ST. XAVIER'S SCHOOL, DORANDA
Syllabus for the Academic Year(2023-24)
CLASS XII
Syllabus for ENGLISH I (Language)
FIRST TERMINAL

Composition
Grammar
Directed Writing- Speech, Article, Review Writing, Statement of Purpose, Profile Writing
Proposal Writing
Comprehension
Precis-Writing

ASSIGNMENT:

A. Write a Statement of Purpose to get admission in Somerset University to pursue English Honours mentioning reasons why you wish to take up this particular course.
B. Write a personal profile for your admission in the college of your choice stating clearly why the institution should choose you over other candidates.

Syllabus for ENGLISH II (Literature)

DRAMA: Shakespeare's- The Tempest - Act III
PROSE:
1. Fritz- Satyajit Ray
2. The Story of an Hour- Kate Chopin
3. Quality- John Galsworthy

POETRY:
The Darkling Thrush- Thomas Hardy
Birches- Robert Frost

ASSIGNMENT: Write on the content of imagination and reality in the poem 'Birches' by Robert Frost. (500 words)

Syllabus for Geography
<u>First Term</u>

1. **Physical Environment**
   (i) **Locational setting - India:** size and area. Present importance of the location of India with reference to the Indian Ocean Rim countries and the Northern and Western frontiers. Comparison with China and Australia.
   Extent, position with reference to latitude and longitude, length of coastline and frontiers with neighbouring countries. The locational advantages of India in the Indian Ocean and as a subcontinent.
   (ii) **Structure of India** – Geological formation, relief and drainage; major physiographic divisions and their characteristics.
   (a) Outline of the geological evolution and structure: basic definitions – geology, era, periods, physiography, geological structure, stratigraphy.
   *Names of the main Standard and Indian geological eras with reference to Indian Geology. Geological evolution of: the Peninsular Plateau, the Himalayas and the Great Plains. Difference between the Peninsular Plateau and the Himalayas. (The Geological rock formations of India are **not required**).*
   (b) The three-fold physiographic divisions: the Himalayan mountain complex, the Indus-Ganga-Brahmaputra Plains and the Peninsular Plateau.
   - ***Himalayan mountain complex: (orthoclinal structure)***
     The three parallel ranges, the northwest and northeast offshoots, comparison between Western and Eastern Himalayas.
     Regional divisions of the Himalayas (Kashmir/ Punjab Himalayas,Himalayas, Nepal

Himalayas, Assam Himalayas).

- ***Indus-Ganga-Brahmaputra Plains***
  The relief features – bhabar, tarai, bhangar, khaddar, bhur, barind, barkhans, doabs. Regional divisions of the plains: Rajasthan plain (the Great Indian desert), Punjab plain, Ganga plain, Brahamaputra/ Assam plain.).
- ***The Peninsular Plateau***
  The Malwa plateau, Chotanagpur Plateau and Deccan Plateau: the relief features - badland, Western Ghats, Eastern Ghats, Aravalis. Comparison between the Western Ghats and the Eastern Ghats.

The above three physical divisions are to be studied with reference to their extent, altitude, slope and landform characteristics.

- ***Coastal Plains***
  Comparison between Western and Eastern Coastal Plains and their divisions. The relief features: Lagoons, estuaries, deltas.
- ***Islands***
  Difference between Andaman and Nicobar and Lakshwadweep islands.

(a) *Drainage (i.e. rivers) and drainage systems: Names and sources of the main rivers and their major tributaries (Extent of river basin area **not required**).*
Comparison of Himalayan and Peninsular rivers.

2. Population and Human settlements.

(i) Population of India compared to six countries
- China, Australia, USA, Canada, Russia and Brazil.
*Population of India as compared to the other six countries with reference to percentage **of world population** and India's position in the world.*

(ii) National and State level patterns of population distribution.
Definition of census. Index of concentration (highest and lowest index of concentration as per the latest census), density of population – arithmetic and physiological.
Spatial distribution of population in India and explanation of the factors influencing it – landforms, climate, accessibility and level of development that result in this pattern. Comparison of the density at the State level and factors influencing it.

(iii) Pattern of population growth in the last three decades; implications for development.
Meaning of terminologies such as population, birth rate, death rate, population growth rate, natural growth rate and absolute growth of population, migratory growth, positive and negative growth.
Population growth of India at national level
– trends of 1921, 1951 and 1981 to the latest Census, absolute growth rate of population.
Demographic characteristics of India at the National level- birth rate, death rate, and natural growth rate from 1991 to the latest Census.
Drawing general conclusions about the:
Impact of rapid growth rate on economic development, on environment; need for planned development (to maintain the ecological balance).

