CBSE | DEPARTMENT OF SKILL EDUCATION
CURRICULUM FOR SESSION 2021-2022

INFORMATION TECHNOLOGY (CODE – 402)

JOB ROLE: DOMESTIC DATA ENTRY OPERATOR

CLASS – IX

COURSE OVERVIEW:

A Data Entry Operator/Analyst is a person who is responsible for entering data into different applications and computer databases manage and maintain effective record keeping. In addition, they are responsible for organizing files, collecting and managing data to be entered into the computer. They are also responsible for security of data and safeguard the computer network.

With every office and organization seeking to become computerized, the demand for data entry operators/analysts is on a rise. Data entry operators/analysts usually work in an indoor, office setting using a computer and other electronic machines. To be in the profession of data entry/analysis, one has to have computer literacy, high typing speed, organization skills, concentration skills, communication skills and an ability to sit for long periods of time entering and computing data.

OBJECTIVES OF THE COURSE:

In this course, the students will be introduced to the fundamental concepts of digital documentation, digital spreadsheet, digital presentation, database management and internet security.

The following are the main objectives of this course:

- To familiarize the students with the world of IT and IT enabled services.
- To provide an in-depth training in use of data entry, internet and internet tools.
- To develop practical knowledge of digital documentation, spreadsheets and presentation.
- To enable the students to understand database management system and have updated knowledge about digital record keeping.

Session 2021-22

- To make the students capable of getting employment in Private Sector, Public Sector, Ministries, Courts, House of Parliament and State Legislative Assemblies.
- To develop the following skills:
    - Data Entry and Keyboarding skills
    - The concept of Digital Documentation
    - The concept of Digital Presentation
    - The concept of Electronic Spreadsheet
    - The concept of Databases
    - Internet Technologies

SALIENT FEATURES

To be a data entry operator/analyst, one requires a lot of hard work and practical hands-on experience. One should have an intensive knowledge of Office applications, computer operations, and knowledge of clerical, administrative techniques and data analysis. Along with this, as a data entry operator/analyst, you will be expected to have fast typing speed, accuracy, and efficiency to perform tasks.

As a data entry operator/analyst, one should improve their computer skills, numerical and literacy skills. These skills can help one expand into a new career path in the future.

SCHEME OF UNITS

This course is a planned sequence of instructions consisting of units meant for developing employability and vocational competencies of students of Class IX opting for skill subject along with other education subjects. The unit-wise distribution of hours and marks for class IX is as follows:

Session 2021-22

INFORMATION TECHNOLOGY (SUBJECT CODE - 402)

CLASS – IX (Session 2021-2022)

Total Marks: 100 (Theory-50 + Practical-50)

	TERM	UNITS	NO. OF HOURS for Theory and Practical 200		MAX. MARKS for Theory and Practical 100
Part A	**Employability Skills**				
	TERM I	Unit 1 : Communication Skills-I	10		5
		Unit 2 : Self-Management Skills-I	10		
		Unit 3 : ICT Skills-I	10		
	TERM II	Unit 4 : Entrepreneurial Skills-I	15		5
		Unit 5 : Green Skills-I	05		
		Total	**50**		**10**
Part B	**Subject Specific Skills**		**Theory (In Hours)**	**Practical (In Hours)**	**Marks**
	TERM I	Unit 1: Introduction to IT- ITeS industry	2	4	4
		Unit 2: Data Entry & Keyboarding Skills	4	10	6
		Unit 3: Digital Documentation	10	26	10
	TERM II	Unit 4:Electronic Spreadsheet	18	35	10
		Unit 5: Digital Presentation	10	31	10
		Total	**44**	**106**	**40**
Part C	**Practical Work**				
		Practical Examination			15
		Written Test			10
		Viva Voce			10
		Total			**35**
Part D	**Project Work/Field Visit**				
		Practical File/ Student Portfolio			10
		Viva Voce			05
		Total			**15**
		GRAND TOTAL	**200**		**100**

Session 2021-22

DETAILED CURRICULUM/TOPICS:

Part-A: EMPLOYABILITY SKILLS

S. No.	Units	Duration in Hours
1.	Unit 1: Communication Skills-I	10
2.	Unit 2: Self-Management Skills-I	10
3.	Unit 3: Basic Information and Communication Technology Skills-I	10
4.	Unit 4: Entrepreneurial Skills-I	15
5.	Unit 5: Green Skills-I	05
	TOTAL	**50**

NOTE: For Detailed Curriculum/ Topics to be covered under Part A: Employability Skills can be downloaded from CBSE website.

Part-B – SUBJECT SPECIFIC SKILLS

UNIT 1: INTRODUCTION TO IT–ITeS INDUSTRY			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1	Appreciate the applications of IT	• Introduction to IT and ITeS, BPO services, • BPM industry in India, • Structure of the IT-BPM industry, • Applications of IT in home computing, everyday life, library, workplace, education, entertainment, communication, business, science and engineering, banking, insurance, marketing, health care, IT in the government and public service,	- Identify and list the various IT enabled services, Observe the application of IT in various areas.

Session 2021-22

UNIT 2: DATA ENTRY AND KEYBOARDING SKILLS			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Use keyboard and mouse for data entry	• Keyboarding Skills, • Types of keys on keyboard, Numeric keypad, • Home keys, Guide keys, • Typing and deleting text, • Typing ergonomics, • Positioning of fingers on the keyboard, Allocation of keys to fingers on four different rows, • Pointing device – Mouse, Mouse operations.	• Identify the keys and its use on the keyboard, • Demonstrate to use various keys on the keyboard, • Demonstrate to type the text, numbers, special character using appropriate keys on the keyboard, • Practice the correct typing ergonomics, • Practice to place fingers on correct key in four different row of keyboard, • Practice various mouse operations.
2.	Use typing software	• Introduction to Rapid Typing Tutor, • Touch typing technique, • User interface of Typing Tutor, • Typing text and interpret results, • Working with lesson editor, • Calculating typing speed, • Typing rhythm.	• Identify the user interface of • typing tutor, • Practice to type text in typing tutor software and interpret the results, • Practice to work in lesson editor, • Calculate the typing speed, Practice to improve typing • Using typing tutor software.

Session 2021-22

UNIT 3: DIGITAL DOCUMENTATION			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Create a document using a word processor	• Introduction to word processing, • Word processing applications, • Introduction to Word Processing tool • Creating a document, Parts of a Word Processor Window, • Cursor and mouse pointer.	• List the available word processing applications. • Introduce with the parts of the main window. • Change document views. • Start a new document. • Open an existing document. • Save a document. • Close a document. • Use the Navigator.
2.	Apply Editing features	• Text editing – Undo and Redo, • Moving and copying text, • Copy and Paste, • Selecting text, • Selection criteria, • Selecting non-consecutive text items, • Selecting a vertical block of • text, • Find and replace option, • Jumping to the page number, • Non-printing characters, • Checking spelling and grammar, • Using Synonyms and Thesaurus.	• Type some text in the document and edit it, • Demonstrate to use undo and redo option, • Use the keyboard and mouse options to select, cut, copy, paste, and move text. • Demonstrate to select nonconsecutive text items, vertical block of text, • Search the word from the text and replace it with another word. • Jump to the given page number in a document, • Insert non-printing characters in a document, • Check spelling and grammar and apply the changes to the document. • Demonstrate to use Synonyms and Thesaurus.

Session 2021-22

S.NO.	LEARNING OUTCOMES	THEORY	PRACTICAL
3.	Apply formatting features	• Page style dialog, • Formatting text – Removing manual formatting, • Common text formatting, • Changing text case, • Superscript and Subscript, • Formatting paragraph – Indenting paragraphs, • Aligning paragraphs, Font colour, highlighting, and background colour, • Using bullets and numbering, • Assigning colour, border and background to paragraph • Page formatting – setting up basic page layout using styles, Inserting page break, • Creating header/footer and page numbers, • Defining borders and backgrounds, • Inserting images shapes, special characters in a document, • Dividing page into columns, • Formatting the shape or image.	• Apply various text formatting options for the text, • Demonstrate to format paragraphs – indent/align paragraphs, assign font colour, highlighting, and background colour, • Assign number or bullets to the lists items, • Demonstrate to assign colour, border and background to paragraph, • Demonstrate the page formatting – set up basic page layout using styles, • Insert page break, Create header/footer and page numbers, • Define borders and backgrounds • Insert images, shapes, special characters in a document, Divide page into columns, • Format the shape or image.
4.	Create and work with tables	• Creating table in Word Processor, • Inserting row and column in a table, • Deleting rows and columns, • Splitting and merging tables, • Deleting a table, Copying a table, • Moving a table.	• Demonstrate and do the following in Word Processor: • Create table, • Insert and delete rows and column in a table, • Split and merge tables, • Delete a table, • Copy or move from one location to another location of document.
5.	Use Print Options	• Printing options in Word Processor. • Print preview, • Controlling printing, • Printing all pages, single and multiple pages.	• Demonstrate to print the document, selected pages in the document • Print the document with various options, • Preview pages before printing.

Session 2021-22

S. No.	LEARNING OUTCOMES	THEORY	PRACTICAL
6.	Understand and apply mail merge	• Concept of mail merge in word processing, • Creating a main document, • Creating the data source, • Entering data in the fields, Merging the data source with main document, • Editing individual document, Printing the merged letter, Saving the merged letter.	• Demonstrate to print the letters using mail merge, Do the following to achieve • Create a main document, • Create the data source, • Enter data in the fields, • Merge the data source with main document, • Edit individual document, Print the merged letter, • Save the merged letter.

UNIT 4: ELECTRONIC SPREADSHEET			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Create a Spreadsheet	• Introduction to spreadsheet application, • Starting a spreadsheet, • Parts of a spreadsheet • Worksheet – Rows and columns, Cell and cell address, • Range of cell – column range, row range, row and column range.	• Start the spreadsheet, • Identify the parts of Calc, • Identify the rows number, column number, cell address, • Define the range of cell, • Identify row range, column range, row & column range

Session 2021-22

2.	Apply formula and functions in spreadsheet	• Different types of data, • Entering data – Label, Values, Formula • Formula, how to enter formula, • Mathematical operators used in formulae, • Simple calculations using values and operators, • Formulae with cell addresses and operators, • Commonly used basic functions in a spreadsheet – SUM, AVERAGE, MAX, MIN, Count • Use of functions to do calculations.	• Demonstrate to enter the text, numeric data in a cell, • Identify the label, values and formula in the cell, • Demonstrate to enter formula in a cell, • Construct the formula using mathematical operators, • Identify formulae with cell addresses and operators, • Identify the correct syntax of formula, • Use the basic functions to perform calculations on data.
3.	Format data in the spreadsheet	• Formatting tool, • Use of dialog boxes to format values, • Formatting a range of cells with decimal places, • Formatting a range of cells to be seen as labels, • Formatting of a cell range as scientific, • Formatting a range of cells to display times, • Formatting alignment of a cell range, • Speeding up data entry using the fill handle, • Uses of fill handle to copy formulae.	• Identify the formatting tool, • Demonstrate to use of dialog boxes to format values, • Demonstrate to format range of cells with decimal places, • Demonstrate to format a range of cells to labels, • Demonstrate to format of a cell range as scientific, • Demonstrate to format a range of cells to display time, • Demonstrate to align cell data range, • Demonstrate to create • number series using fill handle, • Copy formula by dragging the formula using fill handle.
4.	Understand and apply Referencing	• Concept of referencing, • Relative referencing, □ Mixed referencing, • Absolute referencing.	• Demonstrate to use Relative referencing in spreadsheet, • Demonstrate to use Mixed referencing in spreadsheet, • Demonstrate to use Absolute referencing in spreadsheet.
5.	Create and insert different types of charts in a spreadsheet	• Importance of chart in spreadsheet, • Types of chart, Example of chart.	• Create different types of chart supported by a spreadsheet, • Illustrate the example of chart in a spreadsheet.

Session 2021-22

UNIT 5: DIGITAL PRESENTATION			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Understand features of an effective presentation	• Concept of presentation, • Elements of presentation, • Characteristics of an effective presentation	• Identify and list the elements of presentation, • List the characteristics of an effective presentation.
2.	Create a presentation	• Introduction to presentation software, • Starting a presentation tool, • Parts of a presentation tool window, • Closing the presentation tool, • Creating a presentation using template, • Selecting slide layout, • Saving a presentation, • Running a slide show, • Save a presentation in PDF, Closing a presentation, Using Help.	• Start the presentation application • various components of main Impress window • Observe the different workspace views. • Create a new presentation using wizard. • Run the presentation, • Save the presentation, • Close the presentation, • Demonstrate to use Help in presentation.
3.	Work with slides	• Inserting a duplicate slide, • Inserting new slides, • Slide layout, Copying and moving slides, • Deleting and renaming slides in presentation, • Copying, moving and deleting contents of slide, • View a presentation, • Controlling the size of the view, • Workspace views – Normal, Outline, Notes, Slide sorter view.	• Demonstrate to insert a new slide and duplicate slide in a presentation, • Change the slide layout, • Demonstrate to copy and move slides in the presentation, • Demonstrate to copy, move and delete contents of the slide, • Demonstrate to view a presentation in different views.

Session 2021-22

S. No.	LEARNING OUTCOMES	THEORY	PRACTICAL
4.	Format text and apply animations	• Formatting toolbar, • Various formatting features, • Text alignment, • Bullets and numbering. • Custom Animation	• Identify and list the various options in formatting toolbar, • Apply the appropriate formatting option • Align the text in presentation, • Apply bullets and numbering to the list items in presentation. Apply Animation
5.	Create and use tables	• Inserting tables in presentation, • Entering and editing data in a table, • Selecting a cell, row, column, table, • Adjusting column width and row height, • Table borders and background	Demonstrate the following: • Insert table in presentation, • Enter and edit data in a table, • Select a cell, row, column, table, • Adjust column width and row height, • Assign table borders and background.
6.	Insert and format image in presentation	• Inserting an image from a file, • Inserting an image from the gallery, • Formatting images, • Moving images, • Resizing images, • Rotating images, • Formatting using the Image toolbar, • Drawing graphic objects – line, shapes, • Grouping and un-grouping objects	• Demonstrate to insert an image from file, gallery in presentation, • Apply formatting options to image in presentation, • Demonstrate to move, resize and rotate images, • Apply formatting options of Image toolbar, • Drawing line, shapes using graphic objects, • Demonstrate to group and ungroup objects.
7.	Work with slide master	• Slide masters, • Creating the slide masters, • Applying the slide masters to all slide, • Adding transitions.	• Create the slide masters, • Apply the slide masters to the • presentation, • Add transitions to presentation.

Session 2021-22

LIST OF EQUIPMENT/ MATERIALS:

The list given below is suggestive and an exhaustive list should be compiled by the teacher(s) teaching the subject. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

S. No.	ITEM NAME, DESCRIPTION & SPECIFICATION	QUANTITY
A	**HARDWARE**	
1.	Computer with latest configuration or minimum Pentium Processor with minimum 2GB RAM, 512 GB HDD, 17" LED Monitor, NIC Card, 3 button Mouse, 105 keys key board and built-in speakers and mic.	15
2.	Laser Printer - Black	01
3.	Inkjet Printers (Colour & Black)	01
4.	Scanner	01
5.	Online UPS 5 KVA	01
6.	16 Port Switches	01
7.	Air Conditioner 1.5 tonne	02
8.	Telephone line (For Internet)	01
9.	Fire extinguisher	01
B	**SOFTWARE**	
1.	Operating System Linux and Windows	
2.	Anti-Virus Latest version	
3.	Productivity Suite, Example – Open Office, Google Suite etc.	
C	**FURNITURE**	
1.	Class room chairs and desks	25
2.	Computer Tables	15
3.	Straight back revolving & adjustable chairs (Computer Chairs)	15
4.	Printer Tables	02
5.	Trainers Table	01
6.	Trainers Chair	01
7.	Steel cupboards drawer type	02
8.	Cabinet with drawer	01
9.	Steel Almira - big size	01
10.	Steel Almira- small size	01

Session 2021-22

TEACHER'S/ TRAINER'S QUALIFICATIONS:

Qualification and other requirements for appointment of teachers/trainers for teaching this subject, on contractual basis should be decided by the State/ UT. The suggestive qualifications and minimum competencies for the teacher should be as follows:

Qualification	Minimum Competencies	Age Limit
Diploma in Computer Science/ Information Technology **OR** Bachelor Degree in Computer Application/ Science/ Information Technology (BCA, B. Sc. Computer Science/ Information Technology) **OR** Graduate with PGDCA OR DOEACC A Level Certificate. The suggested qualification is the minimum criteria. However higher qualifications will also be acceptable.	• The candidate should have a minimum of 1 year of work experience in the same job role. • S/He should be able to communicate in English and local language. • S/He should have knowledge of equipment, tools, material, Safety, Health & Hygiene.	• 18-37 years (as on Jan. 01 (year)) • Age relaxation to be provided as per Govt. rules

Teachers/Trainers form the backbone of Skill (Vocational) Education being imparted as an integral part of Rashtriya Madhyamik Shiksha *Abhiyan* (RMSA). They are directly involved in teaching of Skill (vocational) subjects and also serve as a link between the industry and the schools for arranging industry visits, On-the-Job Training (OJT) and placement.

These guidelines have been prepared with an aim to help and guide the States in engaging quality Teachers/Trainers in the schools. Various parameters that need to be looked into while engaging the Vocational Teachers/Trainers are mode and procedure of selection of Teachers/ Trainers, Educational Qualifications, Industry Experience, and Certification/ Accreditation.

The State may engage Teachers/Trainers in schools approved under the component of scheme of Vocationalisation of Secondary and Higher Secondary Education under RMSA in following ways:

(i) Directly as per the prescribed qualifications and industry experience suggested by the PSS Central Institute of Vocational Education (PSSCIVE), NCERT or the respective Sector Skill Council (SSC).

OR

(ii) Through accredited Vocational Training Providers accredited under the National Quality Assurance Framework (NQAF*) approved by the National Skill Qualification Committee on 21.07.2016. If the State is engaging Vocational Teachers/Trainers through the Vocational Training Provider (VTP), it should ensure that VTP should have been accredited at NQAF Level 2 or higher.

Session 2021-22

** The National Quality Assurance Framework (NQAF) provides the benchmarks or quality criteria which the different organizations involved in education and training must meet in order to be accredited by competent bodies to provide government- funded education and training/skills activities. This is applicable to all organizations offering NSQF-compliant qualifications.*

The educational qualifications required for being a Teacher/Trainer for a particular job role are clearly mentioned in the curriculum for the particular NSQF compliant job role. The State should ensure that teachers/ trainers deployed in the schools have relevant technical competencies for the NSQF qualification being delivered. Teachers/Trainers preferably should be certified by the concerned Sector Skill Council for the particular Qualification Pack/Job role which he will be teaching. Copies of relevant certificates and/or record of experience of the teacher/trainer in the industry should be kept as record.

To ensure the quality of the Teachers/Trainers, the State should ensure that a standardized procedure for selection of (Vocational) Teachers/Trainers is followed. The selection procedure should consist of the following:

(i) Written test for the technical/domain specific knowledge related to the sector;

(ii) Interview for assessing the knowledge, interests and aptitude of trainer through a panel of experts from the field and state representatives; and (iii) Practical test/mock test in classroom/workshop/laboratory.

In case of appointment through VTPs, the selection may be done based on the above procedure by a committee having representatives of both the State Government and the VTP.

The State should ensure that the Teachers/ Trainers who are recruited should undergo induction training of 20 days for understanding the scheme, NSQF framework and Vocational Pedagogy before being deployed in the schools.

The State should ensure that the existing trainers undergo in-service training of 5 days every year to make them aware of the relevant and new techniques/approaches in their sector and understand the latest trends and policy reforms in vocational education.

The Head Master/Principal of the school where the scheme is being implemented should facilitate and ensure that the (Vocational) Teachers/Trainers:

- Prepare session plans and deliver sessions which have a clear and relevant purpose and which engage the students;
- Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
- Make effective use of learning aids and ICT tools during the classroom sessions;
- Engage students in learning activities, which include a mix of different methodologies, such as project based work, team work, practical and simulation based learning experiences;

Session 2021-22

- Work with the institution's management to organise skill demonstrations, site visits, on job trainings, and presentations for students in cooperation with industry, enterprises and other workplaces;
- Identify the weaknesses of students and assist them in up-gradation of competency;
- Cater to different learning styles and level of ability of students;
- Assess the learning needs and abilities, when working with students with different abilities
- Identify any additional support the student may need and help to make special arrangements for that support;
- Provide placement assistance

Assessment and evaluation of (Vocational) Teachers/Trainers is very critical for making them aware of their performance and for suggesting corrective actions. The States/UTs should ensure that the performance of the (Vocational) Teachers/Trainers is appraised annually. Performance based appraisal in relation to certain pre-established criteria and objectives should be done periodically to ensure the quality of the (Vocational) Teachers/Trainers.

Following parameters may be considered during the appraisal process:

- Participation in guidance and counseling activities conducted at Institutional, District and State level;
- Adoption of innovative teaching and training methods;
- Improvement in result of vocational students of Class X or Class XII;
- Continuous up-gradation of knowledge and skills related to the vocational pedagogy, communication skills and vocational subject;
- Membership of professional society at District, State, Regional, National and International level;
- Development of teaching-learning materials in the subject area;
- Efforts made in developing linkages with the Industry/Establishments;
- Efforts made towards involving the local community in Vocational Education
- Publication of papers in National and International Journals;
- Organization of activities for promotion of vocational subjects;
- Involvement in placement of students/student support services.

Session 2021-22

CBSE | DEPARTMENT OF SKILL EDUCATION
CURRICULUM FOR SESSION 2021-2022

INFORMATION TECHNOLOGY (CODE – 402)

JOB ROLE: DOMESTIC DATA ENTRY OPERATOR

CLASS – X

COURSE TITLE: Domestic Data Entry Operator

Domestic Data Entry Operator in the IT-ITeS Industry is also known as Data Entry Operator. Individuals are responsible to provide daily work reports and work on daily hour bases. The individual is responsible for electronic entry of data from the client side to the office site or viceversa. Individual tasks vary depending on the size and structure of the organization. This job requires the individual to have thorough knowledge of various technology trends and processes as well as have updated knowledge about database management systems and IT initiatives. The individual should have fast and accurate typing/data encoding. This job involves working in a personal computer, and appropriate software to enter accurate data regarding different issues like retrieving data from a computer or to a computer

COURSE OUTCOME:

On completion of the course, students should be able to:

- Apply effective oral and written communication skills to interact with people and customers;
- Identify the principal components of a computer system; Demonstrate the basic skills of using computer;
- Demonstrate self-management skills;
- Demonstrate the ability to provide a self-analysis in context of entrepreneurial skills and abilities;
- Demonstrate the knowledge of the importance of green skills in meeting the challenges of sustainable development and environment protection; Work safely on computer.
- Start the computer.
- Open and use the related software.
- Exit from the software.
- Shut down the computer.
- Use the computer for data entry process.
- Collect all necessary information about the query.
- Log any decision about the query on the data entry tracking form.
- Follow Rules and guidelines for data entry.
- Handle queries.
- Undertake data entry with speed and accuracy.
- Identify and control hazards in the workplace that pose a danger or threat to their safety or health, or that of others.

Session 2021-22

COURSE OBJECTIVES:

In this course, the students will be introduced to the fundamental concepts of digital documentation, digital spreadsheet, digital presentation, database management and internet security.

The following are the main objectives of this course:

- To familiarize the students with the world of IT and IT enabled services.
- To provide an in-depth training in use of data entry, internet and internet tools.
- To develop practical knowledge of digital documentation, spreadsheets and presentation.
- To enable the students to understand database management system and have updated knowledge about digital record keeping.
- To make the students capable of getting employment in Private Sector, Public Sector, Ministries, Courts, House of Parliament and State Legislative Assemblies.
- To develop the following skills:
    - Data Entry and Keyboarding skills
    - The concept of Digital Documentation
    - The concept of Digital Presentation
    - The concept of Electronic Spreadsheet
    - The concept of Databases
    - Internet Technologies

SALIENT FEATURES:

To be a data entry operator/analyst, one requires a lot of hard work and practical hands-on experience. One should have an intensive knowledge of Office applications, computer operations, and knowledge of clerical, administrative techniques and data analysis. Along with this, as a data entry operator/analyst, you will be expected to have fast typing speed, accuracy, and efficiency to perform tasks.

As a data entry operator/analyst, one should improve their computer skills, numerical and literacy skills. These skills can help one expand into a new career path in the future

Session 2021-22

CLASS – X SESSION 2021-2022

Total Marks: 100 (Theory-50+Practical-50)

SCHEME OF UNITS

This course is a planned sequence of instructions consisting of units meant for developing employability and vocational competencies of students of Class X opting for skill subject along with other subjects. The unit-wise distribution of hours and marks for class X is as follows: z

INFORMATION TECHNOLOGY (402) Class X (Session 2021-22)

	TERM	UNITS	NO. OF HOURS for Theory and Practical 200		MAX. MARKS for Theory and Practical 100
Part A	**Employability Skills**				
	TERM I	Unit 1 : Communication Skills-II	10		5
		Unit 2 : Self-Management Skills-II	10		
		Unit 3 : Information and Communication Technology Skills-II	10		
	TERM II	Unit 4 : Entrepreneurial Skills-II	15		5
		Unit 5 : Green Skills-II	05		
		Total	**50**		**10**
Part B	**Subject Specific Skills**		**Theory (In Hours)**	**Practical (In Hours)**	**Marks**
	TERM I	Unit 1: Digital Documentation (Advanced)	12	18	8
		Unit 2: Electronic Spreadsheet (Advanced)	15	23	10
		Unit 3: Database Management System	04	07	02
	TERM II	Unit 3: Database Management System	14	20	10
		Unit 4: Web Applications and Security	15	22	10
		Total	**60**	**90**	**40**
Part C	**Practical Work**				
		Practical Examination • Advanced Documentation: **5 Marks** • Advanced Spreadsheets: **5 Marks** • Databases : **10 Mark**			20
		Viva Voce			10
		Total			**30**

Session 2021-22

Part D		**Project Work/Field Visit** Any Interdisciplinary Real World Case Study to be taken. Summarized data reports of same can be presented in base. Input should be taken using forms and output should be done using reports using base. Documentation of the case study should be presented using writer.		10
		PORTFOLIO/ PRACTICAL FILE: (Portfolio should contain printouts of the practical done using Writer, Calc and Base with minimum 5 problems of each)		10
		Total		**20**
		GRAND TOTAL	**200**	**100**

DETAILED CURRICULUM/TOPICS:

Part-A: EMPLOYABILITY SKILLS

S. No.	Units	Duration in Hours
1.	Unit 1: Communication Skills-II	10
2.	Unit 2: Self-management Skills-II	10
3.	Unit 3: Information and Communication Technology Skills-II	10
4.	Unit 4: Entrepreneurial Skills-II	15
5.	Unit 5: Green Skills-II	05
	TOTAL DURATION	**50**

NOTE: For Detailed Curriculum/ Topics to be covered under Part A: Employability Skills can be downloaded from CBSE website.

