the Business Studies Syllabus for Classes XI and XII. The projects have been designed to allow students to appreciate that business is an integral component of society and help them develop an understanding of the social and ethical issues concerning them.

The project work also aims to empower the teacher to relate all the concepts with what is happening around the world and the student's surroundings, making them appear more clear and contextual. This will enable the student to enjoy studies and use his free time effectively in observing what's happening around.

By means of Project Work the students are exposed to life beyond textbooks giving them opportunities to refer materials, gather information, analyze it further to obtain relevant information and decide what matter to keep.

Objectives

After doing the Project Work in Business Studies, the students will be able to do the following:

- develop a practical approach by using modern technologies in the field of business and management;
- get an opportunity for exposure to the operational environment in the field of business management and related services;
- inculcate important skills of team work, problem solving, time management, information collection, processing, analysing and synthesizing relevant information to derive meaningful conclusions
- get involved in the process of research work; demonstrate his or her capabilities while working independently and
- make studies an enjoyable experience to cherish.

CLASS XI: GUIDELINES FOR TEACHERS

This section provides some basic guidelines for the teachers to launch the projects in Business Studies. It is very necessary to interact, support, guide, facilitate and encourage students while assigning projects to them.

The teachers must ensure that the project work assigned to the students whether individually or in group are discussed at different stages right from assignment to drafts review and finalization. Students should be facilitated in terms of providing relevant

materials or suggesting websites, or obtaining required permissions from business houses, malls etc for their project. The periods assigned to the Project Work should be suitably spaced throughout the academic session. The teachers MUST ensure that the students actually go through the rigors and enjoy the process of doing the project rather than depending on any readymade material available commercially.

The following steps might be followed:

1. Students must take any one topic during the academic session of Class XI.
2. The project may be done in a group or individually.
3. The topic should be assigned after discussion with the students in the class and should then be discussed at every stage of submission of the draft/final project work.
4. The teacher should play the role of a facilitator and should closely supervise the process of project completion.
5. The teachers must ensure that the student's self esteem should go up, and he /she should be able to enjoy this process.
6. The project work for each term should culminate in the form of Power Point Presentation/Exhibition/ Skit before the entire class. This will help in developing ICT and communication skills among them.

The teacher should help students to identify any one project from the given topics.

I. Project One: Field Visit

The objective of introducing this project among the students is to give a first hand experience to them regarding the different types of business units operating in their surroundings, to observe their features and activities and relate them to the theoretical knowledge given in their text books. The students should select a place of field visit from the following: – (Add more as per local area availability.)

1. Visit to a Handicraft unit.
2. Visit to an Industry.
3. Visit to a Whole sale market (vegetables, fruits, flowers, grains, garments, etc.)
4. Visit to a Departmental store.
5. Visit to a Mall.

The following points should be kept in mind while preparing this visit.

1. Select a suitable day free from rush/crowd with lean business hours.
2. The teacher must visit the place first and check out on logistics. It's better to seek permission from the concerned business- incharge.
3. Visit to be discussed with the students in advance. They should be encouraged to prepare a worksheet containing points of observation and reporting.
4. Students may carry their cameras (at their own risk) with prior permission for collecting evidence of their observations.

1. Visit to a Handicraft Unit

The purpose of visiting a Handicraft unit is to understand nature and scope of its business, stake holders involved and other aspects as outlined below

- a) The raw material and the processes used in the business: People /parties/firms from which they obtain their raw material.
- b) The market, the buyers, the middlemen, and the areas covered. c) The countries to which exports are made.
- d) Mode of payment to workers, suppliers etc.
- e) Working conditions.
- f) Modernization of the process over a period of time.
- g) Facilities, security and training for the staff and workers.
- h) Subsidies available/ availed.
- i) Any other aspect that the teachers deem fit.

2. Visit to an Industry.

The students are required to observe the following:

- a) Nature of the business organisation.
- b) Determinants for location of business unit.
- c) Form of business enterprise: Sole Proprietorship, Partnership, Undivided Hindu Family, Joint Stock Company (a Multinational Company).
- d) Different stages of production/process
- e) Auxiliaries involved in the process.
- f) Workers employed, method of wage payment, training programmes and facilities available.
- g) Social responsibilities discharged towards workers, investors, society, environment and government.
- h) Levels of management.
- i) Code of conduct for employers and employees.
- j) Capital structure employed- borrowed v/s owned.
- k) Quality control, recycling of defective goods.
- l) Subsidies available/availed.
- m) Safety Measures employed.
- n) Working conditions for labour in observation of Labour Laws.
- o) Storage of raw material and finished goods.
- p) Transport management for employees, raw material and finished goods.
- q) Functioning of various departments and coordination among them (Production, Human Resource, Finance and Marketing)
- r) Waste Management.
- s) Any other observation.

3. Visit to a whole sale market: vegetables/fruits/flowers/grains/garments etc.

The students are required to observe the following:

- a) Sources of merchandise.
- b) Local market practices.
- c) Any linked up businesses like transporters, packagers, money lenders, agents, etc.
- d) Nature of the goods dealt in.
- e) Types of buyers and sellers.
- f) Mode of the goods dispersed, minimum quantity sold, types of packaging employed.
- g) Factors determining the price fluctuations.
- h) Seasonal factors (if any) affecting the business.

- i) Weekly/ monthly non-working days.
- j) Strikes, if any- causes thereof.
- k) Mode of payments.
- l) Wastage and disposal of dead stock.
- m) Nature of price fluctuations, reason thereof.
- n) Warehousing facilities available\availed.
- o) Any other aspect.

4. Visit to a Departmental store

The students are required to observe the following:

- a) Different departments and their lay out.
- b) Nature of products offered for sale.
- c) Display of fresh arrivals.
- d) Promotional campaigns.
- e) Spaces and advertisements.
- f) Assistance by Sales Personnel.
- g) Billing counter at store – Cash, Credit Card/ Debit Card, swipe facility. Added attractions and facilities at the counter.
- h) Additional facilities offered to customers
- i) Any other relevant aspect.

5. Visit to a Mall.

The students are required to observe the following:

- a) Number of floors, shops occupied and unoccupied.
- b) Nature of shops, their ownership status
- c) Nature of goods dealt in: local brands, international brands,
- d) Service business shops- Spas, gym, saloons etc.
- e) Rented spaces, owned spaces,
- f) Different types of promotional schemes.
- g) Most visited shops.
- h) Special attractions of the Mall- Food court, Gaming zone or Cinema etc.
- i) Innovative facilities.
- j) Parking facilities. Teachers may add more to the list.

II. Project Two: Case Study on a Product

- a) Take a product having seasonal growth and regular demand with which students can relate. For example,
 - Apples from Himachal Pradesh, Kashmir.
 - Oranges from Nagpur,
 - Mangoes from Maharashtra/U.P./Bihar/Andhra Pradesh etc.
 - Strawberries from Panchgani,
 - Aloe vera from Rajasthan,
 - Walnuts/almonds from Kashmir,
 - Jackfruit from South,
 - Guavas from Allahabad,
 - Pineapples from North East India,

- Tea from Assam,
- Orchids from Sikkim and Meghalaya,
- Pottery of Manipur,
- Fishes from coastal areas.

Students may develop a Case Study on the following lines:

- (i) Research for change in price of the product. For example, apples in Himachal Pradesh during plucking and non plucking season.
- (ii) Effect on prices in the absence of effective transport system.
- (iii) Effect on prices in the absence of suitable warehouse facilities.
- (iv) Duties performed by the warehouses.
- (v) Demand and supply situation of the product during harvesting season, prices near the place of origin and away.

Students may be motivated to find out the importance of producing and selling these products and their processed items along with the roles of Transport, Warehousing, Advertising, Banking, Insurance, Packaging, Wholesale selling, Retailing, Co-operative farming, Co-operative marketing etc.

The teacher may develop the points for other projects on similar lines for students to work on.

The teacher may assign this project as 'group' project and may give different products to different groups. It could conclude in the form of an exhibition.

III. Project Three: Aids to Trade

Taking any one AID TO TRADE, for example Insurance and gathering information on following aspects

1. History of Insurance Lloyd's contribution.
2. Development of regulatory Mechanism.
3. Insurance Companies in India
4. Principles of Insurance.
5. Types of Insurance. Importance of insurance to the businessmen.
6. Benefits of crop, orchards, animal and poultry insurance to the farmers.
7. Terminologies used (premium, face value, market value, maturity value, surrender value) and their meanings.
8. Anecdotes and interesting cases of insurance. Reference of films depicting people committing fraudulent acts with insurance companies.
9. Careers in Insurance.

Teachers to develop such aspects for other aids to trade.

IV. Project Four: Import /Export Procedure

Any one from the following

1. Import /Export procedure

The students should identify a product of their city/country which is imported /exported. They are required to find the details of the actual import/export procedure. They may take help from the Chambers of Commerce, Banker, existing Importers/Exporters, etc.

They should find details of the procedure and link it with their Text knowledge.

The specimens of documents collected should be pasted in the Project file with brief description of each. They may also visit railway godowns/dockyards/ transport agencies and may collect pictures of the same.

Presentation and submission of project report.

At the end of the stipulated term, each student will prepare and submit his/her project report.

Following essentials are required to be fulfilled for its preparation and submission.