(i) Migration trends over the last 25 years.
Explanation of the important terms – migration, commutation, out migration, in migration, step-wise migration and migrant, push and pull factors.
Types (National and International migration, inter migration and intra migration, urban migration and rural migration) and trends of migration.
Streams of migration: (rural-rural, rural- urban, urban-urban and urban-rural).
Causes for migration - natural, economic, political and social.
Comparing the consequences of each type of migration on cities and rural areas.

Syllabus for Political Science

SECTION A

Constitution and Government

1. Forms of Government MARCH

Totalitarian and Authoritarian States, Liberal Democratic State , Unitary and Federal States, Parliamentary and Presidential forms of government.

Meaning and features of Totalitarian State, Authoritarian State and Liberal Democratic State.

Comparison between Totalitarian and Authoritarian States. Historic and contemporary examples of each. Meaning and features of Unitary and Federal States with reference to U.K. as a Unitary state, U.S.A. as a Federal State and India as a federal state with subsidiary unitary features, comparison between unitary and federal state.

Meaning and features of Parliamentary and Presidential forms of government (U.K. and U.S.A.). Comparison between Parliamentary and Presidential forms of government.

2. Constitution APRIL

Meaning; kinds of Constitutions: Written and Unwritten, Rigid and Flexible, Enacted and Evolved: merits and demerits. Amending procedures; Conventions.

Meaning; kinds: *Written and Unwritten, Rigid and Flexible, Enacted and Evolved: merits, demerits of each. Is the difference between Written and Unwritten, Rigid and Flexible a real one?*

Amending procedures of the Constitutions of U.K., U.S.A and India. Conventions: meaning and examples with reference to U.K., U.S.A .and India. The importance of Conventions in U.K.

3.**Franchise and Representation**

JULY

Universal Adult Franchise; Methods of Election; Constituency; Minority Representation. Political Parties; Party System.

Universal Adult Franchise - meaning, reasons for widespread acceptance. Methods of Election: Direct and Indirect – meaning with examples.

Meaning of Constituency, Single member and Multi-member with examples.

First Past the Post System – meaning, merits and demerits.

Minority Representation - meaning, rationale (Why is it important for minorities to be represented properly).

Methods of Minority Representation:

Proportional Representation (List system and single transferable vote system), Cumulative Vote System, Nomination and Reservation.

Political Parties - meaning, definition and functions. Kinds – Single party, Bi-party, Multiparty system - meaning, merits and demerits.

Organs of the Government

4.The Legislature JULY

Functions of Legislature; Unicameral and Bicameral legislatures. The legislature in India and U.S.A. - a comparative study.

Meaning and functions of Legislature. Meaning of Unicameral and Bi-cameral legislature. The legislatures in India and U.S.A.- Composition (strength, method of election and tenure) and functions: legislative, constituent, executive (ways in which the legislature controls the executive), judicial, electoral and financial.

Composition and powers of the House of Representatives and the Senate, Lok Sabha and Rajya Sabha (including special powers). Unique powers of the Senate, why is the Senate considered the world's most powerful second chamber? Comparison of the Rajya Sabha and the U.S. Senate; Lok Sabha with the U.S. House of Representatives.

5. The Executive AUGUST

Functions; The Civil Services. Difference between the Political Executive and the Permanent Executive. Political Executive in India and U.S.A. - a comparative study.

Meaning, and functions of the Executive. Meaning and role of Civil Services. Difference between the Political and Permanent Executive in India. Political Executive in India and U.S.A. - a comparative study. Powers and functions of executive heads of India (President and Prime Minister), and U.S.A. (President). Constitutional limitations on the powers of the President of the USA.

Changing role of the Indian Prime Minister with reference to the past two decades.

6. The Judiciary SEPTEMBER

Meaning and functions of Judiciary. Conditions of Independence of Judiciary. Judiciary in India and U.S.A. - a comparative study. Judicial Review.

Meaning and functions of judiciary; conditions of independence of judiciary with reference to India and U.S.A. The Judiciary in India and U.S.A. – composition and powers of Indian Supreme Court and American Supreme Court. Judicial Review – meaning, principles (maxims) and critical evaluation with special reference to U.S.A. and India. Meaning of Judicial Activism and Judicial Restraint. Comparative study of Indian and US Supreme Courts - Which is most powerful and Why?