Session 2021-22

Part-B – SUBJECT SPECIFIC SKILLS

S. No.	Units	Duration in Hours
1.	Unit 1: Digital Documentation (Advanced)	30
2.	Unit 2: Electronic Spreadsheet (Advanced)	38
3.	Unit 3: Database Management System	45
4.	Unit 4: Web Applications and Security	37
	TOTAL DURATION	**150**

UNIT 1: DIGITAL DOCUMENTATION (ADVANCED)			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Create and Apply Styles in the document	• Styles/ categories in Word Processor • Styles and Formatting window. • Fill Format. • Creating and updating new style from selection • Load style from template or another document. • Creating a new style using drag-and-drop. • Applying styles.	• List style categories. Select the style from the Styles and Formatting window. • Use Fill Format to apply a style to many different areas quickly. • Create and update new style from a selection. • Load a style from a template or another document. • Create a new style using drag-and drop.
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
2.	Insert and use images in document	• Options to insert image to document from various sources. • Options to modify, resize, crop and delete an image. Drawing objects and its properties. • Creating drawing objects and changing its properties. Resizing and grouping drawing objects. • Positioning image in the text.	• Insert an image to document from various sources. • Modify, resize, crop and delete an image. • Create drawing objects • Set or change the properties of a drawing object • Resize and group drawing objects • Position the image in the text

Session 2021-22

3.	Create and use template	• Templates. • Using predefined templates. • Creating a template. • Set up a custom default template. • Updating a document. • Changing to a different template. • Using the Template.	• Create a template. • Use predefined templates. • Set up a custom default template. • Update a document. • Change to a different template. • Use the Template.
4.	Create and customize table of contents	• Table of contents. Hierarchy of headings. Customization of table of contents. • Character styles. Maintaining a table of contents.	• Create table of contents. Define a hierarchy of headings. • Customize a table of contents. • Apply character styles. Maintain a table of contents.
5	Implement Mail Merge	• Advance concept of mail merge in word processing, • Creating a main document, • Creating the data source, • Entering data in the fields, • Merging the data source with main document, • Editing individual document, • Printing a letter and its address label	• Demonstrate to print the label using mail merge, do the following to achieve • Create a main document, • Create the data source, • Enter data in the fields, • Merge the data source with main document, • Edit individual document, • Print the letter and address label

Session 2021-22

UNIT 2: ELECTRONIC SPREADSHEET (ADVANCED)			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Analyse data using scenarios and goal seek.	• Using consolidating data. Creating subtotals. • Using "what if" scenarios. Using "what if" tools • Using goal seek and solver.	• Use consolidating data Create subtotals • Use "what if" scenarios Use "what if" tools • Use goal seek and solver
2.	Link data and spreadsheets	• Setting up multiple sheets. Creating reference to other sheets by using keyboard and mouse. • Creating reference to other document by using keyboard and mouse. • Relative and absolute hyperlinks • Hyperlinks to the sheet. o Linking to external data. o Linking to registered data sources.	• Setup multiple sheets by inserting new sheets. • Create reference to other sheets by using keyboard and mouse. • Create reference to other document by using keyboard and mouse. • Create, Edit and Remove hyperlinks to the sheet. • Link to external data. • Link to registered data source.
3.	Share and review a spreadsheet	• Setting up a spreadsheet for sharing. • Opening and saving a shared spreadsheet. Recording changes. • Add, Edit and Format the comments. • Reviewing changes – view, accept or reject changes. Merging and comparing.	• Set up a spreadsheet for sharing. • Open and save a shared spreadsheet. • Record changes. • Add, Edit and Format the comments. • Review changes – view, accept or reject changes. • Merge and compare sheets.
4.	Create and Use Macros in spreadsheet	• Using the macro recorder. Creating a simple macro. Using a macro as a function. • Passing arguments to a macro. • Passing the arguments areas values. • Macros to work like built-in functions. • Accessing cells directly. • Sorting the columns using macro.	• Use the macro recorder. Create a simple macro. Use a macro as a function. • Pass arguments to a macro. • Pass the arguments are as values. • Write macros that act like built-in functions • Access cells directly. • Sort the columns using macro.

Session 2021-22

UNIT 3: DATABASE MANAGEMENT SYSTEM			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Appreciate the concept of Database Management System	• Concept and examples of data and information, • Concept of database, • Advantages of database, • Features of database, • Concept and examples of Relational database, • Concept and examples of field, record, table, database, • Concept and examples of Primary key, composite primary key, foreign key, • Relational Data base management system (RDBMS) software.	• Identify the data and information, • Identify the field, record, table in the database, • Prepare the sample table with some standard fields. • Assign the primary key to the field, • Identify the primary key, composite primary key, foreign key.
2.	Create and edit tables using wizard and SQL commands	• Introduction to a RDBMS • Database objects – tables, queries, forms, and reports of the database, • Terms in database – table, field, record, • Steps to create a table using table wizard, Data types in Base, • Option to set primary key Table Data View dialog box □ DDL Commands	• Start the RDBMS and observe the parts of main window, • Identify the data base objects Create the sample table in any category using wizard, Practice to create different tables from the available list and choosing fields from the available fields. • Assign data types of field, Set primary key, • Edit the table in design view, Enter the data in the fields. • Create and edit table using DDL Commands
3.	Perform operations on table	• Inserting data in the table, • Editing records in the table, • Deleting records from the table, • Sorting data in the table, Referential integrity, • Creating and editing relationships – one to one, one to many, many to many, • Field properties.	Demonstrate to: • Insert data in the table, Edit records in the table, Delete records from table, Sort data in the table, • Create and edit relationships • one to one, one to many, many to many, • Enter various field properties.

Session 2021-22

S. No.	LEARNING OUTCOMES	THEORY	PRACTICAL
4.	Retrieve data using query	• Database query, • Defining query, • Query creation using wizard, • Creation of query using design view, • Editing a query, • Applying criteria in query – single field, multiple fields, using wildcard, • Performing calculations, • Grouping of data, • Structured Query Language (SQL).	• Prepare a query for given criteria, • Demonstrate to create query using wizard, and using design view, • Edit a query, • Demonstrate to apply various criteria in query – single field, multiple fields, using wild card, • Performing calculations using query in Base, • Demonstrate to group data, • Use basic SQL commands,
5.	Create Forms and Reports using wizard	• Forms in Base, • Creating form using wizard, • Steps to create form using Form Wizard, • Options to enter or remove data from forms • Modifying form, • Changing label, background, • Searching record using Form, • Inserting and deleting record using Form View, • Concept of Report in Base, • Creating Report using wizard, • Steps to create Report using Wizard.	• Illustrate the various steps to create Form using Form Wizard, • Enter or remove data from Forms, • Demonstrate to modify Forms, • Demonstrate to change label, background, • Search record using Form, • Insert and delete record using Form View, • Illustrate the various steps to create Report using Report Wizard, • Demonstrate various examples of Report.

Session 2021-22

UNIT 4: WEB APPLICATIONS AND SECURITY			
S. No.	**LEARNING OUTCOMES**	**THEORY**	**PRACTICAL**
1.	Working with Accessibility Options.	• Understand various types of impairment that impact computer usage • Computer Accessibility Dialog box and its tabs • Serial Keys	• Illustrate use of various options under Computer Accessibility like Keyboard, mouse, sound, display setting serial keys, cursor options • use of toggle keys, filter keys, sticky keys, sound sentry, show sounds etc.
2.	Understand Networking Fundamentals	• Network and its types. • Client Server Architecture, Peer to-peer (P2P) Architecture, • internet, World Wide Web, • benefits of networking • internet, getting access to internet, • internet terminology • Some of the commonly used Internet connectivity options • Data transfer on the Internet	• Identify applications of Internet • comparing various internet technologies • identifying types of networks and selecting internet
3.	Introduction to Instant Messaging	• learn key features of instant messaging • Creating an instant messaging account • Launching Google Talk • Signing In into your Google Talk Account	• Illustrate steps to create instant messaging account • Signing In into your Google Talk Account
4.	Chatting with a Contact – Google Talk	• learn to chat with a contact that is already added to your contact list. • sending text chat messages instantly by double-clicking on a contact. • general rules and etiquettes to be followed while chatting. • chatting on various types of messengers	• Illustrate chat with a contact and send messages, • chatting with various messenger services
5	Creating and Publishing Web Pages – Blog …-	• learn and appreciate a blog and its creation with the help of some blog providers • set up title and other parameters in a blog posting comments • using offline blog editors	□ Illustrate Blog Creation and setting various parameters in it

Session 2021-22

S. No.	LEARNING OUTCOMES	THEORY	PRACTICAL
6	Using Offline Blog Editors	Concept to create blogs using a blog application and publish the blog whenever internet connectivity is available.	• Demonstration on how to create blogs using a blog application offline. • posting messages in an offline application • Publish the blog whenever internet connectivity is available using various examples
7	Online Transaction	• concept of e-commerce and various online applications • importance of secure passwords	• Illustration of online shopping using various ecommerce sites • Demonstration of securing passwords for online transactions.
8.	Internet Security	• Need of internet security • Cyber threats like phishing, email-spoofing, char spoofing etc. • best practices for internet security and secure passwords • concept of browser, cookies, backup, antivirus • clearing data in browsers	• illustration of internet security threats through various ways • cyber security tips • tips for secure passwords • demonstration of strong passwords using various websites. • clearing data stored in browser applications.
9.	Maintain workplace safety	• Basic safety rules to follow at workplace – Fire safety, • Falls and slips, Electrical safety, Use of first aid. • Case Studies of hazardous situations.	• Practice to follow basic safety rules at workplace to prevent accidents and protect workers – Fire safety, • Falls and slips, Electrical safety, Use of first aid.
10.	Prevent Accidents and Emergencies	• Accidents and emergency, • Types of Accidents, • Handling Accidents • Types of Emergencies.	• Illustrate to handle accidents at workplace, • Demonstrate to follow evacuation plan and procedure in case of an emergency.
11.	Protect Health and Safety at work	• Hazards and sources of hazards, • General evacuation procedures, • Healthy living.	• Identify hazards and sources of hazards, • identify the problems at workplace that could cause accidents, • Practice the general evacuation procedures in case of an emergency.

Session 2021-22

ORGANISATION OF FIELD VISITS:

In a year, at least 3 field visits/educational tours should be organised for the students to expose them to the activities in the workplace.

Visit a data entry centre and observe the following: Location, Site, Office building, Computer Systems, Tools and Equipment, Printer, Scanner. During the visit, students should obtain the following information from the owner or the supervisor of the Data Centre:

1. Data Entry Centre.
2. Computer Infrastructure.
3. Sitting Posture of data entry operators.
4. Assistive technology.
5. Man power engaged.
6. Total expenditure of Data Entry Centre.
7. Total annual income.
8. Profit/Loss (Annual).
9. Any other information.

LIST OF EQUIPMENT/ MATERIALS:

The list given below is suggestive and an exhaustive list should be compiled from the feedback given by various by the teachers teaching the subject. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

S. No.	ITEM NAME, DESCRIPTION & SPECIFICATION	QUANTITY
A	**HARDWARE**	
1.	Computer with latest configuration or minimum Pentium Processor with minimum 2GB RAM, 512 GB HDD, 17" LED Monitor, NIC Card, 3 button Mouse, 105 keys key board and built-in speakers and mic.	15
2.	Laser Printer - Black	01
3.	Inkjet Printers (Colour & Black)	01
4.	Scanner	01
5.	Online UPS 5 KVA	01
6.	16 Port Switches	01
7.	Air Conditioner 1.5 tonne	02
8.	Telephone line (For Internet)	01
9.	Fire extinguisher	01
B	**SOFTWARE**	
1.	Operating System Linux and Windows	
2.	Anti-Virus Latest version	
3.	Productivity Suite, Example – Open Office, Google Suite etc.	

Session 2021-22

C	FURNITURE	
1.	Class room chairs and desks	25
2.	Computer Tables	15
3.	Straight back revolving & adjustable chairs (Computer Chairs)	15
4.	Printer Tables	02
5.	Trainers Table	01
6.	Trainers Chair	01
7.	Steel cupboards drawer type	02
8.	Cabinet with drawer	01
9.	Steel Almira - big size	01
10.	Steel Almira- small size	01

TEACHER'S/ TRAINER'S QUALIFICATIONS:

Qualification and other requirements for appointment of teachers/trainers for teaching this subject, on contractual basis should be decided by the State/ UT. The suggestive qualifications and minimum competencies for the teacher should be as follows:

Qualification	Minimum Competencies	Age Limit
Diploma in Computer Science/ Information Technology **OR** Bachelor Degree in Computer Application/ Science/ Information Technology (BCA, B. Sc. Computer Science/ Information Technology) **OR** Graduate with PGDCA OR DOEACC A Level Certificate. The suggested qualification is the minimum criteria. However higher qualifications will also be acceptable.	• The candidate should have a minimum of 1 year of work experience in the same job role. • S/He should be able to communicate in English and local language. • S/He should have knowledge of equipment, tools, material, Safety, Health & Hygiene.	• 18-37 years (as on Jan. 01 (year)) • Age relaxation to be provided as per Govt. rules

Teachers/Trainers form the backbone of Skill (Vocational) Education being imparted as an integral part of Rashtriya Madhyamik Shiksha *Abhiyan* (RMSA). They are directly involved in teaching of Skill (vocational) subjects and also serve as a link between the industry and the schools for arranging industry visits, On-the-Job Training (OJT) and placement.

Session 2021-22

These guidelines have been prepared with an aim to help and guide the States in engaging quality Teachers/Trainers in the schools. Various parameters that need to be looked into while engaging the Vocational Teachers/Trainers are mode and procedure of selection of Teachers/ Trainers, Educational Qualifications, Industry Experience, and Certification/ Accreditation.

The State may engage Teachers/Trainers in schools approved under the component of scheme of Vocationalisation of Secondary and Higher Secondary Education under RMSA in following ways:

(i) Directly as per the prescribed qualifications and industry experience suggested by the PSS Central Institute of Vocational Education (PSSCIVE), NCERT or the respective Sector Skill Council (SSC). **OR**

(ii) Through accredited Vocational Training Providers accredited under the National Quality Assurance Framework (NQAF*) approved by the National Skill Qualification Committee on 21.07.2016. If the State is engaging Vocational Teachers/Trainers through the Vocational Training Provider (VTP), it should ensure that VTP should have been accredited at NQAF Level 2 or higher.

** The National Quality Assurance Framework (NQAF) provides the benchmarks or quality criteria which the different organizations involved in education and training must meet in order to be accredited by competent bodies to provide government- funded education and training/skills activities. This is applicable to all organizations offering NSQF-compliant qualifications.*

The educational qualifications required for being a Teacher/Trainer for a particular job role are clearly mentioned in the curriculum for the particular NSQF compliant job role. The State should ensure that teachers/ trainers deployed in the schools have relevant technical competencies for the NSQF qualification being delivered. Teachers/Trainers preferably should be certified by the concerned Sector Skill Council for the particular Qualification Pack/Job role which he will be teaching. Copies of relevant certificates and/or record of experience of the teacher/trainer in the industry should be kept as record.

To ensure the quality of the Teachers/Trainers, the State should ensure that a standardized procedure for selection of (Vocational) Teachers/Trainers is followed. The selection procedure should consist of the following:

(i) Written test for the technical/domain specific knowledge related to the sector;

(ii) Interview for assessing the knowledge, interests and aptitude of trainer through a panel of experts from the field and state representatives; and (iii) Practical test/mock test in classroom/workshop/laboratory.

In case of appointment through VTPs, the selection may be done based on the above procedure by a committee having representatives of both the State Government and the VTP.

The State should ensure that the Teachers/ Trainers who are recruited should undergo induction training of 20 days for understanding the scheme, NSQF framework and Vocational Pedagogy before being deployed in the schools.

Session 2021-22

The State should ensure that the existing trainers undergo in-service training of 5 days every year to make them aware of the relevant and new techniques/approaches in their sector and understand the latest trends and policy reforms in vocational education.

The Head Master/Principal of the school where the scheme is being implemented should facilitate and ensure that the (Vocational) Teachers/Trainers:

- Prepare session plans and deliver sessions which have a clear and relevant purpose and which engage the students;
- Deliver education and training activities to students, based on the curriculum to achieve the learning outcomes;
- Make effective use of learning aids and ICT tools during the classroom sessions;
- Engage students in learning activities, which include a mix of different methodologies, such as project based work, team work, practical and simulation based learning experiences;
- Work with the institution's management to organise skill demonstrations, site visits, on job trainings, and presentations for students in cooperation with industry, enterprises and other workplaces;
- Identify the weaknesses of students and assist them in up-gradation of competency;
- Cater to different learning styles and level of ability of students;
- Assess the learning needs and abilities, when working with students with different abilities
- Identify any additional support the student may need and help to make special arrangements for that support;
- Provide placement assistance

Assessment and evaluation of (Vocational) Teachers/Trainers is very critical for making them aware of their performance and for suggesting corrective actions. The States/UTs should ensure that the performance of the (Vocational) Teachers/Trainers is appraised annually. Performance based appraisal in relation to certain pre-established criteria and objectives should be done periodically to ensure the quality of the (Vocational) Teachers/Trainers.

Following parameters may be considered during the appraisal process:

- Participation in guidance and counseling activities conducted at Institutional, District and State level;
- Adoption of innovative teaching and training methods;
- Improvement in result of vocational students of Class X or Class XII;
- Continuous up-gradation of knowledge and skills related to the vocational pedagogy, communication skills and vocational subject;
- Membership of professional society at District, State, Regional, National and International level;
- Development of teaching-learning materials in the subject area;
- Efforts made in developing linkages with the Industry/Establishments;
- Efforts made towards involving the local community in Vocational Education
- Publication of papers in National and International Journals;
- Organisation of activities for promotion of vocational subjects; Involvement in placement of students/student support services.

Session 2021-22

CAREER OPPORTUNITIES:

The job of a data entry operator/ analyst is to work for a wide variety of public and private organisations. A data entry operator/analyst is responsible to input data in a quick and efficient manner, create data storage and should possess knowledge about the methods for recovering useful data when needed, organizing and analyzing data in a clear and effective way, navigating computer and database systems proficiently, editing and preparing reports based on the information they have put into the system. They also help the organisations to keep up with recording and analyzing the abundance of information received on a daily basis.

Some of the top sectors that require a data entry operator/analyst are listed below:

- Banks and Public Sector
- Marketing Companies
- Accounting Companies
- Human Resources
- Corporate Businesses
- MNCs
- Study Centers
- Schools and Universities
- Hospitals or Healthcare Service Providers
- Insurance Firms
- Small-scale Businesses

VERTICAL MOBILITY

- Students can pursue Polytechnic/Diploma/Certificate courses in IT fields.
- Can work as DEO
- Data Entry/Analysis work from home for different companies

Session 2021-22

English Language & Literature
Code No. 184
Class IX (2021-22)
Term wise Syllabus

Term - I

Reading-

Question based on the following kinds of unseen passages to assess inference, evaluation, vocabulary, analysis and interpretation:

1. **Discursive passage (400-450 words)**
2. **Case based Factual passage (with visual input/ statistical data/ chart etc. 200-250 words)**

Writing-

1. **Descriptive paragraph (Person)**
2. **Short Story (based on beginning line, outline, cues etc.)**

Grammar

1. **Tenses**
2. **Subject-Verb Concord**
3. **Modals**
4. **Determiners**
5. **Reported Speech**
6. **Commands and Requests**
7. **Statements**
8. **Questions**

Literature

Questions based on extracts / texts to assess interpretation, inference, extrapolation beyond the text and across the texts.

Moments

1. **The Lost Child**
2. **The Adventures of Toto**
3. **In the Kingdom of Fools**
4. **The Happy Prince**

Beehive
Prose

1. **The Fun They Had**
2. **The Sound of Music**
3. **The Little Girl**
4. **A Truly Beautiful Mind**
5. **My Childhood**

Poems-

1. **The Road Not Taken**
2. **Wind**
3. **Rain on The Roof**
4. **A Legend of The Northland**

Term - II

Reading-

Question based on the following kinds of unseen passages to assess inference, evaluation, vocabulary, analysis and interpretation:

1. **Discursive passage (400-450 words)**
2. **Case based Factual passage (with visual input/ statistical data/ chart etc. 200-250 words)**

Writing-

1. **Descriptive Paragraph (Diary)**
2. **Story writing (based on beginning line, outline, cues etc.)**

Grammar

1. **Tenses**
2. **Subject-Verb Concord**
3. **Modals**
4. **Determiners**
5. **Reported Speech**
6. **Commands and Requests**
7. **Statements**
8. **Questions**

Literature

Questions based on extracts / texts to assess interpretation, inference, extrapolation beyond the text and across the texts.

Moments

1. **Weathering the Storm in Ersama**
2. **The Last Leaf**
3. **A House is not a Home**
4. **The Beggar**

Beehive

Prose

1. **Packing**
2. **Reach for The Top**
3. **The Bond of Love**
4. **If I were You**

Poems

1. **No Men Are Foreign**
2. **On killing a Tree**
3. **The Snake Trying**

Each Term

SECTION	WEIGHTAGE (IN MARKS)
READING	10
WRITING & GRAMMAR	10
LITERATURE	20
TOTAL	40
INTERNAL ASSESSMENT	10
GRAND TOTAL	50

English Language and Literature
Code No. 184
Class X (2021-22)
Term wise Syllabus

Term - I

READING

Question based on the following kinds of unseen passages to assess inference, evaluation, vocabulary, analysis and interpretation:

1. **Discursive passage (400-450 words)**
2. **Case based Factual passage (with visual input/ statistical data/ chart etc. 300-350 words)**

WRITING SKILL

1. **Formal letter based on a given situation.**
   - **Letter to the Editor**
   - **Letter of Complaint (Official)**
   - **Letter of Complaint (Business)**

GRAMMAR

1. **Tenses**
2. **Modals**
3. **Subject-Verb Concord**
4. **Determiner**
5. **Reported Speech**
6. **Commands and Requests**
7. **Statements**
8. **Questions**

LITERATURE

Questions based on extracts / texts to assess interpretation, inference, extrapolation beyond the text and across the texts.

FIRST FLIGHT

1. **A Letter to God**
2. **Nelson Mandela**
3. **Two Stories About Flying**
4. **From the Diary of Anne Frank**
5. **The Hundred Dresses 1**
6. **The Hundred Dresses 2**

POEMS

1. **Dust of Snow**
2. **Fire and Ice**
3. **A Tiger in the Zoo**
4. **The Ball Poem**

FOOTPRINTS WITHOUT FEET

1. **A Triumph of Surgery**
2. **The Thief's Story**
3. **Footprints Without Feet**

Term - II

READING

Question based on the following kinds of unseen passages to assess inference, evaluation, vocabulary, analysis and interpretation:

1. **Discursive passage (400-450 words)**
2. **Case based Factual passage (with visual input/ statistical data/ chart etc. 300-350 words)**

WRITING SKILL

1. **Formal letter based on a given situation**
   - **Letter of Order**
   - **Letter of Enquiry**
2. **Analytical Paragraph (based on outline/chart/cue/map/report etc.)**

GRAMMAR

1. **Tenses**
2. **Modals**
3. **Subject Verb Concord**
4. **Determiner**
5. **Reported Speech**
6. **Commands and Requests**
7. **Statements**
8. **Questions**

LITERATURE

Questions based on extracts / texts to assess interpretation, inference, extrapolation beyond the text and across the texts.

FIRST FLIGHT

1. **Glimpses of India**
2. **Madam Rides the Bus**
3. **The Sermon at Benares**
4. **The Proposal (Play)**

POEMS

1. **Amanda**
2. **Animals**
3. **The Tale of Custard the Dragon**

FOOTPRINTS WITHOUT FEET

1. **The Making of a Scientist**
2. **The Necklace**
3. **The Hack Driver**
4. **Bholi**

Each Semester

SECTION	WEIGHTAGE (IN MARKS)
READING	10
WRITING & GRAMMAR	10
LITERATURE	20
TOTAL	40
INTERNAL ASSESSMENT	10
GRAND TOTAL	50

MATHEMATICS (IX-X)

(CODE NO. 041)

Session 2021-22

Term-wise Syllabus

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 (2021-22)

FIRST TERM

One Paper

90 Minutes

NO.	UNIT NAME	MARKS
I	NUMBER SYSTEMS	8
II	ALGEBRA	5
III	COORDINATE GEOMETRY	4
IV	GEOMETRY	13
V	MENSURATION	4
VI	STATISTICS & PROBABILITY	6
	Total	40
	INTERNAL ASSESSMENT	10
	TOTAL	50

UNIT- NUMBER SYSTEMS

1. NUMBER SYSTEM

Review of representation of natural numbers, integers, rational numbers on the number line. Rational numbers as recurring/ terminating decimals. Operations on real numbers.

1. 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
2. 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.
3. 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-ALGEBRA

2. LINEAR EQUATIONS IN TWO VARIABLES

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 with algebraic and graphical solutions being done simultaneously

UNIT-COORDINATE GEOMETRY

3. COORDINATE GEOMETRY

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

UNIT-GEOMETRY

4. LINES AND ANGLES

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.

5. TRIANGLES

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. (Motivate) 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) The sides opposite to equal angles of a triangle are equal.

UNIT-MENSURATION

6. HERON'S FORMULA

Area of a triangle using Heron's formula (without proof)

UNIT-STATISTICS & PROBABILITY

7. STATISTICS

Introduction to Statistics: Collection of data, presentation of data — tabular form, ungrouped / grouped, bar graphs, histograms

INTERNAL ASSESSMENT	MARKS	TOTAL MARKS
Periodic Tests	3	10
Multiple Assessments	2	
Portfolio	2	
Student Enrichment Activities-practical work	3	

SECOND TERM

No.	UNIT NAME	MARKS
I	ALGEBRA(Cont.)	12
II	GEOMETRY(Cont.)	15
III	MENSURATION(Cont.)	9
IV	STATISTICS & PROBABILITY(Cont)	4
	Total	40
	INTERNAL ASSESSMENT	10
	TOTAL	50

UNIT-ALGEBRA

1. POLYNOMIALS

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. 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

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

and their use in factorization of polynomials.

UNIT-GEOMETRY

2. QUADRILATERALS

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.

3. CIRCLES

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 centre and (motivate) its converse.
2. (Motivate) The perpendicular from the centre of a circle to a chord bisects the chord and conversely, the line drawn through the centre of a circle to bisect a chord is perpendicular to the chord.
3. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the centre (or their respective centres) and conversely.
4. (Motivate) The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.
5. (Motivate) Angles in the same segment of a circle are equal.
6. (Motivate) The sum of either of the pair of the opposite angles of a cyclic quadrilateral is 180° and its converse.

4. CONSTRUCTIONS

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.

UNIT-MENSURATION

5. SURFACE AREAS AND VOLUMES

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

UNIT-STATISTICS & PROBABILITY

6. PROBABILITY

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).