1. The total project will be in a file format, consisting of the recordings of the value of shares and the graphs.
2. The project will be handwritten.
3. The project will be presented in a neat folder.
4. The project report will be developed in the following sequence-
 - Cover page should project the title, student information, school and year.
 - List of contents.
 - Acknowledgements and preface (acknowledging the institution, the news papers read, T.V. channels viewed, places visited and persons who have helped).
 - Introduction.
 - Topic with suitable heading.
 - Planning and activities done during the project, if any.
 - Observations and findings while conducting the project.
 - News paper clippings to reflect the changes of share prices.
 - Conclusions (summarised suggestions or findings, future scope of study).
 - Appendix (if needed).
 - Teachers report.
 - Teachers will initial preface page.
 - At the completion of the evaluation of the project, it will be punched in the centre so that the report cannot be reused but is available for reference only.
 - The projects will be returned after evaluation. The school may keep the best projects.

V. Project Five: A visit to any State Emporium (other than your school state).

The purpose of this project is that it leads to -

- Development of deeper understanding of the diversity of products in the states like Assam, Tripura, Nagaland, Mizoram, Manipur, Meghalaya, Sikkim, Arunachal Pradesh, Jammu and Kashmir, Kerala, Chhatisgarh, Telangana, Andhra Pradesh and other states of the country.
- Sensitization and orientation of students about other states, their trade, business and commerce,
- Understanding the cultural and socio-economic aspects of the state by the students,
- Developing the understanding of role of folk art, artisanship and craftsmanship of the state in its growth and economic development
- Understanding the role of gifts of nature and natural produce in the development of trade, business and commerce

- Understanding the role of vocational skills and abilities on the livelihood of artisans/craftsman
- Understanding of entrepreneurial skills and abilities of the artisans/craftsman
- Understanding of the unemployment problem of the state and role of art and craft of the state in generating employment opportunities
- Value aspect -
 - Sense of gratitude - by appreciating the contributions made by others in the betterment of our lives
 - Appreciating the dignity of work
 - Sensitivity towards social, cultural, ethnical and religious differences Benefits of social harmony and peace
 - Understanding and appreciating the unity in diversity in India
 - Appreciating differences in race, skin colour, languages, religion, habits, festivals, clothing coexistence

Presentation and Submission of Project Report

At the end of the stipulated term, each student will prepare and submit his/her project report.

Following essentials are required to be fulfilled for its preparation and submission.

1. Nature of the business organisation (emporium)
2. Determinants for location of the concerned emporium
3. Is the space rented or owned
4. Nature of the goods dealt in
5. Sources of merchandise of the emporium
6. Role of co-operative societies in the manufacturing and/or marketing of the merchandise
7. Role of gifts of nature or natural produce in the development of goods/merchandise
8. Types of buyers and sellers
9. Modes of goods dispersed, minimum quantity sold and type of carrying bag or package used for delivery of the products sold
10. Factors determining the pricing at the emporium
11. Comparison between the prices of goods available at the emporium with the prices in the open market. Also highlight probable causes of variations if any.
12. Kind of raw material available naturally, used in making the products
13. The technique used in making the products i.e., hand made or machine made
14. Has the child labour being used in making the products sold at the emporium
15. Are the products eco-friendly, in terms of manufacturing, disposal and packing
16. Seasonal factors if any affecting the business of the emporium
17. Weekly/ Monthly non-working days
18. Mode of billing and payments - Cash, Credit Card/ Debit Card, Swipe facility.
19. Does the emporium sell its merchandise in installment / deferred payment basis
20. Do they provide home delivery and after sales services.
21. Different types of promotional campaigns / schemes
22. Assistance by Sales Personnel
23. Export orientation of this emporium and procedure used
24. Policies related to damaged/ returned goods
25. Any government facility available to the emporium
26. Warehousing facilities available / availed
27. Impact of tourism on the business of emporium

28. Additional facility offered to customers
29. Any Corporate Social Responsibility (CSR) assumed by the emporium
30. Contribution made by the emporium to its locality

ASSESSMENT

The marks will be allocated on the following heads.

1	Initiative, cooperativeness and participation	2 Mark
2	Creativity in presentation	2 Mark
3	Content, observation and research work	4 Marks
4	Analysis of situations	4 Marks
5	Viva	8 Marks
	Total	20 Marks

CLASS XII: GUIDELINES FOR TEACHERS

Students are supposed to select one unit out of four and are required to make only ONE project from the selected unit. (Consist of one project of 20 marks)

1. Help students to select any ONE Topic for the entire year.
2. The topic should be assigned after discussion with the students in the class and should then be discussed at every stage of the submission of the project.

The teacher should play the role of a facilitator and should closely supervise the process of project completion. The teachers must ensure that the project work assigned to the students whether individually or in group are discussed at different stages right from assignment to drafts review and finalization. Students should be facilitated in terms of providing relevant materials or suggesting websites, or obtaining required permissions from business houses, malls etc for their project. The periods assigned to the Project Work should be suitably spaced throughout the academic session. The teachers MUST ensure that the student actually go through the rigors and enjoy the process of doing the project rather than depending on any readymade material available outside.

3. The students must make a presentation of the project before the class.
4. The teachers must ensure that the student's self-esteem and creativity is enhanced and both the teacher and the student enjoy this process.
5. The teachers should feel pride in the fact that they have explored the different dimensions of the project in an innovative way and their students have put in genuine work.

I. Project One: Elements of Business Environment

The teachers should help the students in selecting any one element of the following:

1. Changes witnessed over the last few years on mode of packaging and its economic impact. The teacher may guide the students to identify the following changes:
 - a) The changes in transportation of fruits and vegetables such as cardboard crates being used in place of wooden crates, etc. Reasons for above changes.

- b) Milk being supplied in glass bottles, later in plastic bags and now in tetra-pack and through vending machines.
- c) Plastic furniture [doors and stools] gaining preference over wooden furniture.
- d) The origin of cardboard and the various stages of changes and growth.
- e) Brown paper bags packing to recycled paper bags to plastic bags and cloth bags.
- f) Re use of packaging [bottles, jars and tins] to attract customers for their products.
- g) The concept of pyramid packaging for milk.
- h) Cost being borne by the consumer/manufacturer.
- i) Packaging used as means of advertisements.

2. The reasons behind changes in the following:

Coca – Cola and Fanta in the seventies to Thums up and Campa Cola in the eighties to Pepsi and Coke in nineties.

The teacher may guide the students to the times when India sold Coca Cola and Fanta which were being manufactured in India by the foreign companies.

The students may be asked to enquire about

- a) Reasons of stopping the manufacturing of the above mentioned drinks in India THEN.
- b) The introduction of Thums up and Campa cola range.
- c) Re entry of Coke and introduction of Pepsi in the Indian market.
- d) Factors responsible for the change.
- e) Other linkages with the above.
- f) Leading brands and the company having the highest market share.
- g) Different local brands venturing in the Indian market.
- h) The rating of the above brands in the market.
- i) The survival and reasons of failure in competition with the international brands.
- j) Other observations made by the students

The teacher may develop the following on the above lines

3. Changing role of the women in the past 25 years relating to joint families, nuclear families, women as a bread earner of the family, changes in the requirement trend of mixers, washing machines, micro wave and standard of living.

4. The changes in the pattern of import and export of different Products.

5. The trend in the changing interest rates and their effect on savings.

6. A study on child labour laws, its implementation and consequences.

7. The state of 'anti plastic campaign,' the law, its effects and implementation.

8. The laws of mining /setting up of industries, rules and regulations, licences required for running that business.

9. Social factors affecting acceptance and rejection of an identified product. (Dish washer, Atta maker, etc)

10. What has the effect of change in environment on the types of goods and services? The students can take examples like:

- a) Washing machines, micro waves, mixers and grinder.
- b) Need for crèche, day care centre for young and old.
- c) Ready to eat food, eating food outside, and tiffin centres.

11. Change in the man-machine ratio with technological advances resulting in change of cost structure.

12. Effect of changes in technological environment on the behaviour of employee.

II. Project Two: Principles of Management

The students are required to visit any one of the following:

1. A departmental store.
2. An Industrial unit.
3. A fast food outlet.
4. Any other organisation approved by the teacher.

They are required to observe the application of the general Principles of management advocated by Fayol.

Fayol's principles

1. Division of work.
2. Unity of command.
3. Unity of direction.
4. Scalar chain
5. Espirit de corps
6. Fair remuneration to all.
7. Order.
8. Equity.
9. Discipline
10. Subordination of individual interest to general interest.
11. Initiative.
12. Centralisation and decentralisation.
13. Stability of tenure.

OR

They may enquire into the application of scientific management techniques by F.W. Taylor in the unit visited.

Scientific techniques of management.

1. Functional foremanship.
2. Standardisation and simplification of work.
3. Method study.
4. Motion Study.
5. Time Study.
6. Fatigue Study
7. Differential piece rate plan.

Tips to teacher

- (i) The teacher may organize this visit.
- (ii) The teacher should facilitate the students to identify any unit of their choice and guide them to identify the principles that are being followed.
- (iii) Similarly they should guide the students to identify the techniques of scientific management implemented in the organisation.
- (iv) It may be done as a group activity.
- (v) The observations could be on the basis of
 - The different stages of division of work resulting to specialisation.
 - Following instructions and accountability of subordinates to higher authorities.
 - Visibility of order and equity in the unit.
 - Balance of authority and responsibility.
 - Communication levels and pattern in the organisation.

- Methods and techniques followed by the organisation for unity of direction and coordination amongst all.
- Methods of wage payments followed. The arrangements of fatigue study.
- Derivation of time study.
- Derivation and advantages of method study.
- Organisational chart of functional foremanship.
- Any other identified in the organisation

vi. It is advised that students should be motivated to pick up different areas of visit. As presentations of different areas in the class would help in better understanding to the other students.

vii. The students may be encouraged to develop worksheets. Teachers should help students to prepare observation tools to be used for undertaking the project.

Examples; worksheets, questionnaire, interviews and organisational chart etc.