SECTION B

Indian Democracy

7. Indian Constitution MAY

(i) Preamble

Preamble and its importance. Meaning of the key words contained in the Preamble.

(ii) Salient features of the Indian Constitution.

Written and Comprehensive; *a Constitution drawn from several sources; Federal structure with Unitary spirit; Partly rigid and Partly flexible; Fundamental Rights and Duties; Directive Principles of State Policy; Parliamentary form of Government; Single Citizenship; Bi-cameral legislature; Universal Adult Franchise; Single Integrated and Independent Judiciary; Judicial Review; Emergency powers; Special provisions for Schedule castes and Schedule tribes.*

8. Fundamental Rights and Directive Principles JUNE

Fundamental Rights and Directive Principles of State Policy.

Fundamental Rights: meaning and importance of Fundamental Rights; detailed study of all Fundamental Rights in India.

Directive Principles of State Policy: meaning and purpose; classification, importance and implementation.

Relationship between Fundamental Rights and Directive Principles of State Policy.

9. Local self-government AUGUST

73rd and 74th Constitutional Amendment Acts.

Key features of the 73rd and 74th Amendments.11th and 12th schedules in brief.

Three tier systems of Panchayati Raj: Rural and Urban local bodies - their composition.

Challenges and solutions.

10. Democracy in India – a perspective of the challenges faced OCTOBER

(i) Challenges faced by the Indian Democracy: Caste, Communalism, Regionalism and Political Violence. Strengthening Indian Democracy.

Caste: meaning, role of caste in Indian

Politics.

Communalism: meaning and effects on the functioning of Indian democracy.

Regionalism: meaning and causes; kinds of regional aspirations (language issues, sonsof-the-soil policies, river water disputes, demand for new states, secessionist demands); responding to regionalism.

Political Violence: meaning, forms, causes and effects.

Strengthening Indian Democracy: measures to overcome the challenges faced by Indian Democracy.

Syllabus for Economics

Class- XII C/D (Commerce/ Humanities) Subject - ECONOMICS (856)			
S. No.	**Chapter**	**Estimated Month/s Required**	**Teacher's Name**
1	**MICROECONOMIC THEORY (40 Marks)**		
	(i) Demand	March	Mrs. Komal kalsi
	(ii) Elasticity of Demand	April	
	(iii) Supply	May	
	(iv) Market Mechanism	June	

	(v) Concepts of Production	June-July	
	(vi) Cost and Revenue	July-August	
	(vii) Main Market Forms and Equilibrium of a Firm	September	
	MACROECONOMICS (40 Marks)		
2	Theory of Income and Employment	August-September	Mr. S. K. Singh/ Ms. Sukriti Bagh
3	Money and Banking	March-April	
4	Balance of Payments and Exchange Rate	May-June-July	
5	Public Finance	October-November	
6	National Income	October-November	Mrs. Komal kalsi

Syllabus for Accounts

Class- XII C (Commerce) Subject - ACCOUNTS (858)			
S. No.	**Chapter**	**Estimated Month/s Required**	**Teacher's Name**
SECTION A: 60 Marks			
1	Partnership Accounts		
	A. Fundamentals of Partnership	March-April	Ms. Sukriti Bagh
	B. Goodwill	April	Ms. Ruchi
	C. Reconstitution of Partnership		
	I. Admission	May-June-July	
	II. Retirement and Death of a Partner	July-August	
	III. Dissolution of a Partnership Firm	August-September	
2	Joint Stock Company Accounts		Ms. Sukriti Bagh
	A. Issue of Shares	May-June	
	B. Issue of Debentures	July	
	C. Redemption of Debentures	August	
	D. Final Accounts of Companies	March	
SECTION B (MANAGEMENT ACCOUNTING): 20 Marks			
3	Financial Statement Analysis	October	Ms. Ruchi
4	Cash Flow Statement	September	Ms. Sukriti Bagh
5	Ratio Analysis	October-November	Ms. Ruchi
OR **SECTION C (COMPUTERISED ACCOUNTING): 20 Marks**			
6	Accounting Application of Electronic Spread Sheet	October	Ms. Sukriti Bagh
7	Database Management System (DBMS)	November	
	FIRST SELECTION TEST SYLLABUS-		
1	Partnership Accounts		
	A. Fundamentals of Partnership		