INTERNAL ASSESSMENT	MARKS	TOTAL MARKS
Periodic Tests	3	10 marks for the term
Multiple Assessments	2	
Portfolio	2	
Student Enrichment Activities-practical work	3	

COURSE STRUCTURE

CLASS –X (2021-22)

FIRST TERM

One Paper

90 Minutes

NO.	UNIT NAME	MARKS
I	NUMBER SYSTEMS	6
II	ALGEBRA	10
III	COORDINATE GEOMETRY	6
IV	GEOMETRY	6
V	TRIGONOMETRY	5
VI	MENSURATION	4
VII	STATISTICS & PROBABILITY	3
	Total	40
	INTERNAL ASSESSMENT	10
	TOTAL	50

INTERNAL ASSESSMENT	MARKS	TOTAL MARKS
Periodic Tests	**3**	**10 marks for the term**
Multiple Assessments	**2**	
Portfolio	**2**	
Student Enrichment Activities-practical work	**3**	

UNIT-NUMBER SYSTEMS

1. REAL NUMBER

Fundamental Theorem of Arithmetic - statements after reviewing work done earlier and after illustrating and motivating through examples. Decimal representation of rational numbers in terms of terminating/non-terminating recurring decimals.

UNIT-ALGEBRA

2. POLYNOMIALS

Zeroes of a polynomial. Relationship between zeroes and coefficients of quadratic polynomials only.

3. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

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 and by elimination. Simple situational problems. Simple problems on equations reducible to linear equations.

UNIT-COORDINATE GEOMETRY

4. COORDINATE GEOMETRY

LINES (In two-dimensions)

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

UNIT-GEOMETRY

5. TRIANGLES

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. (Motivate) 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. (Motivate) In a triangle, if the square on one side is equal to sum of the squares on the other two sides, the angle opposite to the first side is a right angle.

UNIT- TRIGONOMETRY

6. INTRODUCTION TO TRIGONOMETRY

Trigonometric ratios of an acute angle of a right-angled triangle. Proof of their existence (well defined). Values of the trigonometric ratios of 30^0, 45^0 and 60^0. Relationships between the ratios.

TRIGONOMETRIC IDENTITIES

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

UNIT-MENSURATION

7. AREAS RELATED TO CIRCLES

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° and 90° only. Plane figures involving triangles, simple quadrilaterals and circle should be taken.)

UNIT- STATISTICS & PROBABILITY

8. PROBABILITY

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

SECOND TERM

NO.	UNIT NAME	MARKS
I	ALGEBRA(Cont.)	10
II	GEOMETRY(Cont.)	9
III	TRIGONOMETRY(Cont.)	7
IV	MENSURATION(Cont.)	6
V	STATISTICS & PROBABILITY(Cont.)	8
	Total	40
	INTERNAL ASSESSMENT	10
	TOTAL	50

UNIT-ALGEBRA

1. QUADRATIC EQUATIONS

(10) Periods

Standard form of a quadratic equation $ax2 + bx + c = 0$, $(a \neq 0)$. 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 (problems on equations reducible to quadratic equations are excluded)

2. ARITHMETIC PROGRESSIONS

Motivation for studying Arithmetic Progression Derivation of the nth term and sum of the first n terms of A.P. and their application in solving daily life problems.
(Applications based on sum to n terms of an A.P. are excluded)

UNIT- GEOMETRY

3. CIRCLES

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.

4. CONSTRUCTIONS

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

UNIT-TRIGONOMETRY

5. SOME APPLICATIONS OF TRIGONOMETRY

HEIGHTS AND DISTANCES-Angle of elevation, Angle of Depression.

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-MENSURATION

6. SURFACE AREAS AND VOLUMES

1. Surface areas and volumes of combinations of any two of the following: cubes, cuboids, spheres, hemispheres and right circular cylinders/cones.
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-STATISTICS & PROBABILITY

7. STATISTICS

Mean, median and mode of grouped data (bimodal situation to be avoided). Mean by Direct Method and Assumed Mean Method only

INTERNAL ASSESSMENT	MARKS	TOTAL MARKS
Periodic Tests	**3**	**10 marks for the term**
Multiple Assessments	**2**	
Portfolio	**2**	
Student Enrichment Activities-practical work	**3**	

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.

संस्कृतपाठ्यक्रमः (कोड नं. 122)

कक्षा –नवमी (2021 - 22)

"कोरोना" इत्याख्य-विषाणोः कारणात् अस्मिन् वर्षे परीक्षा भागद्वये आयोजयिष्यते।

प्रथमसत्रीयायै परीक्षायै संशोधितः पाठ्यक्रमः

(बहुविकल्पात्मकाः प्रश्नाः)

अनुप्रयुक्त-व्याकरणम्	1. **सन्धिकार्यम्** स्वरसन्धिः-दीर्घः, गुण, अयादि व्यञ्जनसन्धिः – वर्गीयप्रथमवर्णस्य तृतीयवर्णे परिवर्तनम् , 'म्' स्थाने अनुस्वारः विसर्गसन्धिः – उत्वम् 2. **शब्दरूपाणि** ➢ अकारान्त-पुँल्लिङ्गशब्दाः- बालकवत् ➢ उकारान्त-पुँल्लिङ्गशब्दाः-साधुवत् ➢ आकारान्त-स्त्रीलिङ्गशब्दाः- लतावत् ➢ ईकारान्त-स्त्रीलिङ्गशब्दाः– नदीवत् ➢ सर्वनामशब्दाः – अस्मद्, युष्मद् 3. **धातुरूपाणि** ➢ पठ्, गम्, वद्, भू , क्रीड्, नी, दृश्, अस्, कृ, पा(पिब्) (पञ्चसु लकारेषु) ➢ सेव्, लभ् (लट्लकारे लृट्लकारे च) 4. **कारक-उपपद-विभक्तयः** ➢ **द्वितीया** –परितः, निकषा, प्रति, विना ➢ **तृतीया** – सह/ समम्/ सार्धम्, विना, अलम्, हीन ➢ **चतुर्थी** – रुच्, दा (यच्छ्), नमः, कुप् ➢ **पञ्चमी** – विना, बहिः , भी, रक्ष् ➢ **षष्ठी** – उपरि, अधः, पुरतः, पृष्ठतः ➢ **सप्तमी**- स्निह्, निपुणः, विश्वस् 5. **प्रत्ययाः** ➢ क्त्वा, तुमुन्, ल्यप्, क्तवतु 6. **सङ्ख्या** – 1-100 (1-4 **केवलं प्रथमा-विभक्तौ**) 7. **उपसर्गाः** ➢ आ, वि, प्रति, उप, अनु, निर्, प्र, अधि, अप, नि, अव

पठितावबोधनम्	8. **वाक्येषु रेखाङ्कितपदानि अधिकृत्य पञ्चप्रश्नानां निर्माणम्** 9. **प्रसङ्गानुकूलं समुचितं शब्दार्थचयनम्** 10. **भाषिककार्याय तत्त्वानि (पाठाधारितानि) -** ✓ वाक्ये कर्तृ – क्रिया पद्चयनम् ✓ कर्तृ - क्रिया – अन्वितिः ✓ विशेषण – विशेष्यचयनम् ✓ पर्याय – विलोमपद् – चयनम्

पुस्तकम् – 'शेमुषी' संस्कृतपुस्तकम् (नवमश्रेण्यै)

प्रथमसत्रीयायै परीक्षायै निर्धारिताः पाठाः –

पाठसङ्ख्या	पाठनाम
प्रथमः पाठः	भारतीवसन्तगीतिः
द्वितीयः पाठः	स्वर्णकाकः
तृतीयः पाठः	गोदोहनम्
पञ्चमः पाठः	सूक्तिमौक्तिकम्

अवधातव्यम् -

अनुप्रयुक्तव्याकरणस्य अंशानां चयनं यथासम्भवं 'शेमुषी' पाठ्यपुस्तकात् करणीयम्।
यदि ततः न सम्भवति तर्हि 'अभ्यासवान् भव - प्रथमो भागः' इत्यस्मात् कर्तुं शक्यम्।

प्रथमसत्रान्तर्गतम् आन्तरिक-मूल्याङ्कनम्

(10 अङ्काः)

उद्देश्यानि

- ❖ छात्राणां सृजनात्मकक्षमतायाः विकासः।
- ❖ श्रवण-भाषण-पठन-लेखनकौशलानां विकासः।
- ❖ चिन्तनक्षमतायाः आत्मविश्वासस्य च संवर्धनम्।

क्र. सं.	गतिविधयः	उदाहरणानि	अङ्काः	निर्देशाः	मूल्याङ्कनबिन्दवः
1.	**आवधिक-परीक्षाः (पीरियोडिक्-असैस्मैंट)**	लिखितपरीक्षा	2.5	विद्यालयेन समये समये लिखितपरीक्षाणाम् आयोजनं करणीयं भवति।	परीक्षासु यत्र विद्यार्थिनः श्रेष्ठाः अङ्काः स्युः तयोः द्वयोः परीक्षयोः एव अधिभारः ग्रहीतव्यः। अपि च आवधिकपरीक्षासु अपि प्रश्नेषु आन्तरिकविकल्पाः देयाः। मूल्याङ्कनसमये यदि छात्रः सर्वान् प्रश्नान् उत्तरति तर्हि छात्रहिताय यत्र अधिकाः अङ्काः सन्ति तेषाम् एव मूल्याङ्कनं करणीयम्।
2	**बहुविधमूल्याङ्कनम्**	❖ कक्षायां पाठितस्य पाठस्य लघुमूल्याङ्कनम् ❖ निर्गतपत्राणि ❖ प्रश्नोत्तरी ❖ मौखिकी परीक्षा ❖ प्रतियोगिताः ❖ प्रश्नमञ्चस्य आयोजनम्	2.5	कक्षायां पाठित-पाठस्य विषयस्य वा बहुविधं मूल्याङ्कनम् अपेक्षितम् अस्ति। अनेन विद्यार्थिनां विविधकौशलानां मूल्याङ्कनं भवेत्।	❖ मौलिकता ❖ विषयसम्बद्धता ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम्
3.	**निवेशसूचिका (पोर्टफोलियो)**	❖ कक्षाकार्यम् ❖ सामूहिक-मूल्याङ्कनम् ❖ स्वमूल्याङ्कनम् ❖ विद्यार्थिनः विषयगताः उपलब्धयः	2.5	विद्यार्थिभिः कक्षायां कृतानां कार्याणाम् उपलब्धीनां च संरक्षणं संयोजनं च सञ्चिकायां पत्रावल्यां वा करणीयम्। एतेन समग्रं मूल्याङ्कनं प्रमाणिकत्वेन भवितुं शक्नोति।	❖ सुलेखः ❖ तथ्यात्मकता ❖ प्रामाणिकता ❖ समयबद्धता

4.	**भाषा-संवर्धनाय गतिविधयः** **(क) श्रवण-भाषण-कौशलम्**	❖ कथा ❖ संवादः / वार्तालापः ❖ भाषणम् ❖ नाटकम् ❖ वार्ताः ❖ आशुभाषणम् ❖ संस्कृतगीतानि ❖ श्लोकोच्चारणम्	2.5	❖ छात्राः कामपि कथां श्रावयितुं शक्नुवन्ति । ❖ शिक्षकः कमपि विषयं सूचयित्वा परस्परं संवादं कारयितुं शक्नोति। ❖ दूरदर्शने वार्तावली इत्याख्यः संस्कृत-कार्यक्रमः प्रसारितः भवति तं द्रष्टुं छात्राः प्रेरणीयाः। ❖ श्रवण-कौशल-मूल्याङ्कनाय शिक्षकः स्वयम् अपि कथां श्रावयित्वा ततः सम्बद्ध-प्रश्नान् प्रष्टुं शक्नोति ।	❖ उच्चारणम् ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम् आरोहावरोह-गतियति-प्रयोगः
	(ख) लेखनकौशलम्	❖ विविधविषयान् आधृत्य मौलिकलेखनम् यथा– देशः, माता, पिता, गुरुः, विद्या पर्यावरणम्, योगः, समयस्य सदुपयोगः , शिक्षा, अनुशासनम् इत्यादयः। ❖ शैक्षिकभ्रमणस्य संस्कृतेन प्रतिवेदनलेखनम् । ❖ दैनन्दिनीलेखनम् । ❖ सङ्केताधारितं कथालेखनम् । ❖ भित्तिपत्रिकायाः निर्माणम्। ❖ श्रुतलेखः ❖ सूक्तिलेखनम्		❖ छात्राः यथाशक्यं कक्षायामेव लेखनकार्यं कुर्युः । ❖ टिप्पणी- पुस्तिकायाः निर्माणम्। ❖ वैयक्तिकपरीक्षणम्।	❖ विषय-सम्बद्धता ❖ शुद्धता (विशेषतः पञ्चमवर्णस्यप्रयोगः) ❖ समयबद्धता ❖ सुलेखः ❖ प्रस्तुतीकरणम्
	अवधातव्यम् –उपर्युक्त- गतिविधयश्च उदाहरणरूपेण प्रदत्ताः सन्ति। एतदतिरिच्य एतादृशाः अन्यविषयाः अपि भवितुमर्हन्ति।				

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संस्कृतपाठ्यक्रमः (कोड नं. 122)

कक्षा –नवमी (2021- 22)

वार्षिकपरीक्षायै संशोधितः पाठ्यक्रमः

(वर्णनात्मकाः प्रश्नाः)

अपठित – अवबोधनम्	1. **एकः गद्यात्मकः खण्डः** 80-100 शब्दपरिमितः गद्यांशः, सरलकथा, वर्णनं वा ➢ एकपदेन पूर्णवाक्येन च अवबोधनात्मकं कार्यम् ➢ शीर्षकलेखनम् ➢ अनुच्छेद – आधारितं भाषिकं कार्यम् भाषिककार्याय तत्त्वानि - ✓ वाक्ये कर्तृ – क्रिया पदचयनम् ✓ विशेषण – विशेष्य चयनम् ✓ पर्याय – विलोमपद – चयनम्
रचनात्मकं कार्यम्	2. **सङ्केताधारितम् औपचारिकम् अथवा अनौपचारिकं पत्रलेखनम्** (मञ्जूषायाः सहायतया पूर्णं पत्रं लेखनीयम्) 3. **चित्राधारितं वर्णनम् अथवा अनुच्छेदलेखनम्** 4. **हिन्दीभाषायाम् आङ्ग्लभाषायां वा लिखितानां पञ्चसरलवाक्यानां संस्कृतभाषायाम् अनुवादः**
पठित – अवबोधनम्	5. **गद्यांशम् अधिकृत्य अवबोधनात्मकं कार्यम्** प्रश्नप्रकाराः – एकपदेन पूर्णवाक्येन च प्रश्नोत्तराणि । 6. **पद्यांशम् अधिकृत्य अवबोधनात्मकं कार्यम्** प्रश्नप्रकाराः – एकपदेन पूर्णवाक्येन च प्रश्नोत्तराणि । 7. **नाट्यांशम् अधिकृत्य अवबोधनात्मकं कार्यम्** प्रश्नप्रकाराः – एकपदेन पूर्णवाक्येन च प्रश्नोत्तराणि । 8. **एकस्य श्लोकस्य अन्वयः/** **एकस्य श्लोकस्य संस्कृतेन भावार्थः (मञ्जूषायाः सहायतया)** 9. **घटनाक्रमानुसारं कथालेखनम्**

पुस्तकम् – 'शेमुषी' संस्कृतपुस्तकम् (नवमश्रेण्यै)

वार्षिक-परीक्षायै निर्धारिताः पाठाः –

पाठसङ्ख्या	पाठनाम
षष्ठः पाठः	भ्रान्तो बालः
नवमः पाठः	सिकतासेतुः
दशमः पाठः	जटायोः शौर्यम्
एकादशः पाठः	पर्यावरणम्

निर्धारित – पाठ्यपुस्तकानि –

1. '**शेमुषी**'- प्रथमो भागः, पाठ्यपुस्तकम् , **संशोधितसंस्करणम्** (प्रकाशनम् – रा.शै.अनु.प्र.परि. द्वारा)
2. '**अभ्यासवान् भव**' - प्रथमो भागः – व्याकरणपुस्तकम् (प्रकाशनम् – रा.शै.अनु.प्र.परि. द्वारा)
3. '**व्याकरणवीथिः**'- व्याकरणपुस्तकम् (प्रकाशनम् – रा.शै.अनु.प्र.परि. द्वारा)

वार्षिकपरीक्षान्तर्गतम् आन्तरिक-मूल्याङ्कनम्

(10 अङ्काः)

<u>उद्देश्यानि</u>

- ❖ छात्राणां सृजनात्मकक्षमतायाः विकासः।
- ❖ श्रवण-भाषण-पठन-लेखनकौशलानां विकासः।
- ❖ चिन्तनक्षमतायाः आत्मविश्वासस्य च संवर्धनम्।

क्र. सं.	**गतिविधयः**	**उदाहरणानि**	**अङ्काः**	**निर्देशाः**	**मूल्याङ्कनबिन्दवः**
1.	**आवधिक-परीक्षाः (पीरियोडिक्-असैस्मैंट)**	लिखितपरीक्षा	2.5	विद्यालयेन समये समये लिखितपरीक्षाणाम् आयोजनं करणीयं भवति।	परीक्षासु यत्र विद्यार्थिनः श्रेष्ठाः अङ्काः स्युः तयोः द्वयोः परीक्षयोः एव अधिभारः ग्रहीतव्यः। अपि च आवधिकपरीक्षासु अपि प्रश्नेषु आन्तरिकविकल्पाः देयाः। मूल्याङ्कनसमये यदि छात्रः सर्वान् प्रश्नान् उत्तरति तर्हि छात्रहिताय यत्र अधिकाः अङ्काः सन्ति तेषाम् एव मूल्याङ्कनं करणीयम्।
2	**बहुविधमूल्याङ्कनम्**	❖ कक्षायां पाठितस्य पाठस्य लघुमूल्याङ्कनम् ❖ निर्गतपत्राणि ❖ प्रश्नोत्तरी ❖ मौखिकी परीक्षा ❖ प्रतियोगिताः ❖ प्रश्नमञ्चस्य आयोजनम्	2.5	कक्षायां पाठित-पाठस्य विषयस्य वा बहुविधं मूल्याङ्कनम् अपेक्षितम् अस्ति। अनेन विद्यार्थिनां विविधकौशलानां मूल्याङ्कनं भवेत्।	❖ मौलिकता ❖ विषयसम्बद्धता ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम्
3.	**निवेशसूचिका (पोर्टफोलियो)**	❖ कक्षाकार्यम् ❖ सामूहिक-मूल्याङ्कनम् ❖ स्वमूल्याङ्कनम् ❖ विद्यार्थिनः विषयगताः उपलब्धयः	2.5	विद्यार्थिभिः कक्षायां कृतानां कार्याणाम् उपलब्धीनां च संरक्षणं संयोजनं च सञ्चिकायां पत्रावल्यां वा करणीयम्। एतेन समग्रं मूल्याङ्कनं प्रमाणिकत्वेन भवितुं शक्नोति।	❖ सुलेखः ❖ तथ्यात्मकता ❖ प्रामाणिकता ❖ समयबद्धता

4.	**भाषा-संवर्धनाय गतिविधयः** **(क) श्रवण-भाषण-कौशलम्**	❖ कथा ❖ संवादः / वार्तालापः ❖ भाषणम् ❖ नाटकम् ❖ वार्ताः ❖ आशुभाषणम् ❖ संस्कृतगीतानि ❖ श्लोकोच्चारणम्	2.5	❖ छात्राः कामपि कथां श्रावयितुं शक्नुवन्ति । ❖ शिक्षकः कमपि विषयं सूचयित्वा परस्परं संवादं कारयितुं शक्नोति। ❖ दूरदर्शने वार्तावली इत्याख्यः संस्कृत-कार्यक्रमः प्रसारितः भवति तं द्रष्टुं छात्राः प्रेरणीयाः। ❖ श्रवण-कौशल-मूल्याङ्कनाय शिक्षकः स्वयम् अपि कथां श्रावयित्वा ततः सम्बद्ध-प्रश्नान् प्रष्टुं शक्नोति ।	❖ उच्चारणम् ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम् आरोहावरोह-गतियति-प्रयोगः
	(ख) लेखनकौशलम्	❖ विविधविषयान् आधृत्य मौलिकलेखनम् यथा– देशः, माता, पिता, गुरुः, विद्या पर्यावरणम्, योगः, समयस्य सदुपयोगः , शिक्षा, अनुशासनम् इत्यादयः। ❖ शैक्षिकभ्रमणस्य संस्कृतेन प्रतिवेदनलेखनम् । ❖ दैनन्दिनीलेखनम् । ❖ सङ्केताधारितं कथालेखनम् । ❖ भित्तिपत्रिकायाः निर्माणम्। ❖ श्रुतलेखः ❖ सूक्तिलेखनम्		❖ छात्राः यथाशक्यं कक्षायामेव लेखनकार्यं कुर्युः । ❖ टिप्पणी- पुस्तिकायाः निर्माणम्। ❖ वैयक्तिकपरीक्षणम्।	❖ विषय-सम्बद्धता ❖ शुद्धता (विशेषतः पञ्चमवर्णस्यप्रयोगः) ❖ समयबद्धता ❖ सुलेखः ❖ प्रस्तुतीकरणम्
	अवधातव्यम् –उपर्युक्त- गतिविधयश्च उदाहरणरूपेण प्रदत्ताः सन्ति। एतदतिरिच्य एतादृशाः अन्यविषयाः अपि भवितुमर्हन्ति।				

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संस्कृतपाठ्यक्रमः (कोड नं. 122)

कक्षा – दशमी (2021 - 22)

"कोरोना" इत्याख्य-विषाणोः कारणात् अस्मिन् वर्षे परीक्षा भागद्वये आयोजयिष्यते।

प्रथमसत्रीयायै परीक्षायै संशोधितः पाठ्यक्रमः

(बहुविकल्पात्मकाः प्रश्नाः)

अनुप्रयुक्त-व्याकरणम्	1. **सन्धिकार्यम्** **व्यञ्जनसन्धिः -** वर्गीयप्रथमवर्णस्य तृतीयवर्णे परिवर्तनम्, प्रथमवर्णस्य पञ्चमवर्णे परिवर्तनम् **विसर्गसन्धिः** - विसर्गस्य उत्वं, विसर्गस्य स्थाने स्, श्, ष् 2. **समासः - वाक्येषु समस्तपदानां विग्रहः विग्रहपदानां च समासः** ➢ तत्पुरुषः – विभक्तिः ➢ अव्ययीभावः (अनु, उप, सह, निर्, प्रति, यथा) ➢ द्वन्द्वः (केवलम् इतरेतर-द्वन्द्वसमासः) 3. **प्रत्ययाः** ➢ तद्धिताः – मतुप्, त्व, ➢ स्त्रीप्रत्ययः – टाप् 4. **वाच्यपरिवर्तनम् - केवलं लट्लकारे (कर्तृ-कर्म-क्रिया)** 5. **समयः** - अङ्कानां स्थाने शब्देषु समयलेखनम् (सामान्य – सपाद – सार्ध – पादोन) 6. **अव्ययपदानि** उच्चैः, च, श्वः, ह्यः , अद्य, अत्र-तत्र, यत्र-कुत्र, इदानीम्, (अधुना, सम्प्रति, साम्प्रतम्) यदा, तदा, कदा, सहसा, वृथा, शनैः, अपि, कुतः, इतस्ततः, यदि-तर्हि, यावत्-तावत् । 7. **अशुद्धि-संशोधनम् (वचन – लिङ्ग – पुरुष – लकार –दृष्ट्या संशोधनम्)**
पठितावबोधनम्	8. **वाक्येषु रेखाङ्कितपदानि अधिकृत्य पञ्चप्रश्नानां निर्माणम्** 9. **प्रसङ्गानुकूलं समुचितं शब्दार्थचयनम्** 10. **भाषिककार्याय तत्त्वानि (पाठाधारितानि) -** ✓ वाक्ये कर्तृ – क्रिया पदचयनम् ✓ विशेषण – विशेष्य चयनम्, सर्वनाम ✓ पर्याय – विलोमपद – चयनम्

पुस्तकम् – 'शेमुषी -संस्कृत-पाठयपुस्तकम् द्वितीयः भागः (दशमश्रेण्यै)

प्रथमसत्रीयायै परीक्षायै निर्धारिताः पाठाः –

पाठसङ्ख्या	**पाठनाम**
प्रथमः पाठः	शुचिपर्यावरणम्
द्वितीयः पाठः	बुद्धिर्बलवती सदा
चतुर्थः पाठः	शिशुलालनम्
पञ्चमः पाठः	जननी तुल्यवत्सला

अवधातव्यम् -

अनुप्रयुक्तव्याकरणस्य अंशानां चयनं यथासम्भवं 'शेमुषी' पाठ्यपुस्तकात् करणीयम्।
यदि ततः न सम्भवति तर्हि 'अभ्यासवान् भव – द्वितीयो भागः' इत्यस्मात् कर्तुं शक्यम्।

प्रथमसत्रान्तर्गतम् आन्तरिक-मूल्याङ्कनम्

(10 अङ्काः)

<u>उद्देश्यानि</u>

- छात्राणां सृजनात्मकक्षमतायाः विकासः।
- श्रवण-भाषण-पठन-लेखनकौशलानां विकासः।
- चिन्तनक्षमतायाः आत्मविश्वासस्य च संवर्धनम्।

क्र. सं.	**गतिविधयः**	**उदाहरणानि**	**अङ्काः**	**निर्देशाः**	**मूल्याङ्कनबिन्दवः**
1.	**आवधिक-परीक्षाः (पीरियोडिक्-असैस्मैंट)**	लिखितपरीक्षा	2.5	विद्यालयेन समये समये लिखितपरीक्षाणाम् आयोजनं करणीयं भवति।	परीक्षासु यत्र विद्यार्थिनः श्रेष्ठाः अङ्काः स्युः तयोः द्वयोः परीक्षयोः एव अधिभारः ग्रहीतव्यः। अपि च आवधिकपरीक्षासु अपि प्रश्नेषु आन्तरिकविकल्पाः देयाः। मूल्याङ्कनसमये यदि छात्रः सर्वान् प्रश्नान् उत्तरति तर्हि छात्रहिताय यत्र अधिकाः अङ्काः सन्ति तेषाम् एव मूल्याङ्कनं करणीयम्।