III. Project Three: Stock Exchange

The purpose of this project is to teach school students the values of investing and utilising the stock market. This project also teaches important lessons about the economy, mathematics and financial responsibility.

The basis of this project is to learn about the stock market while investing a specified amount of fake money in certain stocks. Students then study the results and buy and sell as they see fit.

This project will also guide the students and provide them with the supplies necessary to successfully monitor stock market trends and will teach students how to calculate profit and loss on stock.

The project work will enable the students to:

- understand the topics like sources of business finance and capital market
- understand the concepts used in stock exchange
- inculcate the habit of watching business channels, reading business journals/newspapers and seeking information from their elders.

The students are expected to:

- a) Develop a brief report on History of Stock Exchanges in India. (your country)
- b) Prepare a list of at least 25 companies listed on a Stock Exchange.
- c) To make an imaginary portfolio totalling a sum of Rs. 50,000 equally in any of the 5 companies of their choice listed above over a period of twenty working days.

The students may be required to report the prices of the stocks on daily basis and present it diagrammatically on the graph paper.

- They will understand the weekly holidays and the holidays under the Negotiable Instruments Act.

They will also come across with terms like closing prices, opening prices, etc.

- During this period of recording students are supposed to distinctively record the daily and starting and closing prices of the week other days under the negotiable instrument act so that they acquire knowledge about closing and opening prices.

- The students may conclude by identifying the causes in the fluctuations of prices. Normally it would be related to the front page news of the a business journal, for example,

- Change of seasons.
- Festivals.
- Spread of epidemic.
- Strikes and accidents
- Natural and human disasters.
- Political environment.
- Lack of faith in the government policies.
- Impact of changes in government policies for specific industry.
- International events.
- Contract and treaties at the international scene.
- Relations with the neighbouring countries.
- Crisis in developed countries, etc.

The students are expected to find the value of their investments and accordingly rearrange their portfolio. The project work should cover the following aspects;

1. Graphical presentation of the share prices of different companies on different dates.
2. Change in market value of shares due to change of seasons, festivals, natural and human disasters.
3. Change in market value of shares due to change in political environment/ policies of various countries/crisis in developed countries or any other reasons
4. Identify the top ten companies out of the 25 selected on the basis of their market value of shares.

It does not matter if they have made profits or losses.

IV. Project Four: Marketing

- | | |
|-------------------------|---------------------|
| 1. Adhesives | 27. Fruit candy |
| 2. Air conditioners | 28. Furniture |
| 3. Baby diapers | 29. Hair Dye |
| 4. Bathing Soap | 30. Hair Oil |
| 5. Bathroom cleaner | 31. Infant dress |
| 6. Bike | 32. Inverter |
| 7. Blanket | 33. Jams |
| 8. Body Spray | 34. Jeans |
| 9. Bread | 35. Jewellery |
| 10. Breakfast cereal | 36. Kurti |
| 11. Butter | 37. Ladies bag |
| 12. Camera | 38. Ladies footwear |
| 13. Car | 39. Learning Toys |
| 14. Cheese spreads | 40. Lipstick |
| 15. Chocolate | 41. Microwave oven |
| 16. Coffee | 42. Mixers |
| 17. Cosmetology product | 43. Mobile |
| 18. Crayons | 44. Moisturizer |
| 19. Crockery | 45. Music player |
| 20. Cutlery | 46. Nail polish |
| 21. Cycle | 47. Newspaper |
| 22. DTH | 48. Noodles |
| 23. Eraser | 49. Pen |
| 24. e-wash | 50. Pen drive |
| 25. Fairness cream | 51. Pencil |
| 26. Fans | 52. Pickles |

- 53. Razor
- 54. Ready Soups
- 55. Refrigerator
- 56. RO system
- 57. Roasted snacks
- 58. Salt
- 59. Sarees
- 60. Sauces/ Ketchup
- 61. Shampoo
- 62. Shaving cream
- 63. Shoe polish
- 64. Shoes
- 65. Squashes

- 66. Suitcase/ airbag
- 67. Sunglasses
- 68. Tea
- 69. Tiffin Wallah
- 70. Toothpaste
- 71. Wallet
- 72. Washing detergent
- 73. Washing machine
- 74. Washing powder
- 75. Water bottle
- 76. Water storage tank
- 77. Wipes

Any more as suggested by the teacher.

The teacher must ensure that the identified product should not be items whose consumption/use is discouraged by the society and government like alcohol products/pan masala and tobacco products, etc.

Identify one product/service from the above which the students may like to manufacture/provide [pre-assumption].

Now the students are required to make a project on the identified product/service keeping in mind the following:

1. Why have they selected this product/service?
2. Find out '5' competitive brands that exist in the market.
3. What permission and licences would be required to make the product?
4. What are your competitors Unique Selling Proposition.[U.S.P.]?
5. Does your product have any range give details?
6. What is the name of your product?
7. Enlist its features.
8. Draw the 'Label' of your product.
9. Draw a logo for your product.
10. Draft a tag line.
11. What is the selling price of your competitor's product?
 - (i) Selling price to consumer
 - (ii) Selling price to retailer
 - (iii) Selling price to wholesaler

What is the profit margin in percentage to the

- Manufacturer.
- Wholesaler.
- Retailer.

12. How will your product be packaged?
13. Which channel of distribution are you going to use? Give reasons for selection?
14. Decisions related to warehousing, state reasons.
15. What is going to be your selling price?
 - (i) To consumer
 - (ii) To retailer
 - (iii) To wholesaler

16. List 5 ways of promoting your product.
 17. Any schemes for
 - (i) The wholesaler
 - (ii) The retailer
 - (iii) The consumer
 18. What is going to be your 'U.S.P'?
 19. What means of transport you will use and why?
 20. Draft a social message for your label.
 21. What cost effective techniques will you follow for your product.
 22. What cost effective techniques will you follow for your promotion plan.
- At this stage the students will realise the importance of the concept of marketing mix and the necessary decision regarding the four P's of marketing.
- Product
 - Place
 - Price
 - Promotion

On the basis of the work done by the students the project report should include the following:

1. Type of product /service identified and the (consumer/industries) process involve there in.
2. Brand name and the product.
3. Range of the product.
4. Identification mark or logo.
5. Tagline.
6. Labeling and packaging.
7. Price of the product and basis of price fixation.
8. Selected channels of distribution and reasons thereof.
9. Decisions related to transportation and warehousing. State reasons.
10. Promotional techniques used and starting reasons for deciding the particular technique.
11. Grading and standardization.

Presentation and Submission of Project Report

At the end of the stipulated term, each student will prepare and submit his/her project report.

Following essentials are required to be fulfilled for its preparation and submission.

1. The total length of the project will be of 25 to 30 pages.
2. The project should be handwritten.
3. The project should be presented in a neat folder.
4. The project report should be developed in the following sequence-
 - Cover page should include the title of the Project, student information, school and year.
 - List of contents.
 - Acknowledgements and preface (acknowledging the institution, the places visited and the persons who have helped).
 - Introduction.
 - Topic with suitable heading.
 - Planning and activities done during the project, if any.
 - Observations and findings of the visit.

- Conclusions (summarized suggestions or findings, future scope of study).
- Photographs (if any).
- Appendix
- Teacher's observation.
- Signatures of the teachers.
- At the completion of the evaluation of the project, it should be punched in the centre so that the report may not be reused but is available for reference only.
- The project will be returned after evaluation. The school may keep the best projects.

ASSESSMENT

Allocation of Marks = 20 Marks

The marks will be allocated under the following heads:

1	Initiative, cooperativeness and participation	2 Mark
2	Creativity in presentation	2 Mark
3	Content, observation and research work	4 Marks
4	Analysis of situations	4 Marks
5	Viva	8 Marks
	Total	20 Marks

**Suggested Question Paper Design
Business Studies (Code No. 054)
Class XII (2020-21)
March 2021 Examination**

Marks: 80

Duration: 3 hrs.

SN	Typology of Questions	Marks	Percentage
1	<p>Remembering and Understanding: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	44	55%
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way</p>	19	23.75%
3	<p>Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	17	21.25%
	Total	80	100%

ECONOMICS (Code No. 030)

(2020-21)

Rationale

Economics is one of the social sciences, which has great influence on every human being. As economic life and the economy go through changes, the need to ground education in children's own experience becomes essential. While doing so, it is imperative to provide them opportunities to acquire analytical skills to observe and understand the economic realities.

At senior secondary stage, the learners are in a position to understand abstract ideas, exercise the power of thinking and to develop their own perception. It is at this stage, the learners are exposed to the rigour of the discipline of economics in a systematic way.

The economics courses are introduced in such a way that in the initial stage, the learners are introduced to the economic realities that the nation is facing today along with some basic statistical tools to understand these broader economic realities. In the later stage, the learners are introduced to economics as a theory of abstraction.

The economics courses also contain many projects and activities. These will provide opportunities for the learners to explore various economic issues both from their day-to-day life and also from issues, which are broader and invisible in nature. The academic skills that they learn in these courses would help to develop the projects and activities. The syllabus is also expected to provide opportunities to use information and communication technologies to facilitate their learning process.

Objectives:

- Understanding of some basic economic concepts and development of economic reasoning which the learners can apply in their day-to-day life as citizens, workers and consumers.
- Realisation of learners' role in nation building and sensitivity to the economic issues that the nation is facing today.
- Equipment with basic tools of economics and statistics to analyse economic issues. This is pertinent for even those who may not pursue this course beyond senior secondary stage.
- Development of understanding that there can be more than one view on any economic issue and necessary skills to argue logically with reasoning.