	B. Goodwill		
	C. Reconstitution of Partnership		
	I. Admission		
2	Joint Stock Company Accounts		
	A. Issue of Shares		
	D. Final Accounts of Companies		
	Second Selection Test Sullabus-		
	Full Syllabus		

Syllabus for Commerce

Class- XII C (Commerce) Subject - COMMERCE (857)			
S. No.	**Chapter**	**Estimated Month/s Required**	**Teacher's Name**
1	Business Environment	March-April	Mr. S. K. Singh
2	Financing		
	i) Capital	August	Ms. Ruchi
	ii) Sources of Finance for a joint stock company	September-October	
	iii) Banking	October-November	
3	Management		
	i) Management- Meaning, Nature and importance	March-April	Ms. Ruchi
	ii) Principles of Management	April	
	iii) Functions of Management and Coordination	May	
	iv) Planning	May	
	v) Organising	June	
	vi) Staffing	June	
	vii) Directing	June	
	viii) Controlling	July	
4	Marketing		
	i) Marketing- Concept and Function	May	Mr. S. K. Singh
	ii) Marketing Mix	June-July-August	
	iii) Consumer Protection	September-October	
	FIRST SELECTION TEST SYLLABUS-		
	Business Environment		
	Financing		
	i) Management- Meaning, Nature and importance		
	ii) Principles of Management		
	iii) Functions of Management and Coordination		
	iv) Planning		
	v) Organising		
	vi) Staffing		
	vii) Directing		

	Marketing		
	i) Marketing- Concept and Function		
	ii) Marketing Mix		
	Second Selection Test Sullabus-		
	Full Syllabus		

Syllabus for Chemistry

MARCH	***Anupama kiran***	**1. Solid state**
	Amrita Mukherjee	**2. Haloalkanes and Haloarenes**
APRIL	***Anupama kiran***	**3.Electrochemistry**
	Amrita Mukherjee	**4. Alcohols, Phenols and Ethers**
MAY, JUNE & JULY	***Anupama kiran***	**5. Kinetics&** **6. d- & f- blockelements**
	Amrita Mukherjee	**7. Aldehydes, Ketones and Carboxylic acids**
AUGUST	***Anupama kiran***	**8. Coordination Compounds**
	Amrita Mukherjee	**9. Organic compounds containing nitrogen**
SEPTEMBER	***Anupama kiran***	**10. Solution**
	Amrita Mukherjee	**11.Biomolecules**
OCTOBER	***Anupama kiran***	**12. Surface Chemistry** **13 . General principles and isolation of elements**
	Amrita Mukherjee	**14.Polymers**
NOVEMBER	***Anupama kiran***	**15. p- Block**
	Amrita Mukherjee	**16. Chemistry in everyday life**

Project file topic: " Batteries"

Syllabus for Biology

1ST SELECTION PORTION	**2ND SELECTION PORTION**
1. Reproduction In Organisms 2. Sexual Reproduction In Flowering Plants 3. Human Reproduction 4. Reproductive Health 5. Principles Of Inheritance And Variation 6. Evolution - Origin Of Life 7.Organisms And Populations 8.Ecosystem	1.Evolution -Evidences Of Evolution 2.Theories Of Evolution & Human Evolution 3. Molecular Basis Of Inheritance 4. Human Health And Disease 5. Strategies For Enhancement Of Food Production 6. Microbes In Human Welfare 7. Biotechnology – Principles And Process 8. Biotechnology And Its Applications 9.Ecosytem 9. Biodiversity And Conservation 10. Environmental Issue

PROJECT: "**SELECT ANY ONE TOPIC FROM THE LIST MENTIONED IN THE SYLLABUS OR CHOOSE ON YOUR OWN ANY RELEVANT/ CURRENT TOPIC.** "

MARCH -APRIL REPRODUCTION IN ORGANISMS
HUMAN REPRODUCTION
REPRODUCTIVE HEALTH
SEXUAL REPRODUCTION IN FLOWERING PLANTS
ORGANISMS AND POPULATIONS

MAY- JUNE SEXUAL REPRODUCTION IN FLOWERING PLANTS contd…
PRINCIPLES OF INHERITANCE AND VARIATION
MOLECULAR BASIS OF INHERITANCE
EVOLUTION – ORIGIN OF LIFE
ECOSYSTEM

SYLLABUS FOR FIRST SELECTION TEST (3rd JULY 2023)