2	**बहुविधमूल्याङ्कनम्**	❖ कक्षायां पाठितस्य पाठस्य लघुमूल्याङ्कनम् ❖ निर्गतपत्राणि ❖ प्रश्नोत्तरी ❖ मौखिकी परीक्षा ❖ प्रतियोगिताः ❖ प्रश्नमञ्चस्य आयोजनम्	2.5	कक्षायां पाठित-पाठस्य विषयस्य वा बहुविधं मूल्याङ्कनम् अपेक्षितम् अस्ति। अनेन विद्यार्थिनां विविधकौशलानां मूल्याङ्कनं भवेत्।	❖ मौलिकता ❖ विषयसम्बद्धता ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम्
3.	**निवेशसूचिका (पोर्टफोलियो)**	❖ कक्षाकार्यम् ❖ सामूहिक-मूल्याङ्कनम् ❖ स्वमूल्याङ्कनम् ❖ विद्यार्थिनः विषयगताः उपलब्धयः	2.5	विद्यार्थिभिः कक्षायां कृतानां कार्याणाम् उपलब्धीनां च संरक्षणं संयोजनं च सञ्चिकायां पत्रावल्यां वा करणीयम्। एतेन समग्रं मूल्याङ्कनं प्रमाणिकत्वेन भवितुं शक्नोति।	❖ सुलेखः ❖ तथ्यात्मकता ❖ प्रामाणिकता ❖ समयबद्धता
4.	**भाषा-संवर्धनाय गतिविधयः** **(क) श्रवण-भाषण-कौशलम्**	❖ कथा ❖ संवादः / वार्तालापः ❖ भाषणम् ❖ नाटकम् ❖ वार्ताः ❖ आशुभाषणम् ❖ संस्कृतगीतानि ❖ श्लोकोच्चारणम्	2.5	❖ छात्राः कामपि कथां श्रावयितुं शक्नुवन्ति । ❖ शिक्षकः कमपि विषयं सूचयित्वा परस्परं संवादं कारयितुं शक्नोति। ❖ दूरदर्शने वार्तावली इत्याख्यः संस्कृत-कार्यक्रमः प्रसारितः भवति तं द्रष्टुं छात्राः प्रेरणीयाः। ❖ श्रवण-कौशल-मूल्याङ्कनाय शिक्षकः स्वयम् अपि कथां श्रावयित्वा ततः सम्बद्ध-प्रश्नान् प्रष्टुं शक्नोति ।	❖ उच्चारणम् ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम् आरोहावरोह-गतियति-प्रयोगः
	(ख) लेखनकौशलम्	❖ विविधविषयान् आधृत्य मौलिकलेखनम् यथा– देशः, माता, पिता, गुरुः, विद्या पर्यावरणम्, योगः, समयस्य सदुपयोगः , शिक्षा, अनुशासनम्		❖ छात्राः यथाशक्यं कक्षायामेव लेखनकार्यं कुर्युः । ❖ टिप्पणी- पुस्तिकायाः निर्माणम्। ❖ वैयक्तिकपरीक्षणम्।	❖ विषय-सम्बद्धता ❖ शुद्धता (विशेषतः पञ्चमवर्णस्यप्रयोगः) ❖ समयबद्धता ❖ सुलेखः ❖ प्रस्तुतीकरणम्

		इत्यादयः। ❖ शैक्षिकभ्रमणस्य संस्कृतेन प्रतिवेदनलेखनम् । ❖ दैनन्दिनीलेखनम् । ❖ सङ्केताधारितं कथालेखनम् । ❖ भित्तिपत्रिकायाः निर्माणम्। ❖ श्रुतलेखः ❖ सूक्तिलेखनम्			
	अवधातव्यम् –उपर्युक्त- गतिविधयश्च उदाहरणरूपेण प्रदत्ताः सन्ति। एतदतिरिच्य एतादृशाः अन्यविषयाः अपि भवितुमर्हन्ति।				

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संस्कृतपाठ्यक्रमः (कोड नं. 122)

कक्षा –दशमी (2021- 22)

वार्षिकपरीक्षायै संशोधितः पाठ्यक्रमः

(वर्णनात्मकाः प्रश्नाः)

अपठित – अवबोधनम्	**1. एकः गद्यात्मकः खण्डः** 80-100 शब्दपरिमितः गद्यांशः, सरलकथा, वर्णनं वा ➢ एकपदेन पूर्णवाक्येन च अवबोधनात्मकं कार्यम् ➢ शीर्षकलेखनम् ➢ अनुच्छेद – आधारितं भाषिकं कार्यम् भाषिककार्याय तत्त्वानि - ✓ वाक्ये कर्तृ – क्रिया पदचयनम् ✓ कर्तृ - क्रिया – अन्वितिः ✓ विशेषण – विशेष्य चयनम् ✓ पर्याय – विलोमपद – चयनम्

रचनात्मकं कार्यम्	2. **सङ्केताधारितम् औपचारिकम् अथवा अनौपचारिकं पत्रलेखनम्** (मञ्जूषायाः सहायतया पूर्णं पत्रं लेखनीयम्) 3. **चित्राधारितं वर्णनम् अथवा अनुच्छेदलेखनम्** 4. **हिन्दीभाषायाम् आङ्ग्लभाषायां वा लिखितानां पञ्चसरलवाक्यानां संस्कृतभाषायाम् अनुवादः**
पठित – अवबोधनम्	5. **गद्यांशम् अधिकृत्य अवबोधनात्मकं कार्यम्** प्रश्नप्रकाराः – एकपदेन पूर्णवाक्येन च प्रश्नोत्तराणि । 6. **पद्यांशम् अधिकृत्य अवबोधनात्मकं कार्यम्** प्रश्नप्रकाराः – एकपदेन पूर्णवाक्येन च प्रश्नोत्तराणि । 7. **नाट्यांशम् अधिकृत्य अवबोधनात्मकं कार्यम्** प्रश्नप्रकाराः – एकपदेन पूर्णवाक्येन च प्रश्नोत्तराणि । 8. **एकस्य श्लोकस्य अन्वयः / एकस्य श्लोकस्य संस्कृतेन भावार्थः (मञ्जूषायाः सहायतया)** 9. **घटनाक्रमानुसारं कथालेखनम्**

पुस्तकम् – 'शेमुषी -संस्कृत-पाठयपुस्तकम् द्वितीयः भागः (दशमश्रेण्यै)

वार्षिक-परीक्षायै निर्धारिताः पाठाः –

पाठसङ्ख्या	**पाठनाम**
षष्ठः पाठः	सुभाषितानि
सप्तमः पाठः	सौहार्दं प्रकृतेः शोभा
अष्टमः पाठः	विचित्रः साक्षी
नवमः पाठः	सूक्तयः

पाठ्यपुस्तकानि-

1. '**शेमुषी**' पाठ्यपुस्तकम् भाग-2 , **संशोधितसंस्करणम्** प्रकाशनम् : रा.शै.प्र.अनु.परि. द्वारा
2. '**अभ्यासवान् भव**' भाग-2 प्रकाशनम् : रा.शै.प्र.अनु.परि. द्वारा
3. **व्याकरणवीथिः** (अतिरिक्तपठनार्थम्) प्रकाशनम् : रा.शै.प्र.अनु.परि

वार्षिकपरीक्षान्तर्गतम् आन्तरिक-मूल्याङ्कनम्

(10 अङ्काः)

<u>उद्देश्यानि</u>

- ❖ छात्राणां सृजनात्मकक्षमतायाः विकासः।
- ❖ श्रवण-भाषण-पठन-लेखनकौशलानां विकासः।
- ❖ चिन्तनक्षमतायाः आत्मविश्वासस्य च संवर्धनम्।

क्र. सं.	**गतिविधयः**	**उदाहरणानि**	**अङ्काः**	**निर्देशाः**	**मूल्याङ्कनबिन्दवः**
1.	**आवधिक-परीक्षाः (पीरियोडिक्-असैस्मैंट)**	लिखितपरीक्षा	2.5	विद्यालयेन समये समये लिखितपरीक्षाणाम् आयोजनं करणीयं भवति।	परीक्षासु यत्र विद्यार्थिनः श्रेष्ठाः अङ्काः स्युः तयोः द्वयोः परीक्षयोः एव अधिभारः ग्रहीतव्यः। अपि च आवधिकपरीक्षासु अपि प्रश्नेषु आन्तरिकविकल्पाः देयाः। मूल्याङ्कनसमये यदि छात्रः सर्वान् प्रश्नान् उत्तरति तर्हि छात्रहिताय यत्र अधिकाः अङ्काः सन्ति तेषाम् एव मूल्याङ्कनं करणीयम्।
2	**बहुविधमूल्याङ्कनम्**	❖ कक्षायां पाठितस्य पाठस्य लघुमूल्याङ्कनम् ❖ निर्गतपत्राणि ❖ प्रश्नोत्तरी ❖ मौखिकी परीक्षा ❖ प्रतियोगिताः ❖ प्रश्नमञ्चस्य आयोजनम्	2.5	कक्षायां पाठित-पाठस्य विषयस्य वा बहुविधं मूल्याङ्कनम् अपेक्षितम् अस्ति। अनेन विद्यार्थिनां विविधकौशलानां मूल्याङ्कनं भवेत्।	❖ मौलिकता ❖ विषयसम्बद्धता ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम्
3.	**निवेशसूचिका (पोर्टफोलियो)**	❖ कक्षाकार्यम् ❖ सामूहिक-मूल्याङ्कनम् ❖ स्वमूल्याङ्कनम् ❖ विद्यार्थिनः विषयगताः उपलब्धयः	2.5	विद्यार्थिभिः कक्षायां कृतानां कार्याणाम् उपलब्धीनां च संरक्षणं संयोजनं च सञ्चिकायां पत्रावल्यां वा करणीयम्। एतेन समग्रं मूल्याङ्कनं प्रमाणिकत्वेन भवितुं शक्नोति।	❖ सुलेखः ❖ तथ्यात्मकता ❖ प्रामाणिकता ❖ समयबद्धता

4.	**भाषा-संवर्धनाय गतिविधयः** **(क) श्रवण-भाषण-कौशलम्**	❖ कथा ❖ संवादः / वार्तालापः ❖ भाषणम् ❖ नाटकम् ❖ वार्ताः ❖ आशुभाषणम् ❖ संस्कृतगीतानि ❖ श्लोकोच्चारणम्	2.5	❖ छात्राः कामपि कथां श्रावयितुं शक्नुवन्ति । ❖ शिक्षकः कमपि विषयं सूचयित्वा परस्परं संवादं कारयितुं शक्नोति। ❖ दूरदर्शने वार्तावली इत्याख्यः संस्कृत-कार्यक्रमः प्रसारितः भवति तं द्रष्टुं छात्राः प्रेरणीयाः। ❖ श्रवण-कौशल-मूल्याङ्कनाय शिक्षकः स्वयम् अपि कथां श्रावयित्वा ततः सम्बद्ध-प्रश्नान् प्रष्टुं शक्नोति ।	❖ उच्चारणम् ❖ शुद्धता ❖ समयबद्धता ❖ प्रस्तुतीकरणम् आरोहावरोह-गतियति-प्रयोगः
	(ख) लेखनकौशलम्	❖ विविधविषयान् आधृत्य मौलिकलेखनम् यथा– देशः, माता, पिता, गुरुः, विद्या पर्यावरणम्, योगः, समयस्य सदुपयोगः , शिक्षा, अनुशासनम् इत्यादयः। ❖ शैक्षिकभ्रमणस्य संस्कृतेन प्रतिवेदनलेखनम् । ❖ दैनन्दिनीलेखनम् । ❖ सङ्केताधारितं कथालेखनम् । ❖ भित्तिपत्रिकायाः निर्माणम्। ❖ श्रुतलेखः ❖ सूक्तिलेखनम्		❖ छात्राः यथाशक्यं कक्षायामेव लेखनकार्यं कुर्युः । ❖ टिप्पणी- पुस्तिकायाः निर्माणम्। ❖ वैयक्तिकपरीक्षणम्।	❖ विषय-सम्बद्धता ❖ शुद्धता (विशेषतः पञ्चमवर्णस्यप्रयोगः) ❖ समयबद्धता ❖ सुलेखः ❖ प्रस्तुतीकरणम्
	अवधातव्यम् –उपर्युक्त- गतिविधयश्च उदाहरणरूपेण प्रदत्ताः सन्ति। एतदतिरिच्य एतादृशाः अन्यविषयाः अपि भवितुमर्हन्ति।				

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SCIENCE

(Subject Code - 086)

Syllabus for Purpose of Examination 2021-22

CLASS – IX and X (2021-22)

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, hypothesizing, experimenting recording observations, drawing, tabulation, plotting graphs, analyze and drive conclusions 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 the 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. The total Theory Examinations (Term I+II) will be of 80 marks and 20 marks weightage shall be for Internal Assessment (Term I+II).
2. Internal Assessment - Maximum Marks 10 for each Term:
   a. There will be Periodic Assessment that would include:
      - Three periodic tests will be conducted by the school in the entire session. Average of the two periodic tests/marks of best periodic Test conducted in the Term is to be taken for consideration.
      - 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, enquiry based scientific investigations etc.
   b. Subject Enrichment in the form of Practical/Laboratory work should be done throughout the year and the student should maintain record of the same. Practical Assessment should be

continuous. 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.

COURSE STRUCTURE

CLASS IX

EVALUATION SCHEME		
Theory		
Units	**Term- I**	**Marks**
I	Matter-Its Nature and Behaviour: Chapter - 2	09
II	Organization in the Living World: Chapter - 5 and 6	18
III	Motion, Force and Work: Chapter - 8 and 9	13
Units	**Term - II**	**Marks**
I	Matter-Its Nature and Behaviour: Chapter 3 and 4	18
II	Organization in the Living World: Chapter -13	08
III	Motion, Force and Work: 10 and 11	14
Total Theory (Term I+II)		**80**
Internal Assessment: Term I		**10**
Internal Assessment: Term II		**10**
Grand Total		**100**

TERM – I

Theme: Materials

Unit I: Matter- It's Nature and Behaviour

Chapter – 2 Is matter around us Pure

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

Theme: The World of the Living

Unit II: Organization in the Living World

Chapter – 5 The Fundamental Unit of Life

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.

Chapter – 6 Tissues

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).

Theme: Moving Things, People and Ideas

Unit III: Motion, Force and Work

Chapter – 8 Motion

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.

Chapter – 9 Force and Laws of 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.

TERM - II

Theme: Materials

Unit I: Matter- It's Nature and Behaviour

Chapter – 3 Atoms and Molecules

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.

Chapter – 4 Structure of Atom

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

Theme: Moving Things, People and Ideas

Unit III: Motion, Force and Work

Chapter – 10 Gravitation

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

Chapter – 11 Work and Energy

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

Theme: The World of the Living

Unit II: Organization in the Living World

Chapter – 13 Why do we fall ill

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.

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ONLY FOR INTERNAL ASSESSMENT

Note*: *Learners are assigned to read the below listed part of Unit IV. They can be encouraged to prepare a brief write up on any one concept of this Unit in their Portfolio. This may be an assessment for Internal Assessment and credit may be given (Periodic assessment/Portfolio). This portion of the Unit is not to be assessed in the year-end examination.

Theme: Natural Resources: Balance in nature

Unit IV: Our Environment

Chapter -14 Natural Resources

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.

PRACTICALS

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

TERM-I

LIST OF EXPERIMENTS

1. Preparation of:
   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**Unit-I: (Chapter -2)**
2. Preparation of
   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**Unit-I:(Chapter-2)**

3. Perform the following reactions and classify them as physical or chemical changes

   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.

Unit-I:(Chapter-2)

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

5. 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:(Chapter-6)**

TERM-II

LIST OF EXPERIMENTS

1. Determination of the density of solid (denser than water) by using a spring balance and a measuring cylinder. **Unit-III:(Chapter–10)**
2. Establishing the relation between the loss in weight of a solid when fully immersed in

   a) Tap water

   b) Strongly salty water with the weight of water displaced by it by taking at least two different solids.**Unit-III:(Chapter–10)**

3. Verification of the law of conservation of mass in a chemical reaction.**Unit-I:(Chapter–3)**

COURSE STRUCTURE

CLASS X

EVALUATION SCHEME		
THEORY		
Units	**Term - I**	**Marks**
I	Chemical Substances-Nature and Behaviour: Chapter 1,2 and 3	16
II	World of Living: Chapter 6	10
III	Natural Phenomena: Chapter 10 and 11	14
Units	**Term - II**	**Marks**
I	Chemical Substances-Nature and Behaviour: Chapter 4 and 5	10
II	World of Living: Chapter 8 and 9	13
IV	Effects of Current: Chapter 12 and 13	12
V	Natural Resources: Chapter 15	05
Total Theory (Term I+II)		**80**
Internal Assessment: Term I		**10**
Internal Assessment: Term II		**10**
Grand Total		**100**

TERM - I

Theme: Materials

Unit I: Chemical Substances - Nature and Behaviour

Chapter -1 Chemical reactions and equations

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.

Chapter – 2 Acids, Bases and Salts

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.

Chapter – 3 Metals and non – metals

Metals and nonmetals: Properties of metals and non-metals; Reactivity series; Formation and properties of ionic compounds.

Theme: The World of the Living

Unit II: World of Living

Chapter – 6 Life processes

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

Theme: How Things Work

Unit III: Natural Phenomena

Chapter – 10 Light – Reflection and Refraction

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.

Chapter – 11 Human eye and colourful world

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

TERM - II

Theme: Materials

Unit I: Chemical Substances - Nature and Behaviour

Chapter – 4 Carbon and its compounds

Carbon compounds: Covalent bonding in carbon compounds. Versatile nature of carbon.Homologous series.

Chapter – 5 Periodic classification of elements

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

Unit II: World of Living

Chapter – 8 How do organisms reproduce?

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.

Chapter – 9 Heredity and Evolution

Heredity: Heredity; Mendel's contribution- Laws for inheritance of traits: Sex determination: brief introduction;

Theme: Natural Phenomena

Unit IV: Effects of Current

Chapter – 12 Electricity

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.

Chapter – 13 Magnetic effects of current

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.

Theme: Natural Resources

Unit V: Natural Resources

Chapter – 15 Our Environment

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

*****

ONLY FOR INTERNAL ASSESSMENT

Note: ***Learners are assigned to read the below listed part of Unit V. They can be encouraged to prepare a brief write up on any one concept of this Unit in their Portfolio. This may be an assessment for Internal Assessment and credit may be given (Periodic assessment/Portfolio). This portion of the Unit is not to be assessed in the year-end examination.***

Chapter – 16 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.

TERM-I

LIST OF EXPERIMENTS

1. A. Finding the pH of the following samples by using pH paper/universal indicator:

   (i) Dilute Hydrochloric Acid
   (ii) Dilute NaOH solution
   (iii) Dilute Ethanoic Acid solution
   (iv) Lemon juice
   (v) Water
   (vi) Dilute Hydrogen Carbonate solution

   B. Studying the properties of acids and bases (HCl & NaOH) on the basis of their reaction with:

   a) Litmus solution (Blue/Red)
   b) Zinc metal
   c) Solid sodium carbonate**Unit–I:(Chapter-2)**

2. Performing and observing the following reactions and classifying them into:

   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.

   Unit-I:(Chapter-1)

3. A. Observing the action of Zn, Fe, Cu and Al metals on the following salt solutions:

   (i) $ZnSO_4(aq)$
   (ii) $FeSO_4(aq)$
   (iii) $CuSO_4(aq)$
   (iv) $Al_2(SO_4)_3(aq)$

   B. Arranging Zn, Fe, Cu and Al (metals) in the decreasing order of reactivity based on the above result.**Unit-I :(Chapter-3)**

4. Experimentally show that carbon dioxide is given out during respiration.

   Unit-II:(Chapter-6)

5. Determination of the focal length of (i) Concave mirror and (ii) Convex lens by obtaining the image of a distant object. **Unit-III:(Chapter- 10)**

6. 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:(Chapter-10)**

7. Tracing the path of the rays of light through a glass prism. **Unit-III:(Chapter-11)**

TERM-II

LIST OF EXPERIMENTS

1. Studying the dependence of potential difference (V) across a resistor on the current (I) passing through it and determining its resistance. Also plotting a graph between V and I. **Unit-IV:(Chapter-12)**
2. Studying (a) binary fission in *Amoeba*, and (b) budding in yeast and Hydra with the help of prepared slides. **Unit-II:(Chapter-8)**

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) 2021-22
(Class X)
Science (086)

Theory **TotalMaximum Marks: 80**

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

Note:

- Internal choice would be provided.

Internal Assessment – Term I and II (10 Marks each)

- **Periodic Assessment** - 03 marks
- **Multiple Assessment** – 02 marks
- **Subject Enrichment** (Practical Work) - 03 marks
- **Portfolio** - 02 marks

SOCIAL SCIENCE

CLASS IX-X (2021-22)
CODE NO. (087)
TERM WISE CURRICULUM

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 (2021-22)

TERM- I

			M. MARKS: 40
No.	**Units**	**No. of Periods**	**Marks**
I	India and the Contemporary World -1	17	10
II	Contemporary India – I	14	10
III	Democratic Politics – I	20	10
IV	Economics	20	10
	Total	**71**	**40**

TERM- II

			M. MARKS: 40
No.	**Units**	**No. of Periods**	**Marks**
I	India and the Contemporary World -1	34	10
II	Contemporary India – I	24	10
III	Democratic Politics – I	18	10
IV	Economics	10	10
	Total	**86**	**40**

COURSE CONTENT- IX

<table>
<tr><th colspan="2">TERM- I</th></tr>
<tr><td colspan="2">Unit 1: India and the Contemporary World – I</td></tr>
<tr><td>Themes</td><td>Learning Objectives</td></tr>
<tr><td>Section 1: Events and Processes: (Theme one)

I. The French Revolution

• 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</td><td>In this theme students would get familiarized with distinct ideologies, extracts of speeches, political declarations, as well as the politics of caricatures, posters and engravings. Students would learn how to interpret these kinds of historical evidences.

• 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.</td></tr>
<tr><td colspan="2">Unit 2: Contemporary India – I</td></tr>
<tr><td>Themes</td><td>Learning Objectives</td></tr>
<tr><td>1. India

• Size and Location
• India and the World
• India’s Neighbours

2. Physical Features of India

• Major Physiographic Divisions</td><td>• 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.</td></tr>
<tr><td colspan="2">Unit 3: Democratic Politics – I</td></tr>
<tr><td>Themes</td><td>Learning Objectives</td></tr>
<tr><td>1. What is Democracy? Why Democracy?

• What is Democracy?
• Features of Democracy
• Why Democracy?</td><td>• Develop conceptual skills of defining democracy.
• Understand how different historical processes and forces have promoted democracy.</td></tr>
</table>

• Broader Meaning of Democracy **2. Constitutional Design** • Why do we need a Constitution? • Making of the Indian Constitution • Guiding Values of the Indian Constitution	• Develop a sophisticated defence of democracy against common prejudices. • Develop a historical sense of the choice and nature of democracy in India. • Understand the process of Constitution making. • Develop respect for the Constitution and appreciation for Constitutional values. • Recognize Constitution as a dynamic and living document.
Unit 4: Economics	
Themes	**Learning Objectives**
1. The Story of Village Palampur • Overview • Organization of production • Farming in Palampur • Non-farm activities of Palampur **2. People as Resource** • Overview • Economic activities by men and women • Quality of Population • Unemployment	• 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.

LIST OF MAP ITEMS
CLASS IX (2021-22)

TERM – I

SUBJECT - HISTORY

Chapter-1: The French Revolution

Outline Political Map of France

- Bordeaux
- Nantes
- Paris
- Marseilles

SUBJECT – GEOGRAPHY

Chapter -1: India-Size and Location

- India-States with Capitals, Tropic of Cancer, Standard Meridian

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, Coromandel & Northern Circar

COURSE CONTENT - IX

<table>
<tr><th colspan="2">TERM II</th></tr>
<tr><td colspan="2">Unit 1: India and the Contemporary World – I</td></tr>
<tr><td>Themes</td><td>Learning Objectives</td></tr>
<tr><td>Section 1: Events and Processes:
(Theme two and three)

II. Socialism in Europe and the Russian Revolution
• 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
III. Nazism and the Rise of Hitler
• Birth of the Weimar Republic
• Hitler’s Rise to Power
• The Nazi Worldview
• Youth in Nazi Germany
• Ordinary People and the Crimes Against Humanity</td><td>In each of these two 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 would learn how to interpret these kinds of historical evidences.
• Explore the history of socialism through the study of Russian Revolution.
• Familiarize with the different types of ideas that inspired the revolution.

• Discuss the critical significance of Nazism in shaping the politics of modern world.
• Get familiarized with the speeches and writings of Nazi Leaders.</td></tr>
<tr><td colspan="2">Unit 2: Contemporary India – I</td></tr>
<tr><td>Themes</td><td>Learning Objectives</td></tr>
<tr><td>3. Drainage
• Major rivers and tributaries
• Lakes
• Role of rivers in the economy
• Pollution of rivers
Note: Only Map Items as given in the Map List from this chapter to be evaluated in Examination.

4. Climate
• Concept
• Climatic Controls
• Factors influencing India’s climate
• The Indian Monsoon
• Distribution of Rainfall
• Monsoon as a unifying bond
5. Natural Vegetation and Wild Life
• Factors affecting Vegetation</td><td>• 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 and its impact on the life of people.
• Explain the importance and unifying role of monsoons.</td></tr>
</table>

• Vegetation types • Wild Life Conservation	• 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.
Unit 3: Democratic Politics – I	
Themes	**Learning Objectives**
3. Electoral Politics • Why Elections? • What is our System of Elections? • What makes elections in India democratic? **4. Working of Institutions** • How is the major policy decision taken? • Parliament • Political Executive • Judiciary	• 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. • 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.
Unit 4: Economics	
Themes	**Learning Objectives**
3. Poverty as a Challenge • 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	• Understand poverty as a challenge. • Identify vulnerable group and interstate disparities. • Appreciate the initiatives of the government to alleviate poverty.

LIST OF MAP ITEMS
CLASS IX (2021-22)
TERM- II

SUBJECT - HISTORY

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 -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)

INTERNAL ASSESSMENT

<table>
<tr><th></th><th>Marks</th><th>Description</th></tr>
<tr><td>Periodic Assessment</td><td>10 Marks</td><td>
<table>
<tr><td>Pen Paper Test</td><td>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>5 marks</td></tr>
</table>
</td></tr>
<tr><td>Portfolio</td><td>5 Marks</td><td>• 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</td></tr>
<tr><td>Subject Enrichment Activity</td><td>5 Marks</td><td>• Project Work</td></tr>
<tr><td>TOTAL</td><td colspan="2">20 MARKS</td></tr>
</table>

PROJECT WORK

CLASS IX (2021-22)

05 Marks

1. Every student has to compulsorily undertake one project on Disaster Management.
2. **Objectives**: The main objectives of giving project work on Disaster Management to the students are to:
    a. create awareness in them about different disasters, their consequences and management
    b. prepare them in advance to face such situations
    c. ensure their participation in disaster mitigation plans
    d. enable them to create awareness and preparedness among the community.
3. The project work should also help in enhancing the Life Skills of the students.
4. If possible, ***different forms of art*** may be integrated in the project work.

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.
6. The distribution of marks over different aspects relating to Project Work is as follows:

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 (like comic strips, drawings, illustrations, script play etc.);
    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.

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

COURSE STRUCTURE
CLASS X (2021-22)

TERM - I

		M. MARKS: 40	
No.	**Units**	**No. of Periods**	**Marks**
I	India and the Contemporary World -1	12	10
II	Contemporary India – I	16	10
III	Democratic Politics – I	14	10
IV	Economics	20	10
	Total	**62**	**40**

TERM- II

		M. MARKS: 40	
No.	**Units**	**No. of Periods**	**Marks**
I	India and the Contemporary World -1	34	10
II	Contemporary India – I	19	10
III	Democratic Politics – I	14	10
IV	Economics	22	10
	Total	**89**	**40**

COURSE CONTENT - X

TERM- I	
Unit 1: India and the Contemporary World – II	
Themes	**Learning Objectives**
Section 1: Events and Processes **1. The Rise of Nationalism in Europe** • 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	• 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.