ECONOMICS (030) CLASS – XI (2020-21)

Theory: 80 Marks

3 Hours

Project: 20 Marks

Units		Marks	Periods
Part A	Statistics for Economics		
	Introduction	13	07
	Collection, Organisation and Presentation of Data		27
	Statistical Tools and Interpretation	27	66
		40	100
Part B	Introductory Microeconomics		
	Introduction	4	8
	Consumer's Equilibrium and Demand	13	32
	Producer Behaviour and Supply	13	32
	Forms of Market and Price Determination under perfect competition with simple applications	10	28
		40	100
Part C	Project Work	20	20

Part A: Statistics for Economics

In this course, the learners are expected to acquire skills in collection, organisation and presentation of quantitative and qualitative information pertaining to various simple economic aspects systematically. It also intends to provide some basic statistical tools to analyse, and interpret any economic information and draw appropriate inferences. In this process, the learners are also expected to understand the behaviour of various economic data.

Unit 1: Introduction

07 Periods

What is Economics?

Meaning, scope, functions and importance of statistics in Economics

Unit 2: Collection, Organisation and Presentation of data

27 Periods

Collection of data - sources of data - primary and secondary; how basic data is collected with concepts of Sampling; methods of collecting data; some important sources of secondary data: Census of India and National Sample Survey Organisation.

Organisation of Data: Meaning and types of variables; Frequency Distribution.

Presentation of Data: Tabular Presentation and Diagrammatic Presentation of Data: (i) Geometric forms (bar diagrams and pie diagrams), (ii) Frequency diagrams (histogram, polygon and Ogive) and (iii) Arithmetic line graphs (time series graph).

Unit 3: Statistical Tools and Interpretation

66 Periods

For all the numerical problems and solutions, the appropriate economic interpretation may be attempted. This means, the students need to solve the problems and provide interpretation for the results derived.

Measures of Central Tendency- Arithmetic mean, median and mode

Measures of Dispersion - absolute dispersion (range, quartile deviation, mean deviation and standard deviation); relative dispersion (co-efficient of range, co-efficient of quartile-deviation, co-efficient of mean deviation, co-efficient of variation)

Correlation – meaning and properties, scatter diagram; Measures of correlation - Karl Pearson's method (two variables ungrouped data) Spearman's rank correlation.

Introduction to Index Numbers - meaning, types - wholesale price index, consumer price index and index of industrial production, uses of index numbers; Inflation and index numbers.

Part B: Introductory Microeconomics

Unit 4: Introduction

8 Periods

Meaning of microeconomics and macroeconomics; positive and normative economics

What is an economy? Central problems of an economy: what, how and for whom to produce; concepts of production possibility frontier and opportunity cost.

Unit 5: Consumer's Equilibrium and Demand

32 Periods

Consumer's equilibrium - meaning of utility, marginal utility, law of diminishing marginal utility, conditions of consumer's equilibrium using marginal utility analysis.

Indifference curve analysis of consumer's equilibrium-the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.

Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand - factors affecting price elasticity of demand; measurement of price elasticity of demand – percentage-change method.

Unit 6: Producer Behaviour and Supply

32 Periods

Meaning of Production Function – Short-Run and Long-Run

Total Product, Average Product and Marginal Product.

Returns to a Factor

Cost: Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost, average variable cost and marginal cost-meaning and their relationships.

Revenue - total, average and marginal revenue - meaning and their relationship.

Producer's equilibrium-meaning and its conditions in terms of marginal revenue-marginal cost. Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - percentage-change method.

Unit 7: Forms of Market and Price Determination under Perfect Competition with simple applications.

28 Periods

Perfect competition - Features; Determination of market equilibrium and effects of shifts in demand and supply.

Other Market Forms - monopoly, monopolistic competition - their meaning and features.

Simple Applications of Demand and Supply: Price ceiling, price floor.

Part C: Project in Economics

20 Periods

Guidelines as given in class XII curriculum

**Suggested Question Paper Design
Economics (Code No. 030)
Class XI (2020-21)
March 2021 Examination**

Marks: 80

Duration: 3 hrs.

SN	Typology of Questions	Marks	Percentage
1	Remembering and Understanding: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas	44	55%
2	Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	18	22.5%
3	Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	18	22.5%
	Total	80	100%

ECONOMICS
CLASS - XII (2020-21)

Theory: 80 Marks

3 Hours

Project: 20 Marks

Units		Marks	Periods
Part A	Introductory Macroeconomics		
	National Income and Related Aggregates	10	28
	Money and Banking	6	15
	Determination of Income and Employment	12	27
	Government Budget and the Economy	6	15
	Balance of Payments	6	15
		40	100
Part B	Indian Economic Development		
	Development Experience (1947-90) and Economic Reforms since 1991	12	28
	Current Challenges facing Indian Economy	22	60
	Development Experience of India – A Comparison with Neighbours	06	12
	Theory Paper (40+40 = 80 Marks)	40	100
Part C	Project Work	20	20

Part A: Introductory Macroeconomics

Unit 1: National Income and Related Aggregates

28 Periods

What is Macroeconomics?

Basic concepts in macroeconomics: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation.

Circular flow of income (two sector model); Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method.

Aggregates related to National Income:

Gross National Product (GNP), Net National Product (NNP), Gross Domestic Product (GDP) and Net Domestic Product (NDP) - at market price, at factor cost; Real and Nominal GDP.

GDP and Welfare

Unit 2: Money and Banking

15 Periods

Money - meaning and supply of money - Currency held by the public and net demand deposits held by commercial banks.

Money creation by the commercial banking system.

Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Control of Credit through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Unit 3: Determination of Income and Employment

27 Periods

Aggregate demand and its components.

Propensity to consume and propensity to save (average and marginal).

Short-run equilibrium output; investment multiplier and its mechanism.

Meaning of full employment and involuntary unemployment.

Problems of excess demand and deficient demand; measures to correct them - changes in government spending, taxes and money supply.

Unit 4: Government Budget and the Economy

15 Periods

Government budget - meaning, objectives and components.

Classification of receipts - revenue receipts and capital receipts; classification of expenditure – revenue expenditure and capital expenditure.

Measures of government deficit - revenue deficit, fiscal deficit, primary deficit their meaning.

Unit 5: Balance of Payments

15 Periods

Balance of payments account - meaning and components; balance of payments deficit-meaning.

Foreign exchange rate - meaning of fixed and flexible rates and managed floating.

Determination of exchange rate in a free market.

Part B: Indian Economic Development

Unit 6: Development Experience (1947-90) and Economic Reforms since 1991:

28 Periods

A brief introduction of the state of Indian economy on the eve of independence.

Indian economic system and common goals of Five Year Plans.

Main features, problems and policies of agriculture (institutional aspects and new agricultural strategy), industry (IPR 1956; SSI – role & importance) and foreign trade.

Economic Reforms since 1991:

Features and appraisals of liberalisation, globalisation and privatisation (LPG policy);
Concepts of demonetization and GST

Unit 7: Current challenges facing Indian Economy

60 Periods

Poverty- absolute and relative; Main programmes for poverty alleviation: A critical assessment;

Human Capital Formation: How people become resource; Role of human capital in economic development; Growth of Education Sector in India

Rural development: Key issues - credit and marketing - role of cooperatives; agricultural diversification; alternative farming - organic farming

Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies

Infrastructure: Meaning and Types: Case Studies: Energy and Health: Problems and Policies- A critical assessment;

Sustainable Economic Development: Meaning, Effects of Economic Development on Resources and Environment, including global warming

Unit 8: Development Experience of India:

12 Periods

A comparison with neighbours

India and Pakistan

India and China

Issues: economic growth, population, sectoral development and other Human Development Indicators

Part C: Project in Economics

20 Periods

Prescribed Books:

1. Statistics for Economics, NCERT
2. Indian Economic Development, NCERT
3. Introductory Microeconomics, NCERT
4. Macroeconomics, NCERT
5. Supplementary Reading Material in Economics, CBSE

Note: The above publications are also available in Hindi Medium.

**Suggested Question Paper Design
Economics (Code No. 030)
Class XII (2020-21)
March 2021 Examination**

Marks: 80

Duration: 3 hrs.

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2	Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	18	22.5%
3	Analysing, Evaluating and Creating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	18	22.5%
	Total	80	100%

Guidelines for Project Work in Economics (Class XI and XII)

The **objectives** of the project work are to enable learners to:

- probe deeper into theoretical concepts learnt in classes XI and XII
- analyse and evaluate real world economic scenarios using theoretical constructs and arguments
- demonstrate the learning of economic theory
- follow up aspects of economics in which learners have interest
- develop the communication skills to argue logically

The **expectations** of the project work are that:

- learners will complete only **ONE** project in each academic session
- project should be of 3,500-4,000 words (excluding diagrams & graphs), preferably hand-written
- it will be an independent, self-directed piece of study

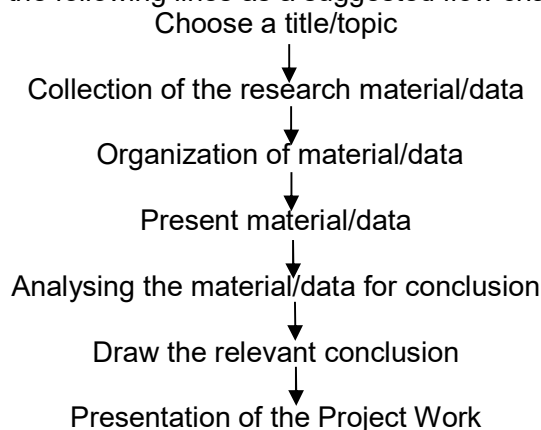
Role of the teacher:

The teacher plays a critical role in developing thinking skills of the learners. A teacher should:

- help each learner select the topic based on recently published extracts from the news media, government policies, RBI bulletin, NITI Aayog reports, IMF/World Bank reports etc., after detailed discussions and deliberations of the topic
- play the role of a facilitator and supervisor to monitor the project work of the learner through periodic discussions
- guide the research work in terms of sources for the relevant data
- educate learner about plagiarism and the importance of quoting the source of the information to ensure authenticity of research work
- prepare the learner for the presentation of the project work
- arrange a presentation of the project file

Scope of the project:

Learners may work upon the following lines as a suggested flow chart:



Expected Checklist:

- Introduction of topic/title
- Identifying the causes, consequences and/or remedies
- Various stakeholders and effect on each of them
- Advantages and disadvantages of situations or issues identified
- Short-term and long-term implications of economic strategies suggested in the course of research
- Validity, reliability, appropriateness and relevance of data used for research work and for presentation in the project file
- Presentation and writing that is succinct and coherent in project file
- *Citation of the materials referred to, in the file in footnotes, resources section, bibliography etc.*

Mode of presentation/submission of the Project:

At the end of the stipulated term, each learner will present the research work in the Project File to the External and Internal examiner. **The questions should be asked from the Research Work/ Project File of the learner. The Internal Examiner should ensure that the study submitted by the learner is his/her own original work.** In case of any doubt, authenticity should be checked and verified.