1. Reproduction In Organisms
2. Sexual Reproduction In Flowering Plants
3. Human Reproduction
4. Reproductive Health
5. Principles Of Inheritance And Variation
6. Evolution - Origin Of Life
7. Organisms And Populations
8. Ecosystem

JULY - AUGUST MOLECULAR BASIS OF INHERITANCE
ECOSYSTEM (contd….)
EVOLUTION -EVIDENCES OF EVOLUTION
THEORIES OF EVOLUTION & HUMAN EVOLUTION

AUGUST -SEPTEMBER STRATEGIES FOR ENHANCEMENT OF FOOD PRODUCTION

MICROBES IN HUMAN WELFARE
HUMAN HEALTH AND DISEASES
BIODIVERSITY AND ITS CONSERVATION

OCTOBER - N**OVEMBER** MOLECULAR BASIS OF INHERITANCE (contd….)
ENVIRONMENTAL ISSUES
BIOTECHNOLOGY – PRINCIPLES AND PROCESS
BIOTECHNOLOGY AND ITS APPLICATIONS

SYLLABUS FOR SECOND SELECTION TEST (14 DECEMBER 2023)

1. Reproduction In Organisms
2. Sexual Reproduction In Flowering Plants
3. Human Reproduction
4. Reproductive Health
5. Human Health And Disease

6. Evolution - Origin Of Life
7. Evolution -Evidences Of Evolution
8.Theories Of Evolution – Human Evolution
9.Strategies For Enhancement Of Food Production
10. Principles Of Inheritance And Variation
11. Microbes In Human Welfare
12. Organism And Population
13.Molecular Basis Of Inheritance
14.Ecosystem
15.Biotechnology – Principles And Process
16.Biodiversity And Conservation
17.Biotechnology And Its Applications
18.Environmental Issue

Syllabus of Mathematics

S. No.	Months	Units	Chapters
1	March	Algebra	Matrices Determinant
2	April	Algebra Calculus	Determinant Continuity & Differentiability
3	May	Calculus	Differentiation
4	June	Section - B	Vectors
5	July	Section - B	Three - dimensional geometry
6	August	Algebra Calculus	Relation & Functions Inverse trigonometry function Application of derivative Indefinite Integrals
	Sept	Calculus	Definite Integrals Differential Equation
8	Oct	Section -B Section -A	Application of integral Probability
9	Nov	Section -c	Application of calculus in commerce and economics Linear Regression Linear Programming Problem
10	Dec	--	Revision

Mathematics Projects

This is to inform you that for the academic year 2023 – 2024 you have to prepare a project on the following topics. The work should not be a copy paste.

1. Using a graph to demonstrate a function which is invertible function. And
2. Using Vector Algebra, find the area of a parallelogram/triangle. Also, derive the area analytically and verify the same. Or
   Draw a rough sketch of Cost, average cost and marginal cost.

Note: There will be a Viva Voice.

Instructions for the project.

Kindly, follow these along with your ideas.

Topic 1:

1. What is the objective of the project?
2. Write the prerequisites knowledge required for the project.
3. Theory
4. Examples
5. Conclusion

Topic 2:

1. What is the objective of the project?
2. Write the prerequisites knowledge required for the project.
3. Theory
4. Examples
5. Conclusion
6. Acknowledgement
7. Bibliography.

General Instructions:

1) Use a **practical copy** for making the project. **Draw/paste the images** (if any) on the plane/blank(unruled) pages **only.**
2) Draw (if any)/ paste (pictures and graphs). Make it attractive by giving a single line border surrounding the pictures.
3) Give the **caption** for the diagrams/ graphs/ pictures at the bottom of the diagrams/ graphs/pictures and **underline it.**
4) Use a **pencil** to write the caption. **Do not use the pen on the unruled (plane) pages.**
5) Use only a **BLUE** or a **BLACK** ball/ gel pen for writing the body of the project. You can use any colour pen, glitter pen, sketch pen etc. for design purpose.
6) Overwriting, scribbling and use of the whitener will result in deduction of marks. It may also lead you to prepare once again the project.
7) Write in your handwriting in the practical copy. **Typed work will not be accepted.**
8) **Cover page should contain the details such as, School name, Mathematics Project, Session, Submitted to, Submitted by: (your details)**
9) **Cover your copy with Yellow chart paper and Cellophane i.e. transparent plastic.**

1st page: Topic 1
2nd page: Index (**with page number**)
3rd page: Objectives
4th page: Prerequisites
5th page: Introduction (Theory) + body of the project + examples (**9 pages only**)
13th page: **Conclusion**
14th page: Topic 2
15th page: Objectives
16th page: Prerequisites
17th page: Introduction (Theory) + body of the project + examples (**9 pages only**)
25th page: **Conclusion**
26th page: Acknowledgement
27th page: Bibliography
28th and 29th page: **Prepare a table to mention the total no. of graphs, figs., pics added in the project.**

Mathematics Assignment

Kindly, solve the following problems in your Math HW/Test copy only.