Unit 2: Contemporary India – II	
Themes	**Learning Objectives**
1. Resources and Development • 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	• Understand the value of resources and the need for their judicious utilization and conservation.
3. Water Resources • Water Scarcity and The Need for Water Conservation and Management • Multi-Purpose River Projects and Integrated Water Resources Management • Rainwater Harvesting *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 will be evaluated in Board Examination.*	• Comprehend the importance of water as a resource as well as develop awareness towards its judicious use and conservation. • Identify different Dams in the country.
4. Agriculture • Types of farming • Cropping Pattern • Major Crops • Technological and Institutional Reforms • Impact of Globalization on Agriculture	• 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.

Unit 3: Democratic Politics – II	
Themes	**Learning Objectives**
1. **Power Sharing** • Case Studies of Belgium and Sri Lanka • Why power sharing is desirable? • Forms of Power Sharing 2. **Federalism** • What is Federalism? • What make India a Federal Country? • How is Federalism practiced? • Decentralization in India	• 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.
Unit 4: Economics	
Themes	**Learning Objectives**
1. **Development** • 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 2. **Sectors of the Indian Economy** • 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	• 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.

LIST OF MAP ITEMS
CLASS X (2021-22)
TERM – I

A. GEOGRAPHY

Chapter 1: Resources and Development

a. Major soil Types

Chapter 3: Water Resources

Dams:

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

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

COURSE CONTENT – X

TERM - II	
Unit 1: India and the Contemporary World – II	
Themes	**Learning Objectives**
Section 1: Events and Processes	
2. Nationalism in India • The First World War, Khilafat and Non - Cooperation • Differing Strands within the Movement • Towards Civil Disobedience • The Sense of Collective Belonging	• 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. • Appreciate the ideas promoting Pan Indian belongingness.
Section 2: Livelihoods, Economies and Societies Note: Any one theme of the following. The theme selected should be assessed in the periodic test only and will not be evaluated in the board examination:	
3. The Making of a Global World • The Pre-modern world • The Nineteenth Century (1815-1914) • The Inter war Economy • Rebuilding a World Economy: The Post-War Era	• 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.
4. The Age of Industrialization • Before the Industrial Revolution • Hand Labour and Steam Power • Industrialization in the colonies • Factories Come Up • The Peculiarities of Industrial Growth • Market for Goods	• 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.

Unit 2: Contemporary India – II	
Themes	**Learning Objectives**
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 Note: The theoretical aspect of chapter 'Minerals and Energy 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	• Identify different types of minerals and energy resources and places of their availability • Feel the need for their judicious utilization
6. Manufacturing Industries • Importance of manufacturing • Contribution of Industry to National Economy • Industrial Location • Classification of Industries • Spatial distribution • Industrial pollution and environmental degradation • Control of Environmental Degradation	• 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. • Discuss the need for a planned industrial development and debate over the role of government towards sustainable development.
7. Life Lines of National Economy • Transport – Roadways, Railways, Pipelines, Waterways, Airways • Communication • International Trade • Tourism as a Trade	• 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	
Themes	**Learning Objectives**
6. Political Parties	• Analyze party systems in democracies.

• 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? **7. Outcomes of Democracy** • 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	• 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.
Unit 4: Economics	
Themes	**Learning Objectives**
3. Money and Credit • 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 **4. Globalization and the Indian Economy** • Production across countries • Interlinking production across countries • Foreign Trade and integration of markets • What is globalization? • Factors that have enabled Globalization • World Trade Organization • Impact of Globalization on India • The Struggle for a fair Globalization	• 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.

LIST OF MAP ITEMS
CLASS X (2021-22)
TERM – II

A. **HISTORY** (Outline Political Map of India)

Chapter - 2 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 5: Minerals and Energy Resources

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)

INTERNAL ASSESSMENT

<table>
<tr><th></th><th>Marks</th><th>Description</th></tr>
<tr><td>Periodic Assessment</td><td>10 Marks</td><td>
<table>
<tr><td>Pen Paper Test</td><td>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>5 marks</td></tr>
</table>
</td></tr>
<tr><td>Portfolio</td><td>5 Marks</td><td>• 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</td></tr>
<tr><td>Subject Enrichment Activity</td><td>5 Marks</td><td>• Project Work</td></tr>
<tr><td>TOTAL</td><td>20 MARKS</td><td></td></tr>
</table>

PROJECT WORK
CLASS X (2021-22)

05 Marks

1. ***Every student*** has to compulsorily undertake ***any one project*** on the following topics:

Consumer Awareness
OR
Social Issues
OR
Sustainable Development

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.

Students are expected to apply the Social Science concepts that they have learnt over the years in order to prepare the project report.

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.

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

3. The distribution of marks over different aspects relating to Project Work is as follows:

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 (like comic strips, drawings, illustrations, script play etc.);
- 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 of prescribed NCERT textbooks.

ACCOUNTANCY (Code No. 055)

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 (2021-22)

	TERM – 1 (MCQ BASED QUESTION PAPER) THEORY :40 MARKS TIME: 90 minutes	MARKS
	Part A: FINANCIAL ACCOUNTING-I	
	UNIT 1	
	THEORETICAL FRAMEWORK:	12
1	INTRODUCTION TO ACCOUNTING	
2	THEORY BASE OF ACCOUNTING	
	UNIT 2 **ACCOUNTING PROCESS:** RECORDING OF BUSINESS TRANSACTIONS, BANK RECONCILIATION STATEMENT, DEPRECIATION, PROVISIONS AND RESERVES	28
	TOTAL	**40**
	Project Work (Part -1): 10 Marks	

PART A: FINANCIAL ACCOUNTING - I

Unit-1: Theoretical Framework

Units/Topics	Learning Outcomes
Introduction to Accounting • 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:** • describe the meaning, significance, objectives, advantages and limitations of accounting in the modem 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.

Theory Base of Accounting • 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.	• 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.

Unit-2: Accounting Process

Units/Topics	**Learning Outcomes**
Recording of Business Transactions • 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	**After going through this Unit, the students will be able to:** • 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

Entry- Journal • Special Purpose books: • Cash Book: Simple, cash book with bank column and petty cashbook • Purchases book • Sales book • Purchases return book • Sales return book ***Note: Including trade discount, freight and cartage expenses for simple GST calculation.*** • Ledger: Format, Posting from journal and subsidiary books, Balancing of accounts **Bank Reconciliation Statement:** • Need and preparation. **Depreciation, Provisions and Reserves** • Depreciation: Concept, Features, Causes, factors • Other similar terms: Depletion and Amortisation • Methods of Depreciation: i. Straight Line Method (SLM) ii. Written Down Value Method (WDV) ***Note: Excluding change of method*** • Difference between SLM and WDV; Advantages of SLM and WDV • Accounting treatment of depreciation i. Charging to asset account ii. Creating provision for depreciation/accumulated depreciation account • Provisions and Reserves: Difference • Types of Reserves: i. Revenue reserve ii. Capital reserve iii. General reserve iv. Specific reserve	accounting equation. • 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.

v. Secret Reserve • Difference between capital and revenue reserve	• 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.

	TERM II **Theory: 40 Marks**	**MARKS**
	Part A	
	UNIT 2 **ACCOUNTING PROCESS:**	
1	ACCOUNTING FOR BILLS OF EXCHANGE	12
2	TRIAL BALANCE AND RECTIFICATION OF ERRORS	
	Part B: FINANCIAL ACCOUNTING-II	
	UNIT 3 FINANCIAL STATEMENTS OF SOLE PROPRIETORSHIP FROM COMPLETE AND INCOMPLETE RECORDS	20
	UNIT 4 COMPUTERS IN ACCOUNTING	8
	TOTAL	**40**
	PROJECT (PART – 2): 10 MARKS	

Accounting for Bills of Exchange • Bill of exchange and Promissory Note: Definition, Specimen, Features, Parties. • Difference between Bill of Exchange and Promissory Note • Terms in Bill of Exchange: 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 • Accounting Treatment ***Note: excluding accounting treatment for accommodation bill*** **Trial balance and Rectification of Errors** • Trial balance: objectives and preparation **(Scope:** *Trial balance with balance method only*) • Errors: types-errors of omission, commission, principles, and compensating; their effect on Trial Balance. • Detection and rectification of errors; preparation of suspense account.	• 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.

Part B: Financial Accounting - II

Unit 3: Financial Statements of Sole Proprietorship

Units/Topics	Learning Outcomes

Financial Statements Meaning, objectives and importance; Revenue and Capital Receipts; Revenue and Capital Expenditure; Deferred Revenue expenditure. Trading and Profit and Loss Account: Gross Profit, Operating profit and Net profit. Preparation. Balance Sheet: need, grouping and marshalling of assets and liabilities. Preparation. 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. Preparation of Trading and Profit and Loss account and Balance Sheet of a sole proprietorship with adjustments. **Incomplete Records** Features, reasons and limitations. Ascertainment of Profit/Loss by Statement of Affairs method.	**After going through this Unit, the students will be able to:** • 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
• Introduction to computer and accounting information system {AIS}: Introduction to computers (elements, capabilities, limitations of computer system)	**After going through this Unit, the students will be able to:** • state the meaning of a computer, describe its components, capabilities and limitations. • state the meaning of accounting information system.

Scope: *(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.* *(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.*	• 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.

Part C: Project Work

The project work would be divided into two parts i.e. Term I (10 marks) and Term II (10 marks) for the purpose of assessment and will be covered as detailed below.

Comprehensive project of any sole proprietorship business. This may state with journal entries and their ledger postings, 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.

TERM -I

PARTICULARS	MARKS
Project (Till Ledger Posting and balancing of accounts)	**10**

TERM -II

PARTICULARS	MARKS
Project (Financial statements and depiction using diagrammatic / graphical tools)	**10**

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
2. Men's saloon
3. A tailoring shop
10. Men's wear
11. Ladies wear
12. Kiddies wear
19. A coffee shop
20. A music shop
21. A juice shop

4. A canteen
5. A cake shop
6. A confectionery shop
7. A chocolate shop
8. A dry cleaner
9. A stationery shop
13. A Saree shop
14. Artificial jewellery shop
15. A small restaurant
16. A sweet shop
17. A grocery shop
18. A shoe shop
22. A school canteen
23. An ice cream parlour
24. A sandwich shop
25. A flower 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
2. Advance rent [approximately three months]
3. Electricity deposit
4. Electricity bill
5. Electricity fitting
6. Water bill
7. Water connection security deposit
8. Water fittings
9. Telephone bill
10. Telephone security deposit
11. Telephone instrument
12. Furniture
13. Computers
14. Internet connection
15. Stationery
16. Advertisements
17. Glow sign
18. Rates and Taxes
19. Wages and Salary
20. Newspaper and magazines
21. Petty expenses
22. Tea expenses
23. Packaging expenses
24. Transport
25. Delivery cycle or a vehicle purchased
26. Registration
27. Insurance
28. Auditors fee
29. Repairs & Maintenance
30. Depreciations
31. Air conditioners
32. Fans and lights
33. Interior decorations
34. Refrigerators
35. Purchase and sales

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.

Accountancy (Code No. 055)

(2021-22)
CLASS XII - CURRICULUM (TERM-WISE)

	TERM -1 (MCQ BASED QUESTION PAPER) Theory:40 Marks Duration: 90 minutes	MARKS
	Part A	
	UNIT **ACCOUNTING FOR PARTNERSHIP FIRMS:**	18
1	FUNDAMENTALS	
2	CHANGE IN PROFIT SHARING RATIO	
3	ADMISSION OF A PARTNER	
	COMPANY ACCOUNTS:	12
1	ACCOUNTING FOR SHARES	
	PART B	
	ANALYSIS OF FINANCIAL STATEMENTS:	10
1	FINANCIAL STATEMENTS OF A COMPANY *(i) 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)* *(ii) Tools of Analysis - Ratio Analysis*	
2	ACCOUNTING RATIOS	
	OR	
	COMPUTERISED ACCOUNTING	10
1	OVERVIEW OF COMPUTERISED ACCOUNTING SYSTEM	
2	ACCOUNTING APPLICATION OF ELECTRONIC SPREADSHEET	
	Total	**40**
	Project Work (Part -1): 10 Marks	

Part - A:

Unit : Accounting for Partnership Firms

Units/Topics	Learning Outcomes
• Partnership: features, Partnership Deed. • Provisions of the Indian Partnership Act 1932in the absence of partnership deed. • Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriationaccount- division of profit among partners, guarantee of profits. • Past adjustments (relating to interest on capital, interest on drawing, salary and profitsharing ratio). • Goodwill: nature, factors affecting and methods of valuation - average profit, superprofit and capitalization. ***Note:*** *Interest on partner's loan is to be treated as a charge against profits.* Goodwill to be adjusted through partners capital/current account. *Note: Raising and writing off goodwill is excluded.* **Accounting for Partnership firms - Reconstitution** • **Change in the Profit Sharing Ratio** amongthe 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 admissionof a partner on change in the profit sharing ratio, treatment of goodwill, treatment for revaluation of assets and re-assessment of liabilities, treatment of reserves and accumulated profits.	**After going through this Unit, the students will beable to:** • state the meaning of partnership, partnershipfirm and partnership deed. • describe the characteristic features of partnership and the contents of partnershipdeed. • discuss the significance of provision of Partnership Act in the absence of partnershipdeed. • 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 preparation profit and loss appropriation account involving guarantee of profits. • develop the understanding and skill ofmaking 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, gainingratio 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 ofreserves and accumulated profits by preparing revaluation account and balancesheet. • explain the effect of change in profit sharingratio on admission of a new partner. • develop the understanding and skill of treatment of goodwill, treatment of revaluation of assets and re-assessment of liabilities, treatment of reserves and accumulated profits, and preparation of balance sheet of the new firm.

Unit - Accounting for Companies

Units/Topics	Learning Outcomes
Accounting for Share Capital • 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 EmployeeStock Option Plan (ESOP). • Accounting treatment of forfeiture and re-issue of shares. • Disclosure of share capital in the BalanceSheet of a company.	**After going through this Unit, the students will beable to:** • state the meaning of share and share capitaland differentiate between equity shares and preference shares and different types of share capital. • understand the meaning of private placementof shares and Employee Stock Option Plan. • explain the accounting treatment of sharecapital 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 inthe balance sheet of the company as per schedule III part I of the Companies Act 2013.

Part – B:

Unit : Analysis of Financial Statements

Units/Topics	Learning Outcomes
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) **Note:** *Exceptional items, extraordinary items and profit (loss) from discontinued operations are excluded.* • **Financial Statement Analysis:** Objectives, importance and limitations. • **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 Payables Turnover Ratio and Working Capital Turnover Ratio.	**After going through this Unit, the students will be able to:** • 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'. • 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 ratio. • develop the skill of computation of gross

• **Profitability Ratios:** Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment.	profit ratio, operating ratio, operating profit ratio, net profit ratio and return on investment.

Note: Net Profit Ratio is to be calculated on the basis of profit before and after tax.

OR

Part B: Computerised Accounting

Unit : 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.

TERM -II

	TERM II Theory: 40 Marks	MARKS
	Part A	
1	**UNIT** **ACCOUNTING FOR NOT-FOR PROFIT ORGANISATIONS**	**10**
1 2	**ACCOUNTING FOR PARTNERSHIP FIRMS:** RETIREMENT AND DEATH OF A PARTNER DISSOLUTION OF PARTNERSHIP FIRMS	**12**
1	**COMPANY ACCOUNTS:** ACCOUNTING FOR DEBENTURES	**8**
	PART B	
1	**ANALYSIS OF FINANCIAL STATEMENTS:** FINANCIAL STATEMENTS OF A COMPANY	**10**

2	*(i) COMPARATIVE AND COMMON SIZE STATEMENTS* CASH FLOW STATEMENT	
	OR	
1 2	**COMPUTERISED ACCOUNTING** USING COMPUTERISED ACCOUNTING SYSTEM DATABASE MANAGEMENT SYSTEM	**10**
	Total	**40**
	PROJECT (PART – 2): 10 MARKS	

Part - A:

Unit : Accounting for Not – For Profit Organisations

Units/Topics	Learning Outcomes
• 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. **Scope:** *(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.* *(ii) Entrance/admission fees and general donations are to be treated as revenue receipts.* *(iii) Trading Account of incidental activities is not to be prepared.*	**After going through this Unit, the students will be able to:** • 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 : Accounting for Partnership Firms

Accounting for Partnership firms - Reconstitution and Dissolution. • **Retirement and death of a partner:** effect of retirement / death of a partner on change in profit sharing ratio, treatment of goodwill, treatment for revaluation of assets and reassessment of liabilities, adjustment of accumulated profits and reserves and preparation of balance sheet. • Calculation of deceased partner's share of profit till the date of death.	• 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. • develop the skill of calculation of deceased

Dissolution of a partnership firm: meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlementof accounts - preparation of realization account, and other related accounts: capitalaccounts of partners and cash/bank a/c (excluding piecemeal distribution, sale to a company and insolvency of partner(s)). **Note:** (i) If realized value of an asset is not given, it is to be presumed that it has not realised any amount. (ii) If a partner has borne and/ or paid the realisation expenses, it should be stated.	partner's share till the time of his death. • discuss the preparation of the capital accounts of the remaining partners and the balance sheet of the firm after retirement / death of a partner. • understand the situations under which a partnership firm can be dissolved. • develop the understanding of preparation of realisation account and other related accounts.

Unit - Accounting for Companies

Units/Topics	Learning Outcomes
Accounting for Debentures • 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. Note: Discount or loss on issue of debentures to be written off in the year debentures are allotted from Security Premium Reserve/ Capital Reserve/ Statement of Profit and Loss as Financial Cost (AS16) in that order. *Note: Related sections of the Companies Act, 2013will apply.* *Concept of Tax Deducted at Source (TDS) is excluded.*	**After going through this Unit, the students will be able to:** • explain the accounting treatment of different categories of transactions related to issue of debentures. • develop the understanding and skill of writing of 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 • debentures and its accounting treatment. • state the meaning of redemption of debentures.

Part – B:

Unit : Analysis of Financial Statements

Units/Topics	Learning Outcomes
Financial statements of a Company: • **Tools for Financial Statement Analysis:** Comparative statements, common size statements.	**After going through this Unit, the students will beable to:** • develop the understanding and skill of preparation of comparative and common sizefinancial statements.

Unit : Cash Flow Statement

Units/Topics	Learning Outcomes
• Meaning, objectives and preparation (as perAS 3 (Revised) (Indirect Method only) ***Note:*** ***(i)*** *Adjustments relating to depreciation and amortization, profit or loss on sale of assets includinginvestments, dividend (both final and interim) and tax.* ***(ii)*** *Bank overdraft and cash credit to be treated asshort term borrowings.* ***(iii)*** *Current Investments to be taken as Marketable securities unless otherwise specified.*	**After going through this Unit, the students willbe able to:** • state the meaning and objectives of cash flow statement. • develop the understanding of preparation of Cash Flow Statement using indirect methodas 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 declaredby the shareholders.*

OR

Part B: Computerised Accounting

Unit : Computerised Accounting

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

Students would prepare only ONE project in the entire academic session, which is divided into two terms i.e. Term – I and Term – II

Detailed guidelines for project work are as follows-

Students need to create **one specific project** only in which they would be required to cover the company profile, assessment of financial

statements, and specific report analysis. The main objective of preparing the project report is for the following reason:

1. Students are able to state the meaning, objectives, and limitations of financial statement analysis.
2. Study the proper use of different tools of 'financial statements analysis' like comparative analysis, Ratios and Cash flow statement.
3. Capable to create Comparative Statements and Common Size Statement.
4. Understand the Meaning, objective, advantage, and limitation of Accounting Ratios.

TERM -I

PARTICULARS	**MAXIMUM MARKS**
Written Test (based on Project – Accounting Ratios)	**6**
Practical file	**2**
Viva (Ratio Analysis)	**2**

TERM -II

PARTICULARS	**MAXIMUM MARKS**
Written Test (based on Comparative Statements and Common Size Statement and Cash Flow statement)	**6**
Practical file	**2**
Viva (Comparative Statements and Common Size Statement and Cash flow Statement)	**2**

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

BIOLOGY

(Code No. 044)

Syllabus for Purpose of Examination 2021-22

CLASS – XI and XII (2021-22)

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 (2021 -22)

EVALUATION SCHEME		
Theory		
Units	**Term – I**	**Marks**
I	Diversity of Living Organisms: Chapter - 1, 2, 3 and 4	15
II	Structural Organization in Plants and Animals: Chapter – 5 and 7	08
III	Cell: Structure and Function: Chapter – 8 and 9	12
Units	**Term - II**	**Marks**
III	Cell: Structure and Function: Chapter - 10	05
IV	Plant Physiology: Chapter - 13,14 and 15	12
V	Human Physiology: Chapter –17, 18, 19, 20, 21 and 22	18
Total Theory (Term – I and Term – II)		**70**

Practicals Term – I	**15**
Practicals Term – II	**15**
Total	**100**

THEORY

Term – I

Unit-I Diversity of Living Organisms

Chapter-1: The Living World

What is living? Biodiversity; Need for classification; three domains of life; concept of species and taxonomical hierarchy; binomial nomenclature.

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 and Gymnospermae. (salient and distinguishing features and a few examples of each category).

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 of inflorescence and flower, Description of 01 family: Solanaceae or Liliaceae (to be dealt along with the relevant experiments of the Practical Syllabus).

Chapter-7: Structural Organization in Animals

Animal tissues.

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.

Term – II

Unit-III Cell: Structure and Function

Chapter-10: Cell Cycle and Cell Division

Cell cycle, mitosis, meiosis and their significance

Unit-IV Plant Physiology

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

Growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Unit-V Human Physiology

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

Skeletal muscle, contractile proteins and muscle contraction.

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.

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

Max. Marks: 15 for each Term

Evaluation Scheme			
	TERM-I	**TERM - II**	**MARKS**
Part A			
One Major Experiment	Experiment No. - 1	Experiment No. –3, 4	**4**
One Minor Experiment	Experiment No. - 2	Experiment No. - 5, 6, 7	**3**
Part B			
Spotting (3 Spots of 1 mark each)	B.1, 2, 3	B.4, 5	**3**
Practical Record + Investigatory Project& Record + Viva Voce			**5**
Total			**15**

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

A: List of Experiments

TERM -I:

1. Study and describe a locally available common flowering plant, from any one family: Solanaceae or 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).
2. Study of osmosis by Potato osmometer.

TERM -II:

3. Separation of plant pigments through paper chromatography.
4. Study of distribution of stomata in the upper and lower surfaces of leaves.
5. Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.
6. Test for presence of sugar in urine.
7. Test for presence of albumin in urine.

B. Study/Observation of the following (spotting):

TERM - I:

B.1 Parts of a compound microscope.
B.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.
B.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.

TERM- II :

B.4 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.
B.5 Mitosis in onion root tip cells and animal cells (grasshopper) from permanent slides.

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.

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

A. **Items for Identification/Familiarity with the apparatus /equipments/animal and plant material / chemicals etc. for assessment in practicals (All experiments)**

TERM - I:

- Plants of Solanaceae - Brinjal, Petunia, any other or Liliaceae- Any of the Lilies.
- **Compound microscope, Test tube, Petridish, Beaker, Scalpel.**

TERM - II:

- Mushroom, Succulents such as *Aloe vera*/*Kalanchoe*, Raisins, Potatoes.
- Honey comb, Mollusc shell, Model of cockroach, Pigeon and Star fish.
- Chromatography paper, Chromatography chamber, Alcohol.

B. **List of Practicals:**

TERM - I:

1. Study one locally available common flowering plants of the family – Solanaceae or Liliaceae and identify inflorescence/flower.
2. Study the parts of a compound microscope- eye piece and objective lens, mirror, stage, coarse and fine adjustment knobs.

TERM - II:

3. Identify the given specimen of a fungus – Mushroom, gymnosperm- pine cone
4. Study honey-bee/butterfly, snail shell, Starfish, Pigeon (through models).

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)

BIOLOGY
(Code No. 044)
COURSE STRUCTURE
CLASS XII (2021 - 22)

EVALUATION SCHEME		
Theory		
Units	**Term – I**	**Marks**
VI	Reproduction: Chapter - 2, 3 and 4	15
VII	Genetics and Evolution: Chapter – 5 and 6	20
Units	**Term - II**	**Marks**
VIII	Biology and Human Welfare: Chapter – 8 and 10	14
IX	Biotechnology and its Applications: Chapter – 11 and 12	11
X	Ecology and Environment: Chapter – 13 and 15	10
Total Theory (Term – I and Term – II)		**70**
Practicals Term – I		**15**
Practicals Term – II		**15**
Total		**100**

THEORY

TERM - I

Unit-VI Reproduction

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.

TERM - II

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-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-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.

PRACTICALS

Max. Marks: 15 for each Term

Evaluation Scheme			
	TERM - I	**TERM - II**	**MARKS**
Part A			
One Major Experiment	Experiment No. – 1	Experiment No. - 3	**4**
One Minor Experiment	Experiment No. - 2	Experiment No. – 4, 5	**3**
Part B			
Spotting (3 Spots of 1 mark each)	B.1, 2, 3, 4, 5	B.6, 7, 8	**3**
Practical Record + Investigatory Project &Record + Viva Voce			**5**
Total			**15**

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

A. List of Experiments

TERM - I:

1. Isolate DNA from available plant material such as spinach, green pea seeds, papaya, etc.
2. Prepare a temporary mount to observe pollen germination.

TERM - II:

3. Prepare a temporary mount of onion root tip to study mitosis.
4. Collect water from two different water bodies around you and study them for pH, clarity and presence of any living organism
5. 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.

B. Study/observation of the following (Spotting)

TERM - I:

B.1 Flowers adapted to pollination by different agencies (wind, insects, birds).

B.2 Identification of stages of gamete development, i.e., T.S. of testis and T.S. of ovary through permanent slides (from grasshopper/mice).

B.3 Meiosis in onion bud cell or grasshopper testis through permanent slides.

B.4 T.S. of blastula through permanent slides (Mammalian).

B.5 Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colourblindness.

TERM – II:

B.6 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.

B.7 Two plants and two animals (models/virtual images) found in xeric conditions. Comment upon their morphological adaptations.

B.8 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

Max. Marks: 15 for each Term

Topic	Marks
Identification/Familiarity with the apparatus	5
Written test (Based on given/prescribed practicals)	5
Practical Records and Viva	5
Total	**15**

General Guidelines

- The practical examination will be of one-hour duration.
- 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 8 practical skill based very short answer type questions. A student would be required to answer any 5 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 the listed experiments Term -wise 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

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

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

TERM -I:

- Beaker, flask, petri plates, test tubes, aluminium foil, paint brush, bunsen burner/spirit lamp/water bath.
- Starch solution, iodine, ice cubes.
- Developmental stages of frog highlighting morula and blastula.