Marking Scheme :

Marks are suggested to be given as –

S. No.	Heading	Marks Allotted
1.	Relevance of the topic	3
2.	Knowledge Content/Research Work	6
3.	Presentation Technique	3
4.	Viva-voce	8
	Total	20 Marks

Suggestive List of Projects:

Class XI	
• Effect on PPC due to various government policies	• Invisible Hand (Adam Smith)
• Opportunity Cost as an Economic Tool (taking real life situations)	• Effect of Price Change on a Substitute Good (taking prices from real life visiting local market)
• Effect on equilibrium Prices in Local Market (taking real life situation or recent news)	• Effect of Price Change on a Complementary Good (taking prices from real life visiting local market)
• Solar Energy, a Cost Effective Comparison with Conventional Energy Sources	• Bumper Production- Boon or Bane for the Farmer
• Any other newspaper article and its evaluation on basis of economic principles	• Any other topic

Class XII	
• Micro and Small Scale Industries	• Food Supply Channel in India
• Contemporary Employment situation in India	• Disinvestment policy of the government
• Goods and Services Tax Act and its Impact on GDP	• Health Expenditure (of any state)
• Human Development Index	• Inclusive Growth Strategy
• Self-help group	• Trends in Credit availability in India
• Monetary policy committee and its functions	• Role of RBI in Control of Credit
• Government Budget & its Components	• Trends in budgetary condition of India
• Exchange Rate determination – Methods and Techniques	• Currency War – reasons and repercussions
• Livestock – Backbone of Rural India	• Alternate fuel – types and importance
• Sarwa Siksha Abhiyan – Cost Ratio Benefits	• Golden Quadrilateral- Cost ratio benefit
• Minimum Support Prices	• Relation between Stock Price Index and Economic Health of Nation
• Waste Management in India – Need of the hour	• Minimum Wage Rate – approach and Application
• Digital India- Step towards the future	• Rain Water Harvesting – a solution to water crises
• Vertical Farming – an alternate way	• Silk Route- Revival of the past
• Make in India – The way ahead	• Bumper Production- Boon or Bane for the farmer
• Rise of Concrete Jungle- Trend Analysis	• Organic Farming – Back to the Nature
• Any other newspaper article and its evaluation on basis of economic principles	• Any other topic

Computer Science

CLASS-XI
Code No. 083
2020-21

1. Learning Outcomes

- Ability to understand and apply basic computational thinking.
- Ability to understand the notion of data types and data structures and apply in different situations.
- Ability to appreciate the notion of an algorithm and apply its structure including how algorithms handle corner cases.
- Ability to develop a basic understanding of computer systems - architecture, operating system, mobile and cloud computing.
- Ability to work in the cyber world with understanding of cyber ethics, cyber safety and cybercrime
- Ability to make use the value of technology in societies, gender and disability issues and the technology behind biometric ids.

2. Distribution of Marks

Unit No.	Unit Name	Theory Marks	Periods	
			Theory	Practical
I	Computer Systems and Organisation	10	10	10
II	Computational Thinking and Programming - 1	45	80	60
III	Society, Law and Ethics	15	20	----
	Total	70	110	70

Unit I: Computer Systems and Organisation

- Basic computer organisation: description of a computer system and mobile system, CPU, memory, hard disk, I/O, battery.
- Types of software: Application software, System software and Utility software.
- Memory Units: bit, byte, MB, GB, TB, and PB.
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, NOT, truth tables and De Morgan's laws, Logic circuits
- Number System: numbers in base 2, 8, 16 and binary addition.
- Encoding Schemes: ASCII, UTF8, UTF32, ISCII and Unicode.

- Concept of Compiler and Interpreter
- Operating System (OS) - need for an operating system, brief introduction to functions of OS, user interface
- Concept of cloud computing and cloud services (SaaS,IaaS,PaaS), cloud (public/private), Blockchain technology

Unit II: Computational Thinking and Programming - 1

Introduction to Problem solving: Problem solving cycle - Analysing a problem, designing algorithms and representation of algorithm using flowchart and pseudo-code.

Decomposition - concept, need for decomposing a problem, examples of problem solving using decomposition.

Familiarization with the basics of Python programming: a simple "hello world" program, the process of writing a program (Interactive & Script mode), running it and print statements; simple data-types: integer, float and string.

- Features of Python, Python Character Set, Token & Identifiers, Keywords, Literals, Delimiters, Operators.
- Comments: (Single line & Multiline/ Continuation statements), Clarity & Simplification of expression
- Introduce the notion of a variable and methods to manipulate it (concept of L-value and R-value even if not taught explicitly).
- Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.
- Operators & types: Binary operators-Arithmetic, Relational Operators, Logical Operators, Augmented Assignment Operators.
- Execution of a program, errors- syntax error, run-time error and logical error.
- Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number.
- Notion of iterative computation and control flow: for(range(),len()), while, using flowcharts, suggested programs: calculation of simple and compound interests, finding the factorial of a positive number etc.
- Strings: Traversal, operations – concatenation, repetition, membership; functions/methods–len(), capitalize(), title(), upper(), lower(), count(), find(), index(), isalnum(), islower(), isupper(), isspace(), isalpha(), isdigit(), split(), partition(), strip(), lstrip(), rstrip(), replace(); String slicing.
- Lists: Definition, Creation of a list, Traversal of a list. Operations on a list - concatenation, repetition, membership; functions/methods–len(), list(),

append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), min(), max(), sum(); Lists Slicing; Nested lists; finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list.

- Tuples: Definition, Creation of a Tuple, Traversal of a tuple. Operations on a tuple - concatenation, repetition, membership; functions/methods – len(), tuple(), count(), index(), sorted(), min(), max(), sum(); Nested tuple; Tuple slicing; finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple.
- Dictionary: Definition, Creation, Accessing elements of a dictionary, add an item, modify an item in a dictionary; Traversal, functions/methods – len(), dict(), keys(), values(), items(), get(), update(), del(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted() copy(); Suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them.
- Sorting algorithm: bubble and insertion sort; count the number of operations while sorting.
- Introduction to Python modules: Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median, mode).

Unit III: Society, Law and Ethics

- Cyber safety: safely browsing the web, identity protection, confidentiality, social networks, cyber trolls and bullying.
- Appropriate usage of social networks: spread of rumours, and common social networking sites (Twitter, LinkedIn, and Facebook) and specific usage rules.
- Safely accessing web sites: adware, malware, viruses, trojans
- Safely communicating data: secure connections, eavesdropping, phishing and identity verification.
- Intellectual property rights, plagiarism, digital rights management, and licensing (Creative Commons, GPL and Apache), open source, open data, privacy.
- Privacy laws, fraud; cyber-crime- phishing, illegal downloads, child pornography, scams; cyber forensics, IT Act, 2000.
- Technology and society:
 - understanding of societal issues and cultural changes induced by technology.
 - E-waste management: proper disposal of used electronic gadgets.

- Identity theft, unique ids and biometrics.
- Gender and disability issues while teaching and using computers.

3. Practical

S.No.	Area	Marks (Total=30)
1.	Lab Test (12 marks)	
	Python program (60% logic + 20% documentation + 20% code quality)	12
2.	Report File + Viva (10 marks)	
	Report file: Minimum 20 Python programs	7
	Viva voce	3
3.	Project (8 marks) (that uses most of the concepts that have been learnt See CS-XII for the rules regarding the projects)	

4. Suggested Practical List

Python Programming

- Input a welcome message and display it.
- Input two numbers and display the larger / smaller number.
- Input three numbers and display the largest / smallest number.
- Given two integers x and n, compute x^n .
- Write a program to input the value of x and n and print the sum of the following series:

- $1+x+x^2+x^3+x^4+\dots X^n$
- $1-x+x^2-x^3+x^4-\dots X^n$
- $x + \frac{x^2}{2} - \frac{x^3}{3} + \frac{x^4}{4} - \dots \frac{X^n}{n}$
- $x + \frac{x^2}{2!} - \frac{x^3}{3!} + \frac{x^4}{4!} - \dots \frac{X^n}{n!}$

- Determine whether a number is a perfect number, an armstrong number or a palindrome.
- Input a number and check if the number is a prime or composite number.
- Display the terms of a Fibonacci series.
- Compute the greatest common divisor and least common multiple of two integers.
- Count and display the number of vowels, consonants, uppercase, lowercase characters in string.
- Input a string and determine whether it is a palindrome or not; convert the case of characters in a string.
- Find the largest/smallest number in a list/tuple
- Input a list of numbers and swap elements at the even location with the elements at the odd location.
- Input a list of elements, sort in ascending/descending order using Bubble/Insertion sort.
- Input a list/tuple of elements, search for a given element in the list/tuple.
- Input a list of numbers and test if a number is equal to the sum of the cubes of its digits. Find the smallest and largest such number from the given list of numbers.
- Create a dictionary with the roll number, name and marks of n students in a class and display the names of students who have marks above 75.