Date of submission: June 16, 2023.

Question 1:

Use matrix method to show that the system of equations

$$2x + 5y = 7\,,$$
$$6x + 15y = 13$$

is inconsistent.

Question 2:

Find the adjoint and inverse of the matrix, A = $\begin{bmatrix} 2 & -3 \\ -4 & 7 \end{bmatrix}$

Question 3:

Using the concept of matrix/determinants show that the points A(a, b + c), B(b, c + a) and C(c, a + b) are collinear.

Question 4:

Find the equation of the line joining the points A(1,2) and B(3,6) using determinants.

Question 5:

Prove that $\begin{vmatrix} \frac{1}{a} & a^2 & bc \\ \frac{1}{b} & b^2 & ca \\ \frac{1}{c} & c^2 & ab \end{vmatrix} = 0$

Question 6:

If $A = \begin{bmatrix} 1 & 0 \\ -1 & 7 \end{bmatrix}$, find k, so that $A^2 = 8A + kI$

Question 7:

Show that the function

$$F(x) = \begin{cases} 3x - 2, & when\, x \le 0 \\ x + 1, & when\, x > 0 \end{cases}$$

is discontinuous at $x = 0$

Question 8:

If $F(x) = \begin{cases} \frac{x^2 - 2x - 3}{x+1}, & x \neq -1 \\ k\ , & x = -1 \end{cases}$; find k so that the function f may be continuous at $x = -1$

Question 9:

Examine the continuity, of the function $f(x) = \sqrt{x - 1}$.

Question 10:

For what choice of 'a' and 'b' is the function

$$f(x) = \begin{cases} x^2\ , & x \le c \\ ax + b\ , & x > c \end{cases}$$ differentiable at $x = c$?

Syllabus of Computer Science

MONTH	TOPICS
May-June	**Numbers** Representation of numbers in different bases and interconversion between them (e.g. binary, octal,decimal, hexadecimal). Addition and subtractionoperations for numbers in different bases.Binary encodings for integers and real numbers using a finite number of bits (sign magnitude,twos complement, mantissa exponent notation). Basic operations on integers and floating point numbers.Limitations of finite representations.

July	**Propositional logic, hardware implementation,** **arithmetic operations** (a) Propositional logic, well formed formulae,truth values and interpretation of well formed formulae, truth tables.(b) Logic and hardware, basic gates (AND, NOT, OR) and their universality, other gates(NAND, NOR, XOR); inverter, half adder, full adder. **Primitive values, wrapper classes, types and Casting** Primitive values and types: int, short, long, float,double, boolean, char. Corresponding wrapperclasses for each primitive type. Class as type ofthe object. Class as mechanism for user definedtypes. Changing types through user definedcasting **Variables, expressions** Variables as names for values; expressions(arithmetic and logical) and their evaluation (operators, associativity, precedence). Assignment operation; difference between left hand side and right hand side of assignment.
August	**Use of Decision making statements** jumping and branching, various forms of if..else, if..else.,switch..case **Loops** : Use of for loop, while loopUse of do..while in making java program both known and unknown iterations. Program based on series, Pattern, number system ,general questions.
September 1st Term	**Functions** : Use of functions, types, parts, function parameters, passing parameters by values.(programming and theoretical examples)
October	**Using Library Classes** Simple input/output. String, packages and import statements.libraries and illustrating their use. The following functions have to be covered String library functions: Char charAt (unti),intcompareTo(String1, String2)String concat(String str) booleanendsWith(String str)boolean equals(String str)booleanequalsIgnoreCase(String str)intindexOf(char ch)intlastIndexOf(char ch)int length( )String replace (char oldChar,charnewChar)booleanstartsWith(String str)String substring(intbeginIndex, intendIndex)String toLowerCase( )String toUpperCase( )String trim( )String valueOf(