TERM -II:

- Soil from different sites- sandy, clayey, loamy; Small potted plants, Cactus/*Opuntia* (model), Large flowers, Maize inflorescence.
- Model of *Ascaris*

B. List of Practicals

TERM -I:

1. Study of flowers adapted to pollination by different agencies (wind, insects).
2. Identification of T.S of morula or blastula of frog (model).
3. Preparation of pedigree charts of genetic traits such as rolling of tongue, colour blindness.

TERM -II:

4. Study of the soil obtained from at least two different sites for their texture.
5. Identify common disease-causing organisms like *Ascaris (Model)* and learn some common symptoms of the disease that they cause.
6. 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) 2021-22
Class XII
Biology (044)

Competencies	
Demonstrate Knowledge and Understanding	50%
Application of Knowledge / Concepts	30%
Analyse, Evaluate and Create	20%

Note:

- Internal choice 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.

BUSINESS STUDIES (Code No. 054)

Rationale

The courses in Business Studies are introduced at + 2 stage of Senior Secondary Education as formal commerce education is provided after the 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 organizations. Computerized 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 analyze, 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 interdependent 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 (2021-22) TERM WISE CURRICULUM

	TERM 1- MCQ BASED QUESTION PAPER THEORY - 40 MARKS DURATION:90 MINUTES		
Units		**Periods**	**Marks**
Part A	**Foundations of Business**		
1	Evolution and Fundamentals of Business	18	16
2	Forms of Business Organisations	20	
3	Public, Private and Global Enterprises	10	14
4	Business Services	14	
5	Emerging Modes of Business	05	10
6	Social Responsibility of Business and Business Ethics	08	
	Total	**75**	**40**
	PROJECT WORK (Part-1)		**10**

Students would prepare only ONE project in the entire academic session, which is divided into 2 terms i.e. Term I and Term II.

TERM I

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 Centers, Major Imports and Exports, Position of Indian Sub-Continent in the World Economy.	● To acquaint the History of Trade and Commerce in India
Business – meaning and characteristics	● Understand the meaning of business with special reference to economic and non-economic activities. ● Discuss the characteristics of business.

Business, profession and employment-Concept	● Understand the concept of business, profession and employment. ● Differentiate between business, profession and employment.
Objectives of business	● Appreciate the economic and social objectives of business. ● Examine the role of profit in business.
Classification of business activities - Industry and Commerce	● Understand the broad categories of business activities- industry and commerce.
Industry-types: primary, secondary, tertiary Meaning and subgroups	● 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	● 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	● 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.	● 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	● 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	● Understand the concept of Hindu Undivided Family Business.
Cooperative Societies-Concept, types, merits, and limitations.	● 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	● Identify and explain the concept, merits and limitations. ● Understand the concept of private and public companies and one person company. ● 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 the formation of a company	● Highlight the stages in the formation of a company. ● Discuss the important documents used in the various stages in the formation of a company.

Unit 3: Public, Private and Global Enterprises

Public sector and private sector enterprises – Concept	● Develop an understanding of Public sector and private sector enterprises
Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company.	● Identify and explain the features, merits and limitations of different forms of public sector enterprises

Unit 4: Business Services

Business services – meaning and types. Banking: Types of bank accounts - savings, current, recurring, fixed deposit and multiple option deposit account	● Understand the meaning and types of business services. ● Develop an understanding of different types of bank accounts.
Banking services with particular reference to Bank Draft, Bank Overdraft, Cash credit. E-Banking meaning, Types of digital payments	● Develop an understanding of the different services provided by banks
Insurance – Principles. Types – life, health, fire and marine insurance– concept	● Understand Utmost Good Faith, Insurable Interest, Indemnity, Contribution, Doctrine of Subrogation and Causa Proxima as principles of insurance ● Discuss different types of insurance-life, health, fire, marine insurance

Unit 5: Emerging Modes of Business

E - business: concept, scope and benefits	● Give the meaning of e-business. ● Discuss the scope of e-business. ● Appreciate the benefits of e-business ● Distinguish e-business from traditional business.

Unit 6: Social Responsibility of Business and Business Ethics

Concept of social responsibility	● State the concept of social responsibility.
Case for social responsibility	● Examine the case for social responsibility.
Responsibility towards owners, investors, consumers, employees, government and community.	● Identify social responsibilities towards different interest groups.
Role of business in environment protection	● Appreciate the role of business in environment protection.

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

CLASS–XI Code -054 (2021-22) TERM WISE CURRICULUM

	TERM-2 SUBJECTIVE QUESTION PAPER **Theory - 40 Marks DURATION:- 2 Hrs**		
Part B	**Finance and Trade**	PERIODS	MARKS
7	Sources of Business Finance	28	20
8	Small Business and Entrepreneurship Development	16	
9	Internal Trade	22	20
10	International Business	04	
	TOTAL	**70**	**40**
	PROJECT WORK (PART - 2)		**10**

TERM II

Part B: Finance and Trade

Unit 7: Sources of Business Finance

Business finance: Concept and Importance	● 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	● 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	● State the meaning of borrowed funds. ● Discuss the concept of debentures, bonds, loans from financial institutions and commercial banks ,public deposits&Trade credit ● Distinguish between owners' funds and borrowed funds.

Unit 8: Small Business and Entrepreneurship Development

Entrepreneurship Development (ED): Concept and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund startup. Intellectual Property Rights and Entrepreneurship	● Understand the concept and need of Entrepreneurship Development (ED), Intellectual Property Rights ● Understand the process of Entrepreneurship Development
Small scale enterprise – Definition	● Understand the definition of small enterprises
Role of small business in India with special reference to rural areas	● Discuss the role of small scale business in India with special reference to rural areas
Government schemes and agencies for small scale	● Appreciate various schemes of NSIC and

industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) with special reference to rural, backward areas	DIC with special reference to rural, backward area.

Unit 9: Internal Trade

Internal trade - meaning and types of services rendered by a wholesaler and a retailer	● State the meaning and types of internal trade. ● Appreciate the services of wholesalers and retailers.
Large scale retailers-Departmental stores, chain stores – concept	● Highlight the distinctive features of departmental stores, chain stores

Unit 10: International Trade

International trade: concept and benefits	● Understand the concept of international trade. ● Describe the benefit of international trade to the nation and business firms.

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

BUSINESS STUDIES (CODE -054)

CLASS–XII (2021-22) TERM WISE CURRICULUM

Units	TERM 1-MCQ BASED QUESTION PAPER THEORY - 40 MARKS DURATION:90 MINUTES	Periods	Marks
Part A	**Principles and Functions of Management**		
1.	Nature and Significance of Management	12	16
2	Principles of Management	11	
3	Business Environment	08	
4	Planning	08	14
5	Organising	10	
	Total	**49**	**30**
Part B	**Business Finance and Marketing**		
11	Marketing Management	24	10
	Total	**24**	**10**
	Total	**73**	**40**
	PROJECT WORK (PART 1)		**10**

Students would prepare only ONE project in the entire academic session, which is divided into 2 terms i.e. Term I and Term II.

Term 1:

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	● 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	● Examine the nature of management as a science, art and profession.
Levels of Management	● Understand the role of top, middle and lower levels of management
Management functions-planning, organizing, staffing, directing and controlling	● Explain the functions of management
Coordination- concept and importance	● Discuss the concept and characteristics of coordination. ● Explain the importance of coordination.

Unit 2: Principles of Management

Principles of Management- concept and significance	● Understand the concept of principles of management. ● Explain the significance of management

	principles.
Fayol's principles of management	• Discuss the principles of management developed by Fayol.
Taylor's Scientific management- principles and techniques	• Explain the principles and techniques of 'Scientific Management'.

Unit 3: Business Environment

Business Environment- concept and importance	• Understand the concept of 'Business Environment'. • Describe the importance of business environment
Dimensions of Business Environment- Economic, Social, Technological, Political and Legal	• Describe the various dimensions of 'Business Environment'.

Unit 4: Planning

Planning: Concept, importance and limitation	• Understand the concept of planning. • Describe the importance of planning. • Understand the limitations of planning.
Planning process	• Describe the steps in the process of planning.

Unit 5: Organising

Organising: Concept and importance	• Understand the concept of organizing as a structure and as a process. • Explain the importance of organising.
Organising Process	• Describe the steps in the process of organizing
Structure of organisation- functional and divisional concept	• Describe functional and divisional structures of organisation.
Delegation: concept, elements and importance	• Understand the concept of delegation. • Describe the elements of delegation. • Appreciate the importance of Delegation.
Decentralization: concept and importance	• Understand the concept of decentralisation. • Explain the importance of decentralisation. • Differentiate between delegation and decentralisation.

Part B: Business Finance and Marketing

Unit 11: Marketing

Marketing – Concept, functions and philosophies	• Understand the concept of marketing. • Discuss the functions of marketing. • Explain the marketing philosophies.
Marketing Mix – Concept and elements	• Understand the concept of marketing mix. • Describe the elements of the

	marketing mix.
Product - branding, labelling and packaging – Concept	● Understand the concept of product as an element of marketing mix. ● Understand the concepts of branding, labelling and packaging.
Price - Concept, Factors determining price	● Understand the concept of price as an element of marketing mix. ● Describe the factors determining price of a product.
Physical Distribution – concept	● Understand the concept of physical distribution.
Promotion – Concept and elements; Advertising, Personal Selling, Sales Promotion and Public Relations	● Understand the concept of promotion as an element of marketing mix. ● Describe the elements of the promotion mix. ● Understand the concept of advertising and personal selling ● Understand the concept of sales promotion. ● Discuss the concept of public relations.

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

BUSINESS STUDIES-(CODE-054)

CLASS–XII (2021-22)-TERM WISE CURRICULUM

Units	TERM-2 SUBJECTIVE QUESTION PAPER Theory- 40 Marks DURATION:-2 Hrs.	Periods	Marks
Part A	**Principles and Functions of Management**		
6	Staffing	13	20
7	Directing	09	
8	Controlling	07	
	Total	**29**	**20**
Part B	**Business Finance and Marketing**		
9	Financial Management	20	15
10	Financial Markets	18	
12	Consumer Protection	05	5
	Total	**43**	**20**
	Total	**72**	**40**
	PROJECT WORK (PART – 2)		10

Term 2: **Principles and Functions of Management**

Unit 6: Staffing

Staffing: Concept and importance	• Understand the concept of staffing. • Explain the importance of staffing
Staffing process	• Describe the steps in the process of staffing
Recruitment process	• Understand the meaning and steps in the process of recruitment. • Discuss the sources of recruitment.
Selection – process	• 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	• Understand the concept of training and development. • Appreciate the importance of training to the organisation and to the employees. • Discuss on the job and off the job methods of training. • Discuss the meaning of vestibule training, apprenticeship training and internship training. • Differentiate between training and development.

Unit 7: Directing

Directing: Concept and importance	● Describe the concept of directing. ● Discuss the importance of directing
Elements of Directing	● Describe the various elements of directing
Motivation - concept, Maslow's hierarchy of needs, Financial and non-financial incentives	● 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	● Understand the concept of leadership. ● Understand the various styles of leadership.
Communication - concept, formal and informal communication;	● Understand the concept of communication ● Discuss the concept of formal and informal communication.

Unit 8: Controlling

Controlling - Concept and importance	● Understand the concept of controlling. ● Explain the importance of controlling.
Steps in process of controlling	● Discuss the steps in the process of controlling.

Part B: Business Finance and Marketing

Unit 9: Financial Management

Financial Management: Concept, role and objectives	● 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	● Discuss the three financial decisions and the factors affecting them.
Financial Planning - concept and importance	● Describe the concept of financial planning. ● Explain the importance of financial planning.
Capital Structure – concept and factors affecting capital structure	● 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	● 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	• Understand the concept of the financial market. • Explain the functions of the financial market. • Understand capital market and money market as types of financial markets.
Money market and its instruments	• Understand the concept of the money market. • Describe the various money market instruments.
Capital market: Concept, types (primary and secondary), methods of floatation in the primary market	• 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 – Meaning, Functions and trading procedure	• 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	• State the objectives of SEBI. • Explain the functions of SEBI.

Unit 12: Consumer Protection

Consumer Protection : Concept	• Understand the concept of consumer protection.
The Consumer Protection Act, 2019: Source: http://egazette.nic.in/WriteReadData/2019/210422.pdf Meaning of consumer Rights and responsibilities of consumers Who can file a complaint? Redressal machinery Remedies available	Understand the concept of a consumer according to the Consumer Protection Act, 2019. •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, 2019. • Examine the remedies available to the consumer under Consumer Protection Act,2019

PROJECT WORK IN BUSINESS STUDIES (ONLY ONE PROJECT): GUIDELINES AS GIVEN IN CLASS XII CURRICULUM

GUIDELINES FOR PROJECT WORK IN BUSINESS STUDIES IN CLASSES XI & XII

MARKS: 20 Marks (10 + 10 MARKS FOR TERM 1 AND TERM 2)

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.

One Project to be done throughout the session, as per the existing scheme.

1. **The objectives of the project work:**

Objectives of project work are to enable learners to:

- probe deeper into personal enquiry ,initiate action and reflect on knowledge and skills, views etc. acquired during the course of class XI-XII .
- analyse and evaluate real world scenarios using theoretical constructs and arguments
- demonstrate the application of critical and creative thinking skills and abilities to produce an independent and extended piece of work
- follow up aspects in which learners have interest
- develop the communication skills to argue logically

2. **Role of the teacher:**

The teacher plays a critical role in developing the thinking skills of the learners. A teacher should:

- help each learner select the topic after detailed discussions and deliberations of the topic;
- play the role of a facilitator to support and monitor the project work of the learner through periodic discussions;
- guide the research work in terms of sources for the relevant data;

- ensure that students must understand the relevance and usage of primary evidence and other sources in their projects and duly acknowledge the same;
- ensure that the students are able to derive a conclusion from the content; cite the limitations faced during the research and give appropriate references used in doing the research work.
- educate learners 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.

3. **Steps involved in the conduct of the project:**

Students may work upon the following lines as a suggested flow chart:

Choose a title/topic

Collection of the research material/data

Organization of material/data

Present material/data

Analysing the material/data for conclusion

Draw the relevant conclusion

Presentation of the Project Work

- The project work can be in the form of PowerPoint Presentation/Exhibition/Skit /albums/files/song and dance or culture show /story telling/debate/panel discussion, paper presentation and so on. Any of these activities which are suitable to visually impaired/differently-abled candidates can be performed as per the choice of the student.

4. **Expected Checklist for the Project Work:**
    - Introduction of topic/title
    - Identifying the causes,events, 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 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.

5. **Term-Wise Assessment of Project Work:**

- Project Work has broadly the following phases: Synopsis/ Initiation, Data Collection, Data Analysis and Interpretation, Conclusion.
- The aspects of the project work to be covered by students can be assessed during the two terms.

TERM-I PROJECT WORK (Part 1): 10 Marks

The teacher will assess the progress of the project work in the term I in the following manner:

Month	**Periodic Work**	**Assessment Rubrics**	**Marks**
1-3 July-September	Instructions about Project Guidelines, Background reading Discussions on Theme and Selection of the Final Topic, Initiation/ Synopsis	Introduction, Statement of Purpose/Need and Objective of the Study, Hypothesis/Research Question, Review of Literature, Presentation of Evidence, Key Words, Methodology, Questionnaire, Data Collection.	5
4-5 October-November	Planning and organisation: forming an action plan, feasibility or baseline study, Updating/modifying the action plan, Data Collection	Significance and relevance of the topic; challenges encountered while conducting the research.	5
October-November	**Midterm Assessment by internal examiner**		**10**

TERM- II - PROJECT WORK (Part 2): 10 Marks

The teacher will assess the progress of the project work in the term II in the following manner:

Month	**Periodic Work**	**Assessment Rubrics**	**Marks**
6-7 December-January	Content/data analysis and interpretation. Conclusion, Limitations, Suggestions, Bibliography, Annexures and Overall Presentation of the project.	Content analysis and its relevance in the current scenario. Conclusion, Limitations, Bibliography, Annexures and Overall Presentation.	5
8 January/ February	**Final Assessment and VIVA by both Internal and External Examiners**	External/ Internal Viva based on the project	5
		TOTAL	10

6. **Viva-Voce**

- 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.

CLASS XI

The teacher should help students to identify any one project from the given topics.

The project may be done in a group or individually.

20 marks assigned for Project Work will be divided into two terms for 10 marks each.

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 textbooks. 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 Wholesale 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, stakeholders 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 wholesale 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 layout.
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 an 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 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 a 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, Chhattisgarh, 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, ethical 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

CLASS XII

The teacher should help students to identify any one project from the given topics.

Students are supposed to select one unit out of four and are required to make only ONE project from the selected unit.

20 marks assigned for Project Work will be divided into two terms for 10 marks each.

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 tetrapack 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 recycled paper bags to plastic bags and cloth bags.
f) Reuse 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 Thumbs up and Campa Cola in the eighties to Pepsi and Coke in the 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 for 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 bread earners of the family, changes in the requirement trend of mixers, washing machines, microwave 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 the environment on the types of goods and services?
The students can take examples like:
a) Washing machines, microwaves, 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 the technological environment on the behaviour of employees.

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, questionnaires, interviews and organisational charts 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 a 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 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
2. Air conditioners
3. Baby diapers
4. Bathing Soap
5. Bathroom cleaner
6. Bike
7. Blanket
8. Body Spray
9. Bread
10. Breakfast cereal
11. Butter
12. Camera
13. Car
14. Cheese spreads
15. Chocolate
16. Coffee
17. Cosmetology product
18. Crayons
19. Crockery
20. Cutlery
21. Cycle
22. DTH
23. Eraser
24. e-wash
25. Fairness cream
26. Fans
27. Fruit candy
28. Furniture
29. Hair Dye
30. Hair Oil
31. Infant dress
32. Inverter
33. Jams
34. Jeans
35. Jewellery
36. Kurti
37. Ladies bag
38. Ladies footwear
39. Learning Toys
40. Lipstick
41. Microwave oven
42. Mixers
43. Mobile
44. Moisturizer
45. Music player
46. Nail polish
47. Newspaper
48. Noodles
49. Pen
50. Pen drive
51. Pencil
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 Propositions?[U.S.P.]?
5. Does your product have any range of 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 tagline.
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 will you 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 involved therein.
2. Brand name and the product.
3. Range of the product.
4. Identification mark or logo.
5. Tagline.
6. Labelling 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 standardisation

CHEMISTRY (043)

SYLLABUS FOR SESSION 2021-22 CLASS XI Term-I

S	UNIT	Periods	Marks
1	Some Basic Concepts of Chemistry	10	11
2	Structure of Atom	12	
3	Classification of Elements and Periodicity in Properties	6	4
4	Chemical Bonding and Molecular Structure	14	6
5	Redox Reactions	4	
6	Hydrogen	4	5
7	Organic Chemistry: Some basic Principles and Techniques	10	9
	TOTAL	60	35

Some Basic Concepts of Chemistry: General Introduction: Importance and scope of Chemistry. Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.

Structure of Atom: 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

Classification of Elements and Periodicity in Properties: 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.

Chemical Bonding and Molecular Structure:
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.

Redox Reactions:
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.

Hydrogen: Position of hydrogen in periodic table, occurrence, isotopes, hydrides-ionic covalent and interstitial; physical and chemical properties of water, heavy water, hydrogen as a fuel

Organic Chemistry: Some basic Principles and Techniques: General introduction, 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.

PRACTICALS

Term I: **A 15-mark Practical** would be conducted under the supervision of subject teacher. This would contribute to the overall practical marks for the subject.

OR

In case the situation of lockdown continues until Nov-Dec 2021, a *Practical Based Assessment (pen-paper) of 15 marks* would be conducted at the end of Term I.

Term-I Evaluation Scheme

S. No	Practical	Marks
1.	Volumetric Analysis	8
2.	Content Based experiment	2
3.	Class record and viva(Internal Examiner)	5
TOTAL		15

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 of Chemical Substances (2 Marks)**

1. Determination of melting point of an organic compound.
2. Determination of boiling point of an organic compound.

C. **Quantitative Estimation (8 marks)**

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.

SYLLABUS FOR SESSION 2021-22 CLASS XI Term-II

S.No	UNIT	Periods	Marks
1	States of Matter: Gases and Liquids	9	15
2	Chemical Thermodynamics	14	
3	Equilibrium	12	
4	s -Block Elements	5	11
5	Some p -Block Elements	9	
6	Hydrocarbons	10	9
	TOTAL	59	35

States of Matter: Gases and Liquids: 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 and deviation from ideal behaviour.

Chemical Thermodynamics: 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, measurement of □U and □H, 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.
Third law of thermodynamics (brief introduction).

Equilibrium: 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, buffer solution, solubility product, common ion effect (with illustrative examples).

s -Block Elements: 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.

Some p -Block Elements: 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.
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.

Hydrocarbons: Classification of Hydrocarbons Aliphatic Hydrocarbons:
Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions.

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.

PRACTICALS

Term II: At the end of Term II, **a 15-mark Practical** would be conducted under the supervision of subject teacher. This would contribute to the overall practical marks for the subject.
OR

In case the situation of lockdown continues beyond December 2021, a *Practical Based Assessment (pen-paper) of 10 marks and Viva 5 marks* would be conducted at the end of Term II by the subject teacher. This would contribute to the overall practical marks for the subject.

TERM-II Evaluation Scheme

S. No	Practical	Marks
1.	Salt Analysis	8
2.	Content Based Experiment	2
3	Project Work and Viva(Internal)	5
TOTAL		15

A. Qualitative Analysis(Marks 8)

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 – $(CO_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^-, Cl^- , Br^- , I^- , PO_4^{3-} , $C_2O_4^{2-}$,CH_3COO^- (Note: Insoluble salts excluded)

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

B. Crystallization of impure sample of any one of the following: Alum, Copper Sulphate, Benzoic Acid. **(Marks 2)**

PROJECTS scientific investigations involving laboratory testing and collecting information from other sources.

Guidelines on Syllabus for Visually Handicapped students.
Schools are expected to rationalise and divide the syllabus of practicums for visually handicapped students into two halves on the basis of collective guidelines given for the same in the complete syllabus and as per the convenience of their students. This flexibility is given in view of the special

condition of visually handicapped students .They will, however, be assessed on 15 marks in practical examination in both the terms as rest of their peers.

SYLLABUS FOR SESSION 2021-22 CLASS XII Term-I

S.No	UNIT	Periods	MARKS
1	Solid State	8	10
2	Solutions	8	
3	p-Block Elements	7	10
4	Haloalkanes and Haloarenes	9	15
5	Alcohols, Phenols and Ethers	9	
6	Biomolecules	8	
	TOTAL	49	35

Solid State: 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.

Solutions: 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.

p Block Elements: 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.
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: 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.

Haloalkanes and Haloarenes: 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).

Alcohols, Phenols and Ethers: Alcohols: Nomenclature, methods of preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration.
Phenols: Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols.
Ethers: Nomenclature, methods of preparation, physical and chemical properties, uses.

Biomolecules: Carbohydrates - Classification (aldoses and ketoses), monosaccahrides (glucose and fructose), D-L configuration
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.
Nucleic Acids: DNA and RNA

PRACTICALS

Term I: **A 15-mark Practical** would be conducted under the supervision of subject teacher/ internal examiner. This would contribute to the overall practical marks for the subject.
OR

In case the situation of lockdown continues until Nov-Dec 2021, a *Practical Based Assessment (pen-paper) of 15 marks* would be conducted at the end of Term I at the school level and marks would be submitted by the schools to the Board. This would contribute to the overall practical marks for the subject.

Term-I Evaluation Scheme

S. No	Practical	Marks
1.	Volumetric Analysis	4
2.	Salt Analysis	4
3.	Content Based experiment	2
4.	Class record and viva(Internal Examiner)	5
	TOTAL	15

(1) **Volumetric analysis (4 marks)**

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).

(2) **Salt analysis (Qualitative analysis) (4 marks)**

Determination of one cation and one anion 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 – $(CO_3)^{2-}$, S^{2-}, NO_2^-, SO_3^{2-}, SO_4^{2-}, NO_3^-, Cl^-, Br^-, I^-, PO_4^{3-}, $C_2O_4^{2-}$, CH_3COO^- (Note: Insoluble salts excluded)

(3) **Content Based Experiments (2 marks)**

A. Chromatography
   i. Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.
   ii. Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in Rf values to be provided).
B. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

SYLLABUS FOR SESSION 2021-22 CLASS XII Term-II

S.No	UNIT	No. of Periods	MARKS
1	Electrochemistry	7	
2	Chemical Kinetics	5	
3	Surface Chemistry	5	13
4	d-and f-Block Elements	7	
5	Coordination Compounds	8	9
6	Aldehydes, Ketones and Carboxylic Acids	10	
7	Amines	7	13
	TOTAL	49	35

Electrochemistry: 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.

Chemical Kinetics: 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).

Surface Chemistry: Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, 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.

d-and f-Block Elements: 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.
Lanthanoids - Electronic configuration, oxidation states and lanthanoid contraction and its consequences.

Coordination Compounds: Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT, and CFT.

Aldehydes, Ketones and Carboxylic Acids: 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.

Amines:

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

PRACTICALS

Term II: At the end of Term II, **a 15-mark Practical** would be conducted under the supervision of Board appointed external examiners. This would contribute to the overall practical marks for the subject.

OR

In case the situation of lockdown continues beyond December 2021, a *Practical Based Assessment (pen-paper) of 10 marks and Viva 5 marks* would be conducted at the end of Term II jointly by the external and internal examiners and marks would be submitted by the schools to the Board. This would contribute to the overall practical marks for the subject.

TERM-II Evaluation Scheme

S. No	Practical	Marks
1.	Volumetric Analysis	4
2.	Salt Analysis	4
3	Content Based Experiment	2
4	Project Work and Viva(Internal and External Both)	5
	TOTAL	15

1) **Volumetric analysis (4 marks)**
   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).

2) **Salt analysis (Qualitative analysis) (4 marks)**
   Determination of one cation and one anion 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 – $(CO_3)^{2-}$, S^{2-} , NO_2^- , SO_3^{2-} , SO_4^{2-} , NO_3^-, Cl^- , Br^- , I^- , PO_4^{3-} , $C_2O_4^{2-}$,CH_3COO^- (Note: Insoluble salts excluded)

3) **Content based experiment**
   A. Preparation of Inorganic Compounds
      Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
      Preparation of Potassium Ferric Oxalate.

   B. Tests for the functional groups present in organic compounds:
      Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

Guidelines on Syllabus for Visually Handicapped students.

Schools are expected to rationalise and divide the syllabus of practicums for visually handicapped students into two halves on the basis of collective guidelines given for the same in the complete syllabus and as per the convenience of their students. This flexibility is given in view of the special condition of visually handicapped students .They will, however, be assessed on 15 marks in practical examination in both the terms as rest of their peers.

General Instructions for Investigatory Project

In Chemistry the students of class XI and XII are supposed to conduct a scientific investigations involving laboratory testing and collecting information from other sources. This project is assessed as a part of practical examination at the end of year.

At the outset, teachers must map appropriate competencies or learning outcomes with real world problems (projects) that are age appropriate for their students. Students in consultation with their teacher finally determine the project question for them depending upon their interest and proclivity. A project should ideally arise out of the need felt by the student. Students explore their areas of interest and narrow down their ideas to a testable hypothesis or problem question.