Computer Science

CLASS-XII
Code No. 083
2020-21

1. Prerequisites

Computer Science- Class XI

2. Learning Outcomes

- Apply the concept of functions and recursion.
- Ability to create and use Python libraries.
- Apply the concept of file handling.
- Make use of the concept of efficiency in algorithms and computing in general.
- Ability to use basic data structures: Stacks and Queues.
- Explain the basics of computer networks.
- Ability to use connectivity between Python and SQL.

3. Distribution of Marks:

Unit No.	Unit Name	Theory Marks	Periods	
			Theory	Practical
I	Computational Thinking and Programming - 2	40	70	50
II	Computer Networks	10	15	---
III	Database Management	20	25	20
	Total	70	110	70

Unit I: Computational Thinking and Programming - 2

- Revision of the basics of Python covered in Class XI.
- Functions: scope, parameter passing, mutable/immutable properties of data objects, passing strings, lists, tuples, dictionaries to functions, default parameters, positional parameters, return values, functions using libraries: mathematical and string functions.
- File handling: Need for a data file, Types of file: Text files, Binary files and CSV (Comma separated values) files.

- Text File: Basic operations on a text file: Open (filename – absolute or relative path, mode) / Close a text file, Reading and Manipulation of data from a text file, Appending data into a text file, standard input / output and error streams, relative and absolute paths.
- Binary File: Basic operations on a binary file: Open (filename – absolute or relative path, mode) / Close a binary file, Pickle Module – methods load and dump; Read, Write/Create, Search, Append and Update operations in a binary file.
- CSV File: Import csv module, functions – Open / Close a csv file, Read from a csv file and Write into a csv file using csv.reader () and csv.writer().
- Using Python libraries: create and import Python libraries.
- Recursion: simple algorithms with recursion: print a message forever, sum of first n natural numbers, factorial, Fibonacci numbers; recursion on arrays: binary search.
- Idea of efficiency: performance measurement in terms of the number of operations.
- Data-structures: Lists as covered in Class XI, Stacks – Push, Pop using a list, Queues – Insert, Delete using a list.

Unit II: Computer Networks

- Evolution of Networking: ARPANET, Internet, Interspace Different ways of sending data across the network with reference to switching techniques (Circuit and Packet switching).
- Data Communication terminologies: Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, Kbps, Mbps, Gbps, Tbps).
- Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link.
- Network devices: Modem, RJ45 connector, Ethernet Card, Router, Switch, Gateway, WiFi card.
- Network Topologies and types: Bus, Star, Tree, PAN, LAN, WAN, MAN.
- Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, HTTP, SMTP, POP3, Remote Login (Telnet) and Internet, Wireless / Mobile Communication protocol such as GSM, GPRS and WLL.
- Mobile Telecommunication Technologies: 1G, 2G, 3G, 4G and 5G; Mobile processors;
Electronic mail protocols such as SMTP, POP3, Protocols for Chat and Video Conferencing: VoIP, Wireless technologies such as Wi-Fi and WiMax

- Network Security Concepts:
Threats and prevention from Viruses, Worms, Trojan horse, Spams
Use of Cookies, Protection using Firewall, https;
India IT Act, Cyber Law, Cyber Crimes, IPR issues, hacking.
- Introduction To Web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Website, Web browser, Web Servers; Web Hosting, Web Scripting – Client side (VB Script, Java Script, PHP) and Server side (ASP, JSP, PHP), Web 2.0 (for social networking)
- E-commerce payment transactions using online banking, mobile banking, payment apps and services.

Unit III: Database Management

Database Concepts: Introduction to database concepts and its need.

Relational data model: Concept of domain, relation, tuple, attribute, degree, cardinality, key, primary key, candidate key, alternate key and foreign key;

Structured Query Language:

General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language;

Data Types: number / decimal, character / varchar / varchar2, date;

SQL commands: CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATESET....., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, LIKE, NULL / IS NULL, ORDER BY, GROUP BY, HAVING;

SQL functions: SUM (), AVG (), COUNT (), MAX () and MIN ();

Joins: equi-join and natural join

Interface of Python with an SQL database

- Connecting SQL with Python
- Creating Database connectivity Applications
- Performing Insert, Update, Delete queries
- Display data by using fetchone(), fetchall(), rowcount

4. Practical

S. No.	Area	Marks (Total=30)
1	Lab Test: 1. Python program (60% logic + 20% documentation + 20% code quality) 2. Small Python program that sends a SQL query to a database and displays the result. A stub program can be provided.	7 5
2	Report file: Minimum 20 Python programs. Out of this at least 4 programs should send SQL commands to a database and retrieve the result	7
3	Project (that uses the concepts that have been learnt in Class 11 and 12)	8
4	Viva voce	3

5. Suggested Practical List:

Python Programming

- Recursively find the factorial of a natural number.
- Write a recursive code to find the sum of all elements of a list.
- Write a recursive code to compute the n^{th} Fibonacci number.
- Read a text file line by line and display each word separated by a #.
- Read a text file and display the number of vowels/ consonants/ uppercase/ lowercase characters in the file.
- Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
- Create a binary file with roll number, name and marks. Input a roll number and update the marks.
- Remove all the lines that contain the character `a` in a file and write it to another file.
- Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
- Write a Python program to implement a stack and queue using a list data-structure.
- Take a sample of ten phishing e-mails (or any text file) and find most commonly occurring word(s)

Database Management

- Create a student table and insert data. Implement the following SQL commands on the student table:
ALTER table to add new attributes / modify data type / drop attribute
UPDATE table to modify data
ORDER By to display data in ascending / descending order
DELETE to remove tuple(s)
GROUP BY and find the min, max, sum, count and average
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing the MySQL module.

6. Project

The aim of the class project is to create something that is tangible and useful using Python / Python and SQL connectivity. This should be done in groups of two to three students and should be started by students at least 6 months before the submission deadline. The aim here is to find a real world problem that is worthwhile to solve.

Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school, software for their disabled fellow students, and mobile applications, Of course to do some of these projects, some additional learning is required; this should be encouraged. Students should know how to teach themselves.

The students should be sensitized to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.

Informatics Practices

CLASS XI

Code No. 065

2020-2021

1. **Prerequisite** : None

2. **Learning Outcomes** :

At the end of this course, students will be able to:

- Identify the components of Computer System.
- Create Python programs using different data types, lists and dictionaries.
- Explain what is 'data' and analyse using NumPy.
- Explain database concepts and Relational Database Management Systems.
- Retrieve and manipulate data in RDBMS using Structured Query Language
- Identify the Emerging trends in the fields of Information Technology.

3. **Distribution of Marks and Periods** :

Unit No	Unit Name	Marks	Periods Theory	Periods Practical	Total Period
1	Introduction to Computer System	5	10	-	10
2	Introduction to Python	25	35	35	70
3	Data Handling using NumPy	15	28	15	43
4	Database concepts and the Structured Query Language	20	25	25	50
5	Introduction to Emerging Trends	5	7	-	7
	Practical	30	-	-	-
	Total	100	105	75	180

4. Unit Wise syllabus

Unit 1: Introduction to Computer System

Introduction to computer and computing: evolution of computing devices, components of a Computer System and their interconnections, Input/Output devices.

Computer Memory: Units of memory, types of memory – primary and secondary, data deletion, its recovery and related security concerns.

Software: purpose and types – system and application software, generic and specific purpose software.

Unit 2: Introduction to Python

Basics of Python programming, Python interpreter - interactive and script mode, the structure of a program, indentation, identifiers, keywords, constants, variables, types of operators, precedence of operators, data types, mutable and immutable data types, statements, expressions, evaluation and comments, input and output statements, data type conversion, debugging.

Control Statements: if-else, for loop

Lists: list operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions.

Dictionary: concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions.

Unit 3: Data Handling using NumPy

Data and its purpose, importance of data, structured and unstructured data, data processing cycle, basic statistical methods for understanding data - mean, median, mode, standard deviation and variance.

Introduction to NumPy library, NumPy arrays and their advantage, creation of NumPy arrays; indexing, slicing, and iteration; concatenating and splitting array;

Arithmetic operations on one Dimensional and two Dimensional arrays.

Calculating max, min, count, sum, mean, median, mode, standard deviation, variance on NumPy arrays.

Unit 4: Database concepts and the Structured Query Language

Database Concepts: Introduction to database concepts and its need, Database Management System.

Relational data model: Concept of domain, tuple, relation, candidate key, primary key, alternate key, foreign key.

Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, Creating a database using MySQL, Data Types

Data Definition: CREATE TABLE, DROP TABLE, ALTER TABLE.

Data Query: SELECT, FROM, WHERE.

Data Manipulation: INSERT, UPDATE, DELETE.

Unit 5: Introduction to the Emerging Trends

Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive experience (AR, VR), Robotics, Big data and its characteristics, Internet of Things (IoT), Sensors, Smart cities, Cloud Computing and Cloud Services (SaaS, IaaS, PaaS); Grid Computing, Block chain technology.

Practical Marks Distribution

S.No.	Unit Name	Marks
1	Problem solving using Python programming language	8
2	Problem solving using NumPy	5
3	Creating database using MySQL and performing Queries	5
4	Practical file (minimum of 20 python programs , 5 Numpy programs and 20 SQL queries)	7
5	Viva-Voce	5
	Total	30

5. Suggested Practical List :

5.1 Programming in Python

1. To find average and grade for given marks.
2. To find sale price of an item with given cost and discount (%).
3. To calculate perimeter/circumference and area of shapes such as triangle, rectangle, square and circle.
4. To calculate Simple and Compound interest.
5. To calculate profit-loss for given Cost and Sell Price.
6. To calculate EMI for Amount, Period and Interest.
7. To calculate tax - GST / Income Tax.
8. To find the largest and smallest numbers in a list.
9. To find the third largest/smallest number in a list.
10. To find the sum of squares of the first 100 natural numbers.
11. To print the first 'n' multiples of given number.
12. To count the number of vowels in user entered string.
13. To print the words starting with a particular alphabet in a user entered string.
14. To print number of occurrence of a given alphabet in a given string.
15. Create a dictionary to store names of states and their capitals.
16. Create a dictionary of students to store names and marks obtained in 5 subjects.
17. To print the highest and lowest values in the dictionary.

5.2 Numpy Program

18. To create an array of 1D containing numeric values 0 to 9.

19. To create a NumPy array with all values as 0.
20. To extract values at odd numbered position from a NumPy array.
21. To create a 1-D array having 12 elements using `arange()`. Now, convert this array into a 2-D array with size 4X3.
22. To perform basic arithmetic operations on 1D and 2D array .

5.3 Data Management: SQL Commands

23. To create a database
24. To create student table with the student id, class, section, gender, name, dob, and marks as attributes where the student id is the primary key.
25. To insert the details of at least 10 student in the above table.
26. To delete the details of a particular student in the above table.
27. To increase marks by 5% for those students who have Rno more than 20.
28. To display the entire content of table.
29. To display Rno, Name and Marks of those students who are scoring marks more than 50.
30. To find the average of marks from the student table.
31. To find the number of students, who are from section 'A'.
32. To add a new column email in the above table with appropriate data type.
33. To add the email ids of each student in the previously created email column.
34. To display the information all the students, whose name starts with 'AN' (Examples: ANAND, ANGAD,..)
35. To display Rno, Name, DOB of those students who are born between '2005- 01-01' and '2005-12-31'.
36. To display Rno, Name, DOB, Marks, Email of those male students in ascending order of their names.
37. To display Rno, Gender, Name, DOB, Marks, Email in descending order of their marks.
38. To display the unique section available in the table.

Reference:

NCERT Informatics Practices - Text book for class - XI

Informatics Practices

CLASS XII

Code No. 065

2020-2021

1. Prerequisite: Informatics Practices – Class XI

2. Learning Outcomes

At the end of this course, students will be able to:

- Create Series, Data frames and apply various operations.
- Perform aggregation operations, calculate descriptive statistics.
- Visualize data using relevant graphs.
- Design SQL queries using aggregate functions.
- Import/Export data between SQL database and Pandas.
- Learn terminology related to networking and internet.
- Identify internet security issues and configure browser settings.
- Explain the impact of technology on society including gender and disability issues.

3. Distribution of Marks and Periods

Unit No	Unit Name	Marks	Periods Theory	Periods Practical	Total Period
1	Data Handling using Pandas and Data Visualization	30	50	40	90
2	Database Query using SQL	25	30	22	52
3	Introduction to Computer Networks	7	12	2	14
4	Societal Impacts	8	14	-	14
	Project	-	-	10	10
	Practical	30	-	-	-
	Total	100	106	74	180

4. Unit Wise syllabus

Unit 1: Data Handling using Pandas and Data Visualization

Data Handling using Pandas -I

Introduction to Python libraries- Pandas, Matplotlib.

Data structures in Pandas - Series and Data Frames.

Series: Creation of Series from – ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing and Slicing.

Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing; Joining, Merging and Concatenation.

Importing/Exporting Data between CSV files and Data Frames.

Data handling using Pandas – II

Descriptive Statistics: max, min, count, sum, mean, median, mode, quartile, Standard deviation, variance.

DataFrame operations: Aggregation, group by, Sorting, Deleting and Renaming Index, Pivoting.

Handling missing values – dropping and filling.

Importing/Exporting Data between MySQL database and Pandas.

Data Visualization

Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram, pie chart, frequency polygon, box plot and scatter plot.

Customizing plots: color, style (dashed, dotted), width; adding label, title, and legend in plots.

Unit 2: Database Query using SQL

Math functions: POWER (), ROUND (), MOD ().

Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().

Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().

Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).

Querying and manipulating data using Group by, Having, Order by.

Operations on Relations - Union, Intersection, Minus, Cartesian Product, JOIN

Unit 3: Introduction to Computer Networks

Introduction to networks, Types of network: LAN, MAN, WAN.

Network Devices: modem, hub, switch, repeater, router, gateway

Network Topologies: Star, Bus, Tree, Mesh.

Introduction to Internet, URL, WWW and its applications- Web, email, Chat, VoIP.

Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website.

Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.

Unit 4: Societal Impacts

Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.

E-waste: hazards and management.

Awareness about health concerns related to the usage of technology.

Project Work

The aim of the class project is to create tangible and useful IT application. The learner may identify a real-world problem by exploring the environment. e.g. Students can visit shops/business places, communities or other organizations in their localities and enquire about functioning of the organization, and how data are generated, stored and managed. The learner can take data stored in csv or database file and analyze using Python libraries and generate appropriate charts to visualize. If an organization is maintaining data offline, then the learner should create a database using MySQL and store the data in tables. Data can be imported in Pandas for analysis and visualization.

Learners can use Python libraries of their choice to develop software for their school or any other social good. Learners should be sensitized to avoid plagiarism and violation of copyright issues while working on projects. Teachers should take necessary measures for this. Any resources (data, image etc.) used in the project must be suitably referenced.

The project can be done individually or in groups of 2 to 3 students. The project should be started by students at least 6 months before the submission deadline.

Practical Marks Distribution

S.No.	Unit Name	Marks
1	Programs using Pandas and Matplotlib	8
2	SQL Queries	5
3	Practical file (minimum of 20 programs based on Pandas , 5 based on Matplotlib and 20 SQL queries must be included)	5
4	Project Work (using concepts learned in class XI and XII)	7
5	Viva-Voce	5
	TOTAL	30

5. Suggested Practical List

5.1 Data Handling

1. Create a pandas series from a dictionary of values and an ndarray
2. Given a Series, print all the elements that are above the 75th percentile.
3. Create a Data Frame quarterly sales where each row contains the item category, item name, and expenditure. Group the rows by the category, and print the total expenditure per category.
4. Create a data frame based on ecommerce data and generate descriptive statistics (mean, median, mode, quartile, and variance)
5. Create a data frame for examination result and display row labels, column labels data types of each column and the dimensions
6. Filter out rows based on different criteria such as duplicate rows..
7. Find the sum of each column, or find the column with the lowest mean.
8. Locate the 3 largest values in a data frame.
9. Subtract the mean of a row from each element of the row in a Data Frame.
10. Replace all negative values in a data frame with a 0.
11. Replace all missing values in a data frame with a 999.
12. Importing and exporting data between pandas and CSV file
13. Importing and exporting data between pandas and MySQL database

5.2 Visualization

14. Given the school result data, analyse the performance of the students on different parameters, e.g subject wise or class wise.
15. For the Data frames created above, analyze and plot appropriate charts with title and legend.
16. Take data of your interest from an open source (e.g. data.gov.in), aggregate and summarize it. Then plot it using different plotting functions of the Matplotlib library.

5.3 Data Management

17. Create a student table with the student id, name, and marks as attributes where the student id is the primary key.
18. Insert the details of a new student in the above table.
19. Delete the details of a particular student in the above table.
20. Use the select command to get the details of the students with marks more than 80.
21. Create a new table (order ID, customer Name, and order Date) by joining two tables (order ID, customer ID, and order Date) and (customer ID, customer Name, contact Name, country).
22. Create a foreign key in one of the two tables mentioned above
23. Find the min, max, sum, and average of the marks in a student marks table.
24. Find the total number of customers from each country in the table (customer ID, customer Name, country) using group by.
25. Create a new table (name, date of birth) by joining two tables (student id, name) and (student id, date of birth).
26. Write a SQL query to order the (student ID, marks) table in descending order of the marks.