For example: Abdul waits for summers as his favourite fruit watermelon is available in plenty. This year he noticed that every time he bought a watermelon its colour was dark red and was exceptionally sweet from inside. This never happened in earlier years. Some watermelons would be sweet some would not. Abdul were surprised by this observation and worried if the fruit was adulterated. He thought of conducting a test to find out if fruits and vegetables available in his locality were adulterated. He reviewed articles and papers on adulteration and found out simple tests to check adulteration at home. Abdul conducted the test and shared his results with his friend and teacher. He developed a small manual to help other check adulteration in fruits.

There are many issues in our immediate surroundings which need to be addressed. Keen observation will help identify the problem.

Before developing a problem question, students must do research on topics and find out what other people have already done in the selected area to avoid repetition. During this phase, students should be encouraged to record the reference of every bit of information they got from different sources. After developing problem question, students should write down precise testable hypothesis and design an experiment or procedure to test their hypothesis by collecting and analysing the data followed by writing conclusion and limitation of the study. Students must also develop a timeline and checklist about accessibility to resources required, safety of experiment/procedure, harmlessness of experiments to environment, organisms and other people. Teacher must ensure that it is doable within a specified period of time and available resources and is appropriately challenging to a particular student (neither be very complex or longer nor be very easy and short). It should not culminate into finding information from a book or website.

A project could have the following outline:

1. **Statement of Problem-** A clear statement of the problem/need that has given rise to the project

2. **Objectives-**General and specific objectives of topic

3. **Introduction-**The introduction should describe the relevance of problem or why the problem is the most appropriate for your inquiry. It should also describe previously known facts about your problem question with proper bibliography. Introduction towards end briefly includes hypothesis your hypothesis and the method to test it.

4. **Problem question** (specific, concrete questions to which concrete answers can be given) and/ or hypotheses

5. **Methods/Procedures** Methodology (will your research be based on survey, an experimental investigation, historical study, ethnographic study or content analysis).Methods describe the experiments proposed or the observations planned to make and the detailed process of analysis of data/observations. Methods proposed should be feasible and be able to adequately answer problem question.

6. **Materials/Resources required**

7. **Observations/Data gathered**
   Using the procedures mentioned in introduction, experiments should be conducted and data should be recorded. Interesting things that happened during the conduct of experiments should also be recorded.

8. **Analysis of data and discussion of result**
   Data should be interpreted in terms of proposed hypothesis. Data should be tabulated and interpreted with the help of graphs if possible. The interpretation should be done in an honest manner even if it does not support proposed hypothesis.

9. **Conclusion** Reporting and writing up the report
   Discussion of new learning from the study may be covered under conclusion. This may have possible suggestions for future studies.

10. **Limitation of the study**
    The limitations of the study are those features of design or procedure that might have affected the interpretation of the results of study. The limitations are alternatively interpreted as flaws or shortcomings due to flawed methodology, observations, small number of experiments or non-peer reviewed nature of study etc.

11. **Bibliography**

Rubric for Assessment of Project

PARAMETER	Exemplary (4)	Accomplished (3)	Developing (2)	Beginner (1)
Factual information	Content covers the research well	Content from all eras but has few inaccuracies	Content does not cover all eras and has few inaccuracies	Content does not cover all eras and is historically inaccurate
Sources	Multiple sources (6 or more) used (library, books, interview with people, different websites, blogs etc.)	Many sources (4-5) used (Books, websites, blogs)	Few sources used (2-3)	Relied on only one source
Data collection	Collected data from a large random sample (50 people or more from different age group, gender, social status) OR collected data for different samples and at least 5 reading for each set of experiment	Collected data from a fairly large random sample (30 -50 people from different age group, gender, social status) OR collected data for different samples and 3 reading for each set of experiment	Collected data from a small random sample (20 people from different age group, gender, social status) OR collected data for one sample and 3-5 readings	Collected data from a small sample (10 or less people) OR collected data for one sample and 1-2 readings
Interpretations and conclusion	In correlation with data and aim of the project. Clear conclusions based on findings	In correlation with data and aim of the project. Conclusions not based on findings	Not in correlation with data but in correlation with the aim Random conclusions	Not in correlation with data and aim, No conclusions
Journal	Daily entries with details of discussions and brainstorming sessions with the teacher.	Most of the entries done with details of discussions with the teacher	Daily entries without details	Random entries
Project report	Exceptionally attractive, organized sequentially and logically, creatively presented with data and clear conclusions	Attractive, organized sequentially and logically, presented some data and conclusions	Information is organized sequentially and logically but not in an attractive manner. Random Data without conclusions	Presentation is confusing. There is no sequence.
Academic Honesty	Sites all sources and gives due credits	Most of the sources cited	Few sources cited	Uses other people's ideas without giving credit

Computer Science
CLASS - XI
Code No. 083
2021-22

1. Learning Outcomes

Student should be able to

a) develop basic computational thinking
b) explain and use data types
c) appreciate the notion of algorithm
d) develop a basic understanding of computer systems - architecture, operating system and cloud computing
e) explain cyber ethics, cyber safety and cybercrime
f) Understand the value of technology in societies along with consideration of gender and disability issues

2. Distribution of Marks

Unit No.	Unit Name	Marks	Periods	
			Theory	Practical
I	Computer Systems and Organisation	10	10	5
II	Computational Thinking and Programming - 1	45	50	35
III	Society, Law and Ethics	15	20	----
	Total	70	80	40

		Term-1	Term-2
		Marks	Marks
I	Computer Systems and Organisation	10	---
II	Computational Thinking and Programming - 1	25	20
III	Society, Law and Ethics	---	15
		35	35

3. Unit wise Syllabus

TERM 1:

Unit I: Computer Systems and Organisation

- Basic Computer Organisation: Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB)
- Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits
- Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
- Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF32)

Unit II: Computational Thinking and Programming – 1

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging). representation of algorithms using flow chart and pseudo code, decomposition
- Familiarization with the basics of Python programming: Introduction to Python, features ofPython, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
- Operators: arithmetic operators, relational operators, logical operators, assignment operator, augmented assignment operators, identity operators (is, is not), membership operators (in, not in)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc
- Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()

TERM 2:

Unit II: Computational Thinking and Programming – 1

- Lists: introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: 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: introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions: len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: 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: introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len(), dict(), keys(), values(), items(), get(), update(), 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
- Introduction to Python modules: Importing module using 'import <module>' and using from statement, 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

- Digital Footprints
- Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
- Cyber safety: safely browsing the web, identity protection, confidentiality, cyber trolls and bullying.
- Safely accessing web sites: malware, viruses, Trojans, adware
- E-waste management: proper disposal of used electronic gadgets
- Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computers

4. Practical

S.No.		Marks (Total=30)	Term-1 (15 Marks)	Term-2 (15 Marks)
1.	Python program	12	6	6
2.	Report file: Minimum 20 Python programs Term- 1 : Minimum 10 programs based on Term – 1 syllabus Term- 2 : Minimum 10 programs based on Term – 2 syllabus	7	4	3
	Viva voce	3	2	1
3.	Project + Viva voce Term – 1 : Synopsis of the project to be submitted by the students (documentation only) Term - 2 : Final coding + Viva voce (Student will be allowed to modify their Term 1 document and submit the final executable code.)	8	3	5

5. Suggested Practical List

Term - 1

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.
- Generate the following patterns using nested loop.

Pattern-1	Pattern-2	Pattern-3
*	1 2 3 4 5	A
**	1 2 3 4	AB
***	1 2 3	ABC
****	1 2	ABCD
*****	1	ABCDE

- Write a program to input the value of x and n and print the sum of the following series:
  - $1+x+x^2+x^3+x^4+. \ldots\ldots\ldots x^n$
  - $1-x+x^2-x^3+x^4 \ldots\ldots\ldots\ldots x^n$
  - $x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \ldots\ldots\ldots\ldots \frac{x^n}{n}$
  - $x + \frac{x^2}{2!} - \frac{x^3}{3!} + \frac{x^4}{4!} \ldots\ldots\ldots\ldots \frac{x^n}{n!}$
- 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.

Term - 2

- 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/tuple of elements, search for a given element in the list/tuple.
- Input a list of numbers and find the smallest and largest number from the list.
- Create a dictionary with the roll number, name and marks of n students in a class and display the names of students who have scored marks above 75.

6. Suggested Reading Material

- NCERT Textbook for COMPUTER SCIENCE (Class XI)
- Support Materials on the CBSE website.

Computer Science
CLASS-XII
Code No. 083
2021-22

1. Prerequisites

Computer Science- Class XI

2. Learning Outcomes

Student should be able to

a) apply the concept of function.

b) explain and use the concept of file handling.

c) use basic data structure: Stacks.

d) explain basics of computer networks.

e) use Database concepts, SQL along with connectivity between Python and SQL.

3. Distribution of Marks:

Unit No.	Unit Name	Marks	Periods	
			Theory	Practical
I	Computational Thinking and Programming - 2	40	50	25
II	Computer Networks	10	10	---
III	Database Management	20	20	15
	Total	70	80	40

Unit No	Unit Name	Term-1	Term-2
I	Computational Thinking and Programming - 2	35	5
II	Computer Networks	---	10
III	Database Management	---	20
	Total	35	35

4. Unit wise Syllabus

TERM 1:

Unit I: Computational Thinking and Programming – 2

- Revision of Python topics covered in Class XI.
- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file
- Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file
- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( )

TERM 2:

Unit I: Computational Thinking and Programming – 2

- Data Structure: Stack, operations on stack (push & pop), implementation of stack using list.

Unit II: Computer Networks

- Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)
- Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)
- Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves

- Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card)
- Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)
- Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP
- Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

Unit III: Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command

- Aggregate functions (max, min, avg, sum, count), group by, having clause, joins :Cartesian product on two tables, equi-join and natural join
- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications

5. Practical

S.No		Marks (Total 30)	Term-1 (15 Marks)	Term-2 (15 Marks)
1	**Lab Test:** 1. Python program	**8**	**6**	**2**
	2. 3 SQL Queries based on one/two table(s), 2 output questions based on SQL queries	**4**	**---**	**4**
2	Report file: Term – 1 : Minimum 15 Python programs based on Term - 1 Syllabus Term – 2 : • Minimum 3 Python programs based on Term-2 Syllabus • SQL Queries – Minimum 5 sets using one table / two tables. • Minimum 2 programs based on Python - SQL connectivity.	**7**	**4**	**3**
3	Project (using concepts learnt in Classes 11 and 12) Term – 1 : Synopsis of the project to be submitted by the students (documentation only, may not submit the code during Term - 1) Term - 2 : Final coding + Viva voce (Student will be allowed to modify their Term 1 document and submit the final executable code.)	**8**	**3**	**5**
4	Viva voce	**3**	**2**	**1**

6. Suggested Practical List:

Term-1

Python Programming

- 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.
- Remove all the lines that contain the character 'a' in a file and write it to another 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.
- Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
- Create a CSV file by entering user-id and password, read and search the password for given user-id.

Term-2

Python Programming

- Write a Python program to implement a stack using list.

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
    - Joining of two tables.
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing suitable module.

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 suitable module.

7. Suggested Reading Material

- NCERT Textbook for COMPUTER SCIENCE (Class XII)
- Support Materials on the CBSE website.

8. Project

The aim of the class project is to create something that is tangible and useful using Python file handling/ Python-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 sensitised to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.

ECONOMICS (Code No. 030)
(2021-22)

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 (Code No. 030)

(2021-22)

CLASS XI - TERM-WISE CURRICULUM

Units	TERM 1 - MCQ BASED QUESTION PAPER Theory: 40 Marks Time: 90 minutes	Marks
Part A	**Statistics for Economics**	
	Introduction	4
	Collection, Organisation and Presentation of Data	9
	Statistical Tools and Interpretation – Arithmetic Mean, Median and Mode	10
	Sub Total	**23**
Part B	**Introductory Microeconomics**	
	Introduction	4
	Consumer's Equilibrium and Demand	13
	Sub Total	**17**
	Total	**40 marks**
Part C	**Project Work (Part 1): 10 Marks**	

Students would prepare only ONE project in the entire academic session, which is divided into 2 terms i.e. Term I and Term II.

TERM 1

Part A: Statistics for Economics

Unit 1: Introduction

What is Economics?

Meaning, scope, functions and importance of statistics in Economics

Unit 2: Collection, Organisation and Presentation of data

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

Measures of Central Tendency- Arithmetic mean, median and mode

Part B: Introductory Microeconomics

Unit 4: Introduction

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; opportunity cost.

Unit 5: Consumer's Equilibrium and Demand

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.

Part C: Project in Economics - Guidelines as given in class XII curriculum

Units	TERM 2 - SUBJECTIVE QUESTION PAPER Theory: 40 Marks Time: 2 Hours	Marks
Part A	**Statistics for Economics**	
	Statistical Tools and Interpretation – Measures of Dispersion, Correlation, Index Number	17
	Sub Total	**17**
Part B	**Introductory Microeconomics**	
	Producer Behaviour and Supply	13
	Forms of Market and Price Determination under perfect competition with simple applications	10
	Sub Total	**23**
	Total	**40 marks**
Part C	**Project Work (Part 2): 10 Marks**	

Part A: Statistics for Economics

Unit 3: Statistical Tools and Interpretation

Measures of Dispersion - absolute dispersion standard deviation); relative dispersion co-efficient of variation)

Correlation – meaning and properties, scatter diagram; Measures of correlation - Karl Pearson's method (two variables ungrouped data)

Introduction to Index Numbers - meaning, types - wholesale price index, consumer price index, uses of index numbers; Inflation and index numbers.

Part B: Introductory Microeconomics

Unit 6: Producer Behaviour and Supply

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.

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.

Perfect competition - Features; Determination of market equilibrium and effects of shifts in demand and supply.

Simple Applications of Demand and Supply: Price ceiling, price floor.

Part C: Project in Economics - Guidelines as given in class XII curriculum

ECONOMICS (Code No. 030)

(2021-22)

CLASS XII - TERM-WISE CURRICULUM

TERM 1 - MCQ BASED QUESTION PAPER **Theory: 40 Marks** **Time: 90 minutes**	**Marks**	**Periods**
Part A: Introductory Macroeconomics		
▪ Money and Banking	6	8
▪ Government Budget and the Economy	6	15
▪ Balance of Payments	6	7
Sub Total	18	30
Part B: Indian Economic Development		
▪ Development Experience (1947-90) and Economic Reforms since 1991: ● Indian Economy on the eve of Independence ● Indian Economy (1950-90) ● Liberalisation, Privatisation and Globalisation : An Appraisal	12	28
▪ Current challenges facing Indian Economy ● Poverty ● Human Capital Formation ● Rural development	10	17
Sub Total	22	45
Total	40	75
Project Work (Part 1): 10 Marks		

Students would prepare only ONE project in the entire academic session, which is divided into 2 terms i.e. Term I and Term II.

Term 1

Part A: Introductory Macroeconomics

Unit 2: Money and Banking **8 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

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 **7 Periods**

Balance of payments account - meaning and components;
Foreign exchange rate - meaning of fixed and flexible rates and managed floating.

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 **17 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;

Rural development: Key issues - credit and marketing - role of cooperatives; agricultural diversification;

TERM 2 - SUBJECTIVE QUESTION PAPER **Theory: 40 Marks** **Time: 2 Hours**	**Marks**	**Periods**
Part A: Introductory Macroeconomics		
▪ National Income and Related Aggregates	10	23
▪ Determination of Income and Employment	12	22
Sub Total	22	45
Part B: Indian Economic Development		
▪ Current challenges facing Indian Economy ● Employment ● Infrastructure ● Sustainable Economic Development	12	18
▪ **Development Experience of India – A Comparison with Neighbours-** ● Comparative Development Experience of India and its Neighbours	06	12
Sub Total	18	30
Total	40	75
Project Work: 10 Marks		

Term – II

Part A: Introductory Macroeconomics

Unit 1: National Income and Related Aggregates **23 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 3: Determination of Income and Employment **22 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 through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Part B: Indian Economic Development

Unit 7: Current challenges facing Indian Economy **18 Periods**

Employment: Growth and changes in work force participation rate in formal and informal sectors; problems and policies

Infrastructure: Meaning and Types: Case Studies: 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 **15 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

Guidelines for Project Work: 20 Marks
(ECONOMICS)

Only **ONE** Project is to be done throughout the session.

1. **The objectives of the project work:**

   Objectives of project work are to enable learners to:

   - Probe deeper into personal enquiry, initiate action and reflect on knowledge and skills, views etc. acquired during the course of class XI-XII.
   - analyse and evaluate real world scenarios using theoretical constructs and arguments
   - demonstrate the application of critical and creative thinking skills and abilities to produce an independent and extended piece of work
   - follow up aspects in which learners have interest
   - develop the communication skills to argue logically

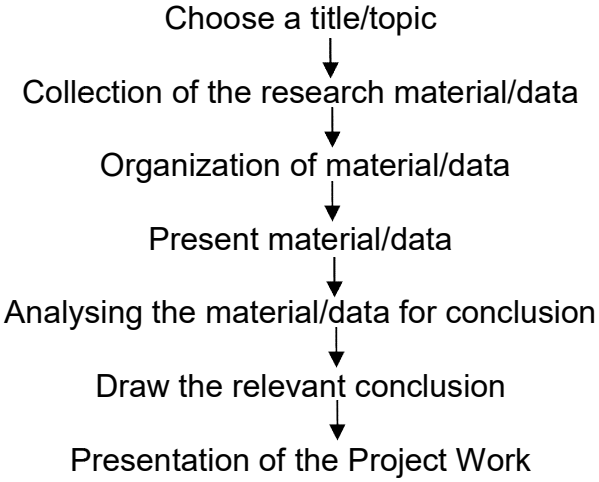
2. **Role of the teacher:**

   The teacher plays a critical role in developing thinking skills of the learners. A teacher should:

   - help each learner select the topic after detailed discussions and deliberations of the topic;
   - play the role of a facilitator to support and monitor the project work of the learner through periodic discussions;
   - guide the research work in terms of sources for the relevant data;
   - ensure that students must understand the relevance and usage of primary evidence and other sources in their projects and duly acknowledge the same;
   - ensure that the students are able to derive a conclusion from the content; cite the limitations faced during the research and give appropriate references used in doing the research work.
   - 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.

3. **Steps involved in the conduct of the project:**

   Students may work upon the following lines as a suggested flow chart:



   - The project work can be in the form of Power Point Presentation/Exhibition/Skit /albums/files/song and dance or culture show /story telling/debate/panel discussion,

paper presentation and so on. Any of these activities which are suitable to visually impaired/differently-abled candidates can be performed as per the choice of the student.

4. **Expected Checklist for the Project Work:**
   - Introduction of topic/title
   - Identifying the causes, events, 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 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.

5. Term-Wise Assessment of Project Work:
   - Project Work has broadly the following phases: Synopsis/ Initiation, Data Collection, Data Analysis and Interpretation, Conclusion.
   - The aspects of the project work to be covered by students can be assessed during the two terms.
   - **20 marks assigned for Project Work can be divided in to two terms in the following manner:**

TERM-I PROJECT WORK (Part 1): 10 Marks

The teacher will assess the progress of the project work in the term I in the following manner:

Month	**Periodic Work**	**Assessment Rubrics**	**Marks**
1-3 July-September	Instructions about Project Guidelines, Background reading Discussions on Theme and Selection of the Final Topic, Initiation/ Synopsis	Introduction, Statement of Purpose/Need and Objective of the Study, Hypothesis/Research Question, Review of Literature, Presentation of Evidence, Key Words, Methodology, Questionnaire, Data Collection.	5
4-5 October-November	Planning and organisation: forming an action plan, feasibility or baseline study, Updating/modifying the action plan, Data Collection	Significance and relevance of the topic; challenges encountered while conducting the research.	5
October-November	**Mid-term Assessment by internal examiner**		**10**

TERM- II - PROJECT WORK (Part 2): 10 Marks

The teacher will assess the progress of the project work in the term II in the following manner:

Month	Periodic Work	Assessment Rubrics	Marks
6-7 December-January	Content/data analysis and interpretation. Conclusion, Limitations, Suggestions, Bibliography, Annexures and Overall Presentation of the project.	Content analysis and its relevance in the current scenario. Conclusion, Limitations, Bibliography, Annexures and Overall Presentation.	5
8 January/ February	**Final Assessment and VIVA by both Internal and External Examiners**	External/ Internal Viva based on the project	5
		TOTAL	10

6. Viva-Voce

- 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.

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.

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)
·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
·SarwaSikshaAbhiyan – 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

English Core
Code No. 301
Class XI (2021-22)
Term Wise Syllabus

SECTION	TERM I	WEIGHTAGE (IN MARKS)	TERM II	WEIGHTAGE (IN MARKS)
A	**Reading Comprehension**: • Unseen passage (factual, descriptive or literary/ discursive or persuasive) • Case Based Unseen (Factual) Passage	**8 + 5 = 13**	**Reading Comprehension:** • Unseen passage (factual, descriptive or literary /discursive or persuasive) • Unseen passage for Note Making and Summarising	**8 + 5 = 13**
B	**Creative Writing Skills and Grammar**: **Short Writing Tasks** • Notice Writing **Long Writing Tasks** • Business or Official Letters(Making enquiries, registering complaints, asking for or giving information, placing orders and sending replies) • Speech **Grammar** • Determiners • Tenses • Re-ordering of Sentences **{MCQs on Gap filling/ Transformation of Sentences}**	**3 + 5 + 4 = 12**	**Creative Writing Skills and Grammar**: **Short Writing Tasks** • Posters **Long Writing Tasks** • Official Letters: e.g. to school/college authorities (regarding admissions, school issues, requirements / suitability of courses) • Debate **Grammar** • Determiners • Tenses • Re-ordering of Sentences **{MCQs on Gap filling/ Transformation of Sentences }**	**3 + 5 + 4 = 12**
C	**Literature:** Literary-prose/poetry extracts (seen- texts) comprehension and appreciation. **(Two Extracts)** **Questions Based on Texts to assess** comprehension and appreciation, analysis, inference, extrapolation **Book-Hornbill:** • The Portrait of a Lady (*Prose*) • A Photograph (*Poem*) • "We're Not Afraid to Die… if We Can All Be Together" (*Prose*) • Discovering Tut: the Saga Continues • The Laburnum Top (*Poem*) • Landscape of the Soul (Prose) **Book-Snapshots:** • The Summer of the Beautiful White Horse(Prose) • The Address (Prose) • Ranga's Marriage (Prose)	**9 Marks for Hornbill + 6 Marks for Snapshots = 15 Marks**	**Literature:** Questions based on extracts/texts to assess comprehension and appreciation, analysis, inference, extrapolation **Book-Hornbill:** • The Voice of the Rain (Poem) • The Ailing Planet: The Green Movement's Role (*Prose*) • The Browning Version(Play) • Childhood (Poem) • Silk Road (Prose) **Book-Snapshots:** • Albert Einstein at School (Prose) • Mother's Day (Play) • Birth (Prose)	**9 Marks for Hornbill + 6 Marks for Snapshots = 15 Marks**
	TOTAL	**40**	**TOTAL**	**40**
	ASL	**10**	**ASL**	**10**
	GRAND TOTAL	**40 + 10 = 50 MARKS**	**GRAND TOTAL**	**40 + 10 = 50 MARKS**

Prescribed Books

1. **Hornbill:** English Reader published by National Council of Education Research and Training, New Delhi
2. **Snapshots:** Supplementary Reader published by National Council of Education Research and Training, New Delhi

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English Core
Code No. 301
Class XII (2021-22)
Term Wise Syllabus

SECTION	TERM 1	WEIGHTAGE (IN MARKS)	TERM II	WEIGHTAGE (IN MARKS)
A	**Reading Comprehension**: (Two Passages) • Unseen passage (factual, descriptive or literary/ discursive or persuasive) • Case Based Unseen (Factual) Passage	**14 (8+6 Marks)**	**Reading Comprehension**: (Two Passages) • Unseen passage (factual, descriptive or literary/ discursive or persuasive) • Case Based Unseen (Factual) Passage	**14 (8+6 Marks)**
B	**Creative Writing Skills** : **Short Writing Tasks** • Notice Writing • Classified Advertisements **Long Writing Tasks(One)** • Letter to an Editor (giving suggestions or opinion on issues of public interest) • Article Writing	**3+5 marks** **Total=08**	**Creative Writing Skills** : **Short Writing Tasks** • Formal & Informal Invitation Cards or the Replies to Invitation/s **Long Writing Tasks(One)** • Letter of Application for a Job • Report Writing	**3+5 Marks** **Total=08**
C	**Literature :** Literary-prose/poetry extracts (seen- texts) to assess comprehension and appreciation, analysis, inference, extrapolation **Questions Based on Texts to assess** comprehension and appreciation, analysis, inference, extrapolation **Book- Flamingo (Prose)** • The Last Lesson • Lost Spring • Deep Water **Book-Flamingo (Poetry)** • My Mother at Sixty-Six • An Elementary School Classroom in a Slum • Keeping Quiet **Book-Vistas (Prose)** • The Third Level • The Enemy	**11 Marks for Flamingo + 7 Marks for Vistas = 18 Marks**	**Literature:** Questions based on extracts/texts to assess comprehension and appreciation, analysis, inference, extrapolation **Book-Flamingo (Prose)** • The Rattrap • Indigo **Book-Flamingo (Poetry)** • A Thing of Beauty • Aunt Jennifer's Tigers **Book-Vistas (Prose)** • Should Wizard Hit Mommy? • On the Face of It • Evans Tries an O Level	**11 Marks for Flamingo + 7 Marks for Vistas = 18 Marks**
	TOTAL	**40**	**TOTAL**	**40**
	ASL	**10**	**ASL**	**10**
	GRAND TOTAL	**40 + 10 = 50**	**GRAND TOTAL**	**40 + 10 = 50**

Prescribed Books

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

Informatics Practices
CLASS XI
Code No. 065
2021-22

1. **Prerequisite** : None

2. **Learning Outcomes** :

At the end of this course, students will be able to:

- Identify the components of the Computer System.
- Create Python programs using different data types, lists and dictionaries.
- 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	10	10	-	10
2	Introduction to Python	25	35	28	63
3	Database concepts and the Structured Query Language	30	23	17	40
4	Introduction to Emerging Trends	5	7	-	7
	Practical	30	-	-	-
	Total	100	75	45	120

TERM - 1

Distribution of Theory Marks

Unit No	Unit Name	Marks
1	Introduction to computer system	10
2	Introduction to Python	25
	Total	35

Unit Wise syllabus

Unit 1:
Introduction to Computer System

- Introduction to computers 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 of expressions, comments, input and output statements, data type conversion, debugging,

- Control statements: if-else, for loop.

- List operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions.: len(), list(), append(), extend(), insert(), count(), find(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum()

- Dictionary: concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions: len(), dict(), keys(), values(), items(), get(), update(), clear(), del()

Distribution of Practical Marks

Topic	**Marks**
Python program (pen and paper or Collab or any online idle or pyroid screen for mobile)	10
Practical File- 15 python Programs	3
Viva	2
Total	15

Suggested Practical List

Programming in Python

1. To find average and grade for given marks.

2. To find the sale price of an item with a 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 a 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 a given number.
12. To count the number of vowels in a user entered string.
13. To print the words starting with a particular alphabet in a user entered string.
14. To print the number of occurrences 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.

TERM - 2

Distribution of Theory Marks

Unit No	Unit Name	Marks
3	Database concepts and the Structured Query Language	30
4	Introduction to Emerging Trends	5
	Total	35

Unit 3:

Database concepts and the Structured Query Language

- Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data model: concept of attribute, domain, tuple, relation, candidate key, primary key, alternate key, foreign key.

- Structured Query Language: Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL: Creating a database, using database, showing tables using MySQL,

- Data Types : char, varchar, int, float, date.

- Data Definition Commands: CREATE, DROP, ALTER (Add and Remove primary key, attribute). Data Query Commands: SELECT-FROM- WHERE, LIKE, BETWEEN, IN, ORDER BY, using arithmetic, logical, relational operators and NULL values in queries, Distinct clause Data Manipulation Commands: INSERT, UPDATE, DELETE.

Unit 4:

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.

Distribution of Practical Marks

Topic	**Marks**
SQL Queries (pen and paper)	8
Practical File SQL Queries - 20 Queries	4
Viva	3
Total	15

Suggested Practical List :

Data Management: SQL Commands

1. To create a database
2. To create a student table with the student id, class, section, gender, name, dob, and marks as attributes where the student id is the primary key.
3. To insert the details of at least 10 students in the above table.
4. To delete the details of a particular student in the above table.
5. To increase marks by 5% for those students who have Rno more than 20.
6. To display the entire content of the table.
7. To display Rno, Name and Marks of those students who are scoring marks more than 50.
8. To find the average of marks from the student table.
9. To find the number of students, who are from section ‘A’.
10. To add a new column email in the above table with appropriate data type.
11. To add the email ids of each student in the previously created email column.
12. To display the information of all the students, whose name starts with ‘AN’ (Examples: ANAND, ANGAD,..)
13. To display Rno, Name, DOB of those students who are born between ‘2005- 01-01’ and ‘2005-12-31’.
14. To display Rno, Name, DOB, Marks, Email of those male students in ascending order of their names.
15. To display Rno, Gender, Name, DOB, Marks, Email in descending order of their marks.
16. To display the unique section available in the table.

Reference:

NCERT Informatics Practices - Text book for class - XI (ISBN- 978-93-5292-148-5)

Informatics Practices
CLASS XII
Code No. 065
2021-2022

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.
- Visualize data using relevant graphs.
- Design SQL queries using aggregate functions.
- Learn terminology related to networking and the internet.
- Identify internet security issues and configure browser settings
- Understand 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	25	25	25	50
2	Database Query using SQL	25	20	17	37
3	Introduction to Computer Networks	10	12	0	12
4	Societal Impacts	10	14	-	14
	Project	-	-	7	7
	Practical	30	-	-	-
	Total	100	71	49	120

Term - 1

Distribution of Theory Marks

Unit No	Unit Name	Marks
1	Data Handling using Pandas and Data Visualization	25
4	Societal Impacts	10
	Total	35

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 dictionary, scalar value; mathematical operations; series attributes, head and tail functions; selection, indexing and slicing.

- Data Frames: creation of data frames from dictionary of series, list of dictionaries, text/CSV files, display, iteration. Operations on rows and columns: add (insert /append) , select, delete (drop column and row), rename, Head and Tail functions, indexing using labels, Boolean indexing.

Data Visualization

- Data Visualization : Purpose of plotting, drawing and saving of plots using Matplotlib (line plot, bar graph, histogram). Customizing plots:; adding label, title, and legend in plots.

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.

Distribution of Practical Marks

Topic	**Marks**
Pandas program (pen and paper or Collab or any online idle or pyroid screen for mobile)	8
Practical File 15 Pandas Programs	3
Project synopsis	2
Viva	2
Total	15

Suggested Practical List

Data Handling

1. Create a panda's series from a dictionary of values and a 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 for examination result and display row labels, column labels data types of each column and the dimensions
5. Filter out rows based on different criteria such as duplicate rows.
6. Importing and exporting data between pandas and CSV file

5.2 Visualization

1. Given the school result data, analyses the performance of the students on different parameters, e.g subject wise or class wise.
2. For the Data frames created above, analyze, and plot appropriate charts with title and legend.
3. 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.

Project Synopsis

The synopsis should cover the brief description about the project along with reasons for selection of the dataset. The learner should write the source of the dataset whether created or taken from any reliable source. The learner should write what analytics can be done on the project.

Term - 2

Distribution of Theory Marks

Unit No	Unit Name	Marks
2	Database Query using SQL	25
3	Introduction to Computer Networks	10
	Total	35

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.

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.

Distribution of Practical Marks

Topic	Marks
SQL queries (pen and paper)	7
Practical File – 12 SQL Queries	2
Final Project Submission	3
Viva	3
Total	15

Suggested Practical List

Data Management

1. Create a student table with the student id, name, and marks as attributes where the student id is the primary key.
2. Insert the details of a new student in the above table.
3. Delete the details of a student in the above table.
4. Use the select command to get the details of the students with marks more than 80.
5. Find the min, max, sum, and average of the marks in a student marks table.
6. Find the total number of customers from each country in the table (customer ID, customer Name, country) using group by.
7. Write a SQL query to order the (student ID, marks) table in descending order of the marks.

Project Work

The aim of the class project is to create tangible and useful IT applications. 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 the 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.

MATHEMATICS (XI-XII)
(Code No. 041)
Session – 2021-22

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 (2021-22)

TERM - I

One Paper

90 Minutes **Max Marks: 40**

No.	Units	Marks
I.	Sets and Functions	11
II.	Algebra	13
III.	Coordinate Geometry	6
IV.	Calculus	4
V.	Statistics and Probability	6
	Total	40
	Internal Assessment	10
	Total	**50**

*No chapter-wise weightage. Care to be taken to cover all the chapters.

Unit-I: Sets and Functions

1. **Sets**

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.

2. **Relations & Functions**

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 (R x R only).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.

Unit-II: Algebra

1. **Complex Numbers and Quadratic Equations**

Need for complex numbers, especially$\sqrt{-1}$, to be motivated by inability to solve some of the quardratic equations. Algebraic properties of complex numbers. Argand plane. Statement of Fundamental Theorem of Algebra, solution of quadratic equations (with real coefficients) in the complex number system.

2. **Sequence and Series**

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.

Unit-III: Coordinate Geometry

1. Straight Lines

Brief recall of two dimensional geometry from earlier classes. 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. Distance of a point from a line.

Unit-IV: Calculus

1. Limits

Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions

Unit-V: Statistics and Probability

1. Statistics

Measures of Dispersion: Range, mean deviation, variance and standard deviation of ungrouped/grouped data.

INTERNAL ASSESSMENT	**10 MARKS**
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

TERM - II

One Paper **Max Marks: 40**

No.	Units	Marks
I.	Sets and Functions (Cont.)	8
II.	Algebra (Cont.)	11
III.	Coordinate Geometry (Cont.)	9
IV.	Calculus (Cont.)	6
V.	Statistics and Probability (Cont.)	6
	Total	40
	Internal Assessment	10
	Total	**50**

Unit-I: Sets and Functions

1. **Trigonometric Functions**

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 sin2x + cos2x = 1, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing sin (*x*±*y*) and cos (*x*±*y*) in terms of sin*x*, sin*y*, cos*x* & cos*y* and their simple applications. Deducing identities like the following:

$$\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$$

$$\sin\alpha \pm \sin\beta = 2\sin\frac{1}{2}(\alpha \pm \beta)\cos\frac{1}{2}(\alpha \mp \beta)$$

$$\cos\alpha + \cos\beta = 2\cos\frac{1}{2}(\alpha + \beta)\cos\frac{1}{2}(\alpha - \beta)$$

$$cos\alpha - cos\beta = -2sin\frac{1}{2}(\alpha + \beta)sin\frac{1}{2}(\alpha - \beta)$$

Identities related to sin2*x*, cos2*x*, tan2 *x*, sin3*x*, cos3*x* and tan3*x*.

Unit-II: Algebra

1. **Linear Inequalities**

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.

2**. Permutations and Combinations**

Fundamental principle of counting. Factorial *n.* (n!) Permutations and combinations, formula for ${}^{n}P_{r}$ and ${}^{n}C_{r}$, simple applications.

Unit-III: Coordinate Geometry

1. Conic Sections

Sections of a cone: circles, ellipse, parabola, hyperbola. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle.

2. Introduction to Three-dimensional Geometry

Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.

Unit-IV: Calculus

1. Derivatives

Derivative introduced as rate of change both as that of distance function and geometrically. Definition of Derivative, relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

Unit-V: Statistics and Probability

1. Probability

Random experiments; outcomes, sample spaces (set representation). Events; occurrence of events, ‘not’, ‘and’ and ‘or’ events, exhaustive events, mutually exclusive events, Probability of an event, probability of ‘not’, ‘and’ and ‘or’ events.

INTERNAL ASSESSMENT	**10 MARKS**
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

- Please refer the guidelines given under XII Mathematics Syllabus:

CLASS-XII
MATHEMATICS (2021-22)
TERM - I

One Paper

90 minutes **Max Marks: 40**

No.	Units	Marks
I.	Relations and Functions	08
II.	Algebra	10
III.	Calculus	17
V.	Linear Programming	05
	Total	40
	Internal Assessment	10
	Total	50

Unit-I: Relations and Functions

1. Relations and Functions

Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.

2. Inverse Trigonometric Functions

Definition, range, domain, principal value branch.

Unit-II: Algebra

1. Matrices

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, Invertible matrices; (Here all matrices will have real entries).

2. Determinants

Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. 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

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.

2. Applications of Derivatives

Applications of derivatives: increasing/decreasing functions, tangents and normals, 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).

Unit-V: Linear Programming

1. Linear Programming

Introduction, related terminology such as constraints, objective function, optimization, different types of linear programming (L.P.) problems. Graphical method of solution for problems in two variables, feasible and infeasible regions (bounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).

INTERNAL ASSESSMENT	**10 MARKS**
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

TERM - II

One Paper

Max Marks: 40

No.	Units	Marks
III.	Calculus	18
IV.	Vectors and Three-Dimensional Geometry	14
VI.	Probability	8
	Total	40
	Internal Assessment	10
	Total	**50**

Unit-III: Calculus

1. Integrals

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.

$$\int \frac{dx}{x^2 \pm a^{2,}} \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}}, \int \frac{dx}{ax^2 + bx + c}, \int \frac{dx}{\sqrt{ax^{2+bx+c}}}$$

$$\int \frac{px + q}{ax^2 + bx + c} dx, \int \frac{px + q}{\sqrt{ax^{2+}bx + c}} dx, \int \sqrt{a^2 \pm x^2}\, dx, \qquad \int \sqrt{x^2 - a^2} dx$$

Fundamental Theorem of Calculus (without proof).Basic properties of definite integrals and evaluation of definite integrals.

2. Applications of the Integrals

Applications in finding the area under simple curves, especially lines, parabolas; area of circles /ellipses (in standard form only) (the region should be clearly identifiable).

3. Differential Equations

Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree of the type: $\frac{dy}{dx} = f(y/x)$. Solutions of linear differential equation of the type:

$$\frac{dy}{dx} + py = q, \text{ where p and q are functions of x or constant.}$$

Unit-IV: Vectors and Three-Dimensional Geometry

1. Vectors

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.

2. Three - dimensional Geometry

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. Distance of a point from a plane.

Unit-VI: Probability

1. Probability

Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution.

INTERNAL ASSESSMENT	**10 MARKS**
Periodic Test	5 Marks
Mathematics Activities: Activity file record +Term end assessment of one activity & Viva	5 Marks

Note: For activities NCERT Lab Manual may be referred

Assessment of Activity Work:

In first term any 4 activities and in second term any 4 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.htmla record of the same may be kept by the student. A term end test on the activity is to be conducted.

The weightage are as under:

- The activities performed by the student in each term and record keeping : 3 marks
- Assessment of the activity performed during the term end test and Viva-voce : 2 marks

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

PHYSICAL EDUCATION (048)
DISTRIBUTION OF SYLLABUS – CLASS XI – 2021-2022
TERM - I AND TERM - II

TERM I – THEORY MCQ BASED - 35 MARKS		TERM II – THEORY SHORT/LONG ANSWER – 35 MARKS	
***Unit No.**	**Name**	***Unit No.**	**Name**
1.	Changing Trends & Career in Physical Education • Meaning & definition of Physical Education • Aims & Objectives of Physical Education • Career Options in Physical Education. • Khelo-India Program	4.	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) • Role of various professionals for children with special needs (Counsellor, Occupational Therapist, Physiotherapist, Physical Education Teacher, Speech Therapist & special Educator)
2.	Olympic Value Education • Olympics • Olympic Symbols, Ideals, Objectives & Values of Olympism • International Olympic Committee • Indian Olympic Association	5.	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)
3.	Physical Fitness, Wellness & Lifestyle • Meaning & Importance of Physical Fitness, Wellness & Lifestyle • Components of physical fitness and Wellness • Components of Health related fitness	6.	Physical Activity & Leadership Training • Leadership Qualities & Role of a Leader • Meaning, objectives & types of Adventure Sports (Rock Climbing, Tracking, River Rafting, Mountaineering, Surfing and Paragliding) • Safety measures to prevent sports injuries
7	Test, Measurement & Evaluation • Define Test, Measurement & Evaluation • Importance of Test, Measurement & Evaluation In Sports • Calculation of BMI & Waist - Hip Ratio. • Measurement of health related fitness.	9.	Psychology & Sports • Definition & Importance of Psychology in Phy. Edu. & Sports • Define & Differentiate Between Growth & Development. • Adolescent Problems & Their Management
8	Fundamentals of Anatomy, Physiology & Kinesiology in Sports • Definition and Importance of Anatomy, Physiology & Kinesiology • Function of Skeleton System, Classification of Bones & Types of Joints .	10.	Training and Doping in Sports • Meaning & Concept of Sports Training • Principles of Sports Training • Concept & classification of doping • Prohibited Substances & their side effects

	• Function & Structure of Respiratory System and Circulatory System • Equilibrium – Dynamic & Static And Centre of Gravity and its application in sports		
TERM I – PRACTICAL		**TERM II – PRACTICAL**	
05 Marks	Project File (About one sport/game of choice)	05 Marks	Project File (Yoga and General Motor Fitness Test)
05 Marks	Demonstration of Fitness Activity	05 Marks	Demonstration of Fitness Activity/Yoga
05 Marks	Viva Voce (From Project File; Fitness)	05 Marks	Viva Voce (From Viva Voce (From Project File; General Motor Fitness; Yoga)

***For resource material refer Class XI Physical Education Handbook available at Board's Academic website: www.cbseacademic.nic.in**

PHYSICAL EDUCATION (048)
DISTRIBUTION OF SYLLABUS – CLASS XII – 2021-2022
TERM - I AND TERM - II

TERM I – THEORY MCQ BASED - 35 MARKS		TERM II – THEORY SHORT/LONG ANSWER – 35 MARKS	
***Unit No.**	**Name**	***Unit No.**	**Name**
1	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)	**3**	Yoga & Lifestyle • Asanas as preventive measures • Obesity: Procedure, Benefits & contraindications for Vajrasana, Hastasana, Trikonasana, Ardh Matsyendrasana • Diabetes: Procedure, Benefits & contraindications for Bhujangasana, Paschimottasana, Pavan Muktasana, Ardh Matsyendrasana • Asthma: Procedure, Benefits & contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottasana, Matsyasana • Hypertension: Tadasana, Vajrasana, Pavan Muktasana, Ardha Chakrasana, Bhujangasana, Sharasana
2	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	**4**	Physical Education & Sports for CWSN (Children with Special Needs - DIVYANG) • Concept of Disability & Disorder • Types of Disability, its causes & nature (cognitive disability, intellectual

	Intolerance & Food Myths		disability, physical disability) - Types of Disorder, its cause & nature (ADHD, SPD, ASD, ODD, OCD) - Disability Etiquettes - Strategies to make Physical Activities assessable for children with special need.
5	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	**7**	Physiology & Injuries in Sports ● Physiological factor determining component of Physical Fitness ● Effect of exercise on Cardio Respiratory System ● Effect of exercise on Muscular System ● 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
6	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 ○ Measurement of Cardio Vascular Fitness – Harvard Step Test/Rockport Test - $\frac{\text{Duration of the Exercise in Seconds}}{5.5 \times \text{Pulse count of 1-1.5 Min after Exercise}} \times 100$	**9**	Psychology & Sports ● Personality; its definition & types – Trait & Types (Sheldon & Jung Classification) & Big Five Theory ● Motivation, its type & techniques ● Meaning, Concept & Types of Aggressions in Sports

	○ Rikli & Jones - Senior Citizen Fitness Test		
8	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	**10**	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

TERM I – PRACTICAL		**TERM II – PRACTICAL**	
Project File (About one sport/game of choice)	05 Marks	Project File (Yoga and General Motor Fitness Test)	05 Marks
Demonstration of Fitness Activity	05 Marks	Demonstration of Fitness Activity/Yoga	05 Marks
Viva Voce (From Project File; Fitness)	05 Marks	Viva Voce (From Project File; General Motor Fitness; Yoga)	05 Marks

***For resource material refer Class XII Physical Education Handbook available at Board's Academic website: www.cbseacademic.nic.in**

PHYSICS XI (Code No. 042) COURSE STRUCTURE

Class XI (Theory) Term 1

Time: one and half hours. **Max Marks: 35**

		No. of Periods	Marks
Unit–I	**Physical World and Measurement**	**6**	**20**
	Chapter–1: Physical World		
	Chapter–2: Units and Measurements		
Unit-II	**Kinematics**	**16**	
	Chapter–3: Motion in a Straight Line		
	Chapter–4: Motion in a Plane		
Unit–III	**Laws of Motion**	**10**	
	Chapter–5: Laws of Motion		
Unit–IV	**Work, Energy and Power**	**12**	**15**
	Chapter–6: Work, Energy and Power		
Unit–V	**Motion of System of Particles and Rigid Body**	**16**	
	Chapter–7: System of Particles and Rotational Motion		
Unit-VI	**Gravitation**	**8**	
	Chapter–8: Gravitation		
Total		**68**	**35**

Syllabus assigned for first term

Unit I: Physical World and Measurement **6 Periods**

Chapter–1: Physical World

Physics-scope and excitement; nature of physical laws; Physics, technology and society. (To be discussed as a part of Introduction and integrated with other topics)

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 **16 Periods**

Chapter–3: Motion in a Straight Line

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 **10 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. (*Recapitulation only)

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, Energy 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 **16 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).

Unit VI: Gravitation **8 Periods**

Chapter–8: Gravitation

Universal law of gravitation. Acceleration due to gravity (recapitulation only) and its variation with altitude and depth.

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

Class XI (Theory) Term II

Time: 2hrs **Max Marks: 35**

Unit		**Periods**	**Marks**
Unit–VII	**Properties of Bulk Matter**	**22**	**23**
	Chapter–9: Mechanical Properties of Solids		
	Chapter–10: Mechanical Properties of Fluids		
	Chapter–11: Thermal Properties of Matter		
Unit–VIII	**Thermodynamics**	**10**	
	Chapter–12: Thermodynamics		
Unit–IX	**Behaviour of Perfect Gases and Kinetic Theory of Gases**	**08**	
	Chapter–13: Kinetic Theory		
Unit–X	**Oscillations and Waves**	**23**	**12**
	Chapter–14: Oscillations		
	Chapter–15: Waves		
	Total Marks	63	**35**

Syllabus assigned for Term II

Unit VII: Properties of Bulk Matter **22 Periods**

Chapter–9: Mechanical Properties of Solids

Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus

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, (recapitulation only) thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat capacity.

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

Unit VIII: Thermodynamics **10 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

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 **23 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, Beats

PRACTICALS

Syllabus for TERM I **Total Periods: 16**

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

Record of at least 4 Experiments, to be performed by the students

Record of at least 3 Activities [with 3 each from section A and section B], to be demonstrated by teacher.

Time Allowed: One and half hours **Max. Marks: 30**

Two experiments one from each section	**8Marks**
Practical record (experiment and activities)	2Marks
Viva on experiments, and activities	**5** Marks
Total	**15 Marks**

Syllabus assigned for Practical Term I

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 Calipers and hence find its volume.
2. To measure diameter of a given wire and thickness of a given sheet using screw gauge.

OR

To determine volume of an irregular lamina using screw gauge.

3. To determine radius of curvature of a given spherical surface by a spherometer.
4. To determine the mass of two different objects using a beam balance.
5. To find the weight of a given body using parallelogram law of vectors.
6. Using a simple pendulum, plot its L-T^2 graph and use it to find the effective length of second's pendulum.

OR

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.

7. 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.

OR

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 θ.

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.

Class XI Syllabus for TERM II **Total Periods: 16**

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

Record of at least 4 Experiments, to be performed by the students

Record of at least 3 Activities [with 3 each from section A and section B], to be demonstrated by teacher.

Time Allowed: One and half hours **Max. Marks: 30**

Two experiments one from each section	**8Marks**
Practical record (experiment and activities)	2Marks
Viva on experiments, and activities	**5** Marks
Total	**15 Marks**

Experiments

1. To determine Young's modulus of elasticity of the material of a given wire.

OR

To find the force constant of a helical spring by plotting a graph between load and extension.

2. 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.
3. To determine the surface tension of water by capillary rise method.

OR

To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.

4. To study the relationship between the temperature of a hot body and time by plotting a cooling curve.

5. To determine specific heat capacity of a given solid by method of mixtures.

6. To study the relation between frequency and length of a given wire under constant tension using sonometer.

OR

To study the relation between the length of a given wire and tension for constant frequency using sonometer.

7. 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 Practical's

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).

Physics Class XII (Code N. 042) (2020-21)

Syllabus assigned for Term I (Theory)

Time: 90 Minutes **Max Marks: 35**

		No. of Periods	Marks
Unit–I	**Electrostatics**	**23**	**17**
	Chapter–1: Electric Charges and Fields		
	Chapter–2: Electrostatic Potential and Capacitance		
Unit-II	**Current Electricity**	**15**	
	Chapter–3: Current Electricity		
Unit-III	**Magnetic Effects of Current and Magnetism**	**16**	**18**
	Chapter–4: Moving Charges and Magnetism		
	Chapter–5: Magnetism and Matter		
Unit-IV	**Electromagnetic Induction and Alternating Currents**	**19**	
	Chapter–6: Electromagnetic Induction Chapter 7: Alternating currents		
Total		**73**	**35**

Unit I: Electrostatics **23 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

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 **15 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; 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(**qualitative ideas only).** Potentiometer - principle and its applications to measure potential difference and for comparing EMF of two cells; measurement of internal resistance of a cell **(qualitative ideas only)**

Unit III: Magnetic Effects of Current and Magnetism 16 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. 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, bar magnet as an equivalent solenoid, magnetic field lines; earth's magnetic field and magnetic elements.

Unit IV: Electromagnetic Induction and Alternating Currents 19 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. AC generator and transformer.

Syllabus assigned for Practical for Term I

Total Periods:16

First term practical examination will be organised by schools as per the directions of CBSE. The record to be submitted by the students at the time of first term examination has to include a record of at least 4 Experiments and 3 Activities to be demonstrated by teacher.

Time Allowed: one and half hours **Max. Marks: 15**

Two experiments to be performed by students at time of examination	**8 marks**
Practical record [experiments and activities]	**2 marks**
Viva on experiments, **and** activities	**5 marks**
Total	**15 marks**

Experiments assigned for Term I

1. To determine resistivity of two / three wires by plotting a graph between potential difference versus current.
2. To find resistance of a given wire / standard resistor using metre bridge.

   OR

   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.
3. To compare the EMF of two given primary cells using potentiometer.

   OR

   To determine the internal resistance of given primary cell using potentiometer.
4. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.
5. 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.
6. To find the frequency of AC mains with a sonometer.

Activities assigned for Term I

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.

Class XII Syllabus assigned for Term II (Theory)

Time: 2 Hours **Max Marks: 35**

		No of Periods	Marks
Unit–V	**Electromagnetic Waves**	**02**	**17**
	Chapter–8: Electromagnetic Waves		
Unit–VI	**Optics**	**18**	
	Chapter–9: Ray Optics and Optical Instruments		
	Chapter–10: Wave Optics		
Unit–VII	**Dual Nature of Radiation and Matter**	**07**	**11**
	Chapter–11: Dual Nature of Radiation and Matter		
Unit–VIII	**Atoms and Nuclei**	**11**	
	Chapter–12: Atoms		
	Chapter–13: Nuclei		
Unit–IX	**Electronic Devices**	**07**	**7**
	Chapter–14: Semiconductor -Electronics: Materials, Devices and Simple Circuits		
Total		**45**	**35**

Unit V: Electromagnetic waves **2 Periods**

Chapter–8: Electromagnetic Waves

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 **18Periods**

Chapter–9: Ray Optics and Optical Instruments

Ray Optics: Refraction of light, total internal reflection and its applications, optical fibers, 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.

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

Unit VII: Dual Nature of Radiation and Matter **7 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

Unit VIII: Atoms and Nuclei **11Periods**

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 Nuclear force Mass-energy relation, mass defect, nuclear fission, nuclear fusion.

Unit IX: Electronic Devices **7 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.

Syllabus assigned for Practical for Term II

Total Periods: 16

The second term practical examination will be organised by schools as per the directions of CBSE and viva will be taken by both internal and external observers. The record to be submitted by the students at the time of second term examination has to include a record of at least 4 Experiments and 3 Activities to be demonstrated by teacher.

Evaluation Scheme

Time Allowed: one and half hours **Max. Marks: 15**

Two experiments to be performed by students at time of examination	**8 marks**
Practical record [experiments and activities]	**2 marks**
Viva on experiments, **and** activities	**5 marks**
Total	**15 marks**

Experiments assigned for Term-II

1. To find the focal length of a convex lens by plotting graphs between u and v or between 1/u and1/v.
2. To find the focal length of a convex mirror, using a convex lens.

   OR

   To find the focal length of a concave lens, using a convex lens.
3. To determine angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation.
4. To determine refractive index of a glass slab using a travelling microscope.
5. To find refractive index of a liquid by using convex lens and plane mirror.
6. To draw the I-V characteristic curve for a p-n junction diode in forward bias and reverse bias.

Activities assigned for Term-II

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.

Practical Examination for Visually Impaired Students of XII
Evaluation Scheme (Term I and Term II)

Time Allowed: one hour **Max. Marks:15**

Identification/Familiarity with the apparatus	3 marks
Written test (based on given/prescribed practicals)	5 marks
Practical Record	2 marks
Viva	5 marks
Total	**15 marks**

General Guidelines

- The practical examination will be of one 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 10 minutes duration.
- The question paper given to the students should be legibly typed. It should contain a total of 8 practical skill based very short answer type questions. A student would be required to answer any 5 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

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.

Experiments assigned for Term-I

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.

Experiments assigned for Term-II

1 To identify a resistor, capacitor, inductor and diode from a mixed collection of such items.

2 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.

3 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.

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