5.4 Introduction to Computer Networks

27. Download, install and configure browser.

Reference:

NCERT Informatics Practices - Text book for class - XII

PHYSICAL EDUCATION (048)
Class XI (2020–21)

Theory

Max. Marks 70

Unit I Changing Trends & Career in Physical Education

- Meaning & definition of Physical Education
- Aims & Objectives of Physical Education
- Career Options in Physical Education
- Competitions in various sports at national and international level
- Khelo-India Program

Unit II Olympic Value Education

- Olympics, Paralympics and Special Olympics
- Olympic Symbols, Ideals, Objectives & Values of Olympism
- International Olympic Committee
- Indian Olympic Association

Unit III Physical Fitness, Wellness & Lifestyle

- Meaning & Importance of Physical Fitness, Wellness & Lifestyle
- Components of physical fitness and Wellness
- Components of Health related fitness

Unit IV Physical Education & Sports for CWSN (Children With Special Needs- Divyang)

- Aims & objectives of Adaptive Physical Education
- Organization promoting Adaptive Sports (Special Olympics Bharat; Paralympics; Deaflympics)
- Concept of Inclusion, its need and Implementation
- Role of various professionals for children with special needs (Counsellor, Occupational Therapist, Physiotherapist, Physical Education Teacher, Speech Therapist & special Educator)

Unit V Yoga

- Meaning & Importance of Yoga
- Elements of Yoga
- Introduction - Asanas, Pranayam, Meditation & Yogic Kriyas
- Yoga for concentration & related Asanas (Sukhasana; Tadasana; Padmasana & Shashankasana, Naukasana, Vrikshasana (Tree pose), Garudasana (Eagle pose)
- Relaxation Techniques for improving concentration – Yog-nidra

Unit VI Physical Activity & Leadership Training

- Leadership Qualities & Role of a Leader
- Creating leaders through Physical Education
- Meaning, objectives & types of Adventure Sports (Rock Climbing, Tracking, River Rafting, Mountaineering, Surfing and Para Gliding)
- Safety measures to prevent sports injuries

Unit VII Test, Measurement & Evaluation

- Define Test, Measurement & Evaluation
- Importance of Test, Measurement & Evaluation In Sports
- Calculation of BMI & Waist - Hip Ratio
- Somato Types (Endomorphy, Mesomorphy & Ectomorphy)
- Measurement of health related fitness

Unit VIII Fundamentals of Anatomy, Physiology & Kinesiology in Sports

- Definition and Importance of Anatomy, Physiology & Kinesiology
- Function of Skeleton System, Classification of Bones & Types of Joints
- Properties and Functions of Muscles
- Function & Structure of Respiratory System and Circulatory System
- Equilibrium – Dynamic & Static And Centre of Gravity and its application in sports

Unit IX Psychology & Sports

- Definition & Importance of Psychology in Phy. Edu. & Sports
- Define & Differentiate Between Growth & Development
- Developmental Characteristics At Different Stages of Development
- Adolescent Problems & Their Management

Unit X Training and Doping in Sports

- Meaning & Concept of Sports Training
- Principles of Sports Training
- Warming up & limbering down
- Skill, Technique & Style
- Concept & classification of doping
- Prohibited Substances & their sideeffects
- Dealing with alcohol and substanceabuse

Practical

Max. Marks 30

- | | |
|---|-----------|
| 01. Physical Fitness Test | - 6 Marks |
| 02. Proficiency in Games and Sports (Skill of any one Game of choice from the given list*)- 7 Marks | - 7 Marks |
| 03. Yogic Practices | - 7 Marks |
| 04. Record File ** | - 5 Marks |
| 05. Viva Voce (Health/ Games & Sports/ Yoga) | - 5 Marks |

* Athletics, Archery, Badminton, Boxing, Chess, Judo, Shooting, Skating, Swimming, Taekwondo, Tennis, Aerobics, Gymnastics, Rope-Skipping, Yoga, Bocce & Unified Basketball [CWSN (Children With Special Needs - Divyang)]

***Record File shall include:*

Practical-1: Labelled diagram of 400 M Track & Field with computations.

Practical-2: Computation of BMI from family or neighbourhood & graphical representation of the data.

Practical-3: Labelled diagram of field & equipment of any one game of your choice out of the above list.

Practical-4: List of current National Awardees (Dronacharya Award, Arjuna Award & Rajiv Gandhi Khel Ratna Award)

Practical-5: Pictorial presentation of any five Asanas for improving concentration.

**Suggested Question Paper Design
Physical Education (Code No. 048)
Class XI (2020-21)**

Marks: 70

Duration: 3 hrs.

SN	Typology of Questions	Marks
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	43
2	<p>Applying: Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.</p>	16
3	<p>Analysing and Evaluating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations.</p> <p>Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	11
Total		70

PHYSICAL EDUCATION (048)
Class XII (2020–21)

Theory

Max. Marks 70

Unit I Planning in Sports

- Meaning & Objectives Of Planning
- Various Committees & its Responsibilities (pre; during & post)
- Tournament – Knock-Out, League Or Round Robin & Combination
- Procedure To Draw Fixtures – Knock-Out (Bye & Seeding) & League (Staircase & Cyclic)
- Intramural & Extramural – Meaning, Objectives & Its Significance
- Specific Sports Programme (Sports Day, Health Run, Run For Fun, Run For Specific Cause & Run For Unity)

Unit II Sports & Nutrition

- Balanced Diet & Nutrition: Macro & Micro Nutrients
- Nutritive & Non-Nutritive Components Of Diet
- Eating For Weight Control – A Healthy Weight, The Pitfalls of Dieting, Food Intolerance & Food Myths

Unit III Yoga & Lifestyle

- Asanas as preventive measures
- Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana
- Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana, Pavanuktasana, Ardh Matsyendrasana
- Asthema: Procedure, Benefits & contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana
- Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana
- Back Pain: Tadasana, Ardh Matsyendrasana, Vakrasana, Shalabhasana, Bhujangasana

Unit IV Physical Education & Sports for CWSN (Children With Special Needs - Divyang)

- Concept of Disability & Disorder
- Types of Disability, its causes & nature (cognitive disability, intellectual disability, physical disability)
- Types of Disorder, its cause & nature (ADHD, SPD, ASD, ODD, OCD)
- Disability Etiquettes
- Advantage of Physical Activities for children with special needs
- Strategies to make Physical Activities assessable for children with special need.

Unit V Children & Women in Sports

- Motor development & factors affecting it
- Exercise Guidelines at different stages of growth & Development
- Common Postural Deformities - Knock Knee; Flat Foot; Round Shoulders; Lordosis, Kyphosis, Bow Legs and Scoliosis and their corrective measures
- Sports participation of women in India
- Special consideration (Menarch & Menstrual Dysfunction)
- Female Athletes Triad (Oestoperosis, Amenoria, Eating Disorders)

Unit VI Test & Measurement in Sports

- Motor Fitness Test – 50 M Standing Start, 600 M Run/Walk, Sit & Reach, Partial Curl Up, Push Ups (Boys), Modified Push Ups (Girls), Standing Broad Jump, Agility – 4x10 M Shuttle Run
- General Motor Fitness – Barrow three item general motor ability (Standing Broad Jump, Zig Zag Run, Medicine Ball Put – For Boys: 03 Kg & For Girls: 01 Kg)
- Measurement of Cardio Vascular Fitness – Harvard Step Test/Rockport Test -
Computation of Fitness Index: $\frac{\text{Duration of the Exercise in Seconds} \times 100}{5.5 \times \text{Pulse count of 1-1.5 Min after Exercise}}$
- Rikli & Jones - Senior Citizen Fitness Test
 1. Chair Stand Test for lower body strength
 2. Arm Curl Test for upper body strength
 3. Chair Sit & Reach Test for lower body flexibility
 4. Back Scratch Test for upper body flexibility
 5. Eight Foot Up & Go Test for agility
 6. Six Minute Walk Test for Aerobic Endurance

Unit VII Physiology & Injuries in Sports

- Physiological factor determining component of Physical Fitness
- Effect of exercise on Cardio Respiratory System
- Effect of exercise on Muscular System
- Physiological changes due to ageing
- Sports injuries: Classification (Soft Tissue Injuries:(Abrasion, Contusion, Laceration, Incision, Sprain & Strain) Bone & Joint Injuries: (Dislocation, Fractures: Stress Fracture, Green Stick, Communated, Transverse Oblique & Impacted) Causes, Prevention&treatment
- First Aid – Aims & Objectives

Unit VIII Biomechanics & Sports

- Meaning and Importance of Biomechanics in Sports
- Types of movements (Flexion, Extension, Abduction & Adduction)
- Newton's Law of Motion & its application in sports
- Friction & Sports

Unit IX Psychology & Sports

- Personality; its definition & types – Trait & Types (Sheldon & Jung Classification) & Big Five Theory
- Motivation, its type & techniques
- Exercise Adherence; Reasons to Exercise, Benefits of Exercise
- Strategies for Enhancing Adherence to Exercise
- Meaning, Concept & Types of Aggressions in Sports

Unit X Training in Sports

- Strength – Definition, types & methods of improving Strength – Isometric, Isotonic & Isokinetic
- Endurance - Definition, types & methods to develop Endurance – Continuous Training, Interval Training & Fartlek Training
- Speed – Definition, types & methods to develop Speed – Acceleration Run & Pace Run
- Flexibility – Definition, types & methods to improve flexibility
- Coordinative Abilities – Definition & types
- Circuit Training - Introduction & its importance

Practical

Max. Marks 30

- | | |
|---|-----------|
| 01. Physical Fitness Test | - 6 Marks |
| 02. Proficiency in Games and Sports (Skill of any one Game of choice from the given list*)- 7 Marks | |
| 03. Yogic Practices | - 7 Marks |
| 04. Record File ** | - 5 Marks |
| 05. Viva Voce (Health/ Games & Sports/ Yoga) | - 5 Marks |

* Basketball, Football, Kabaddi, Kho-Kho, Volleyball, Handball, Hockey, Cricket, Bocce & Unified Basketball [CWSN (Children With Special Needs - Divyang)]

****Record File shall include:**

Practical-1: Fitness tests administration for all items.

Practical-2: Procedure for Asanas, Benefits & Contraindication for any two Asanas for each lifestyle disease.

Practical-3: Procedure for administering Senior Citizen Fitness Test for 5 elderly family members.

Practical-4: Any one game of your choice out of the list above. Labelled diagram of field & equipment (Rules, Terminologies & Skills).

**Suggested Question Paper Design
Physical Education (Code No. 048)
Class XII (2020-21)**

Marks: 70

Duration: 3 hrs.

SN	Typology of Questions	Marks
1	<p>Remembering: Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers.</p> <p>Understanding: Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas</p>	43
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3	<p>Analysing and Evaluating: Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p>Creating: Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.</p>	11
	Total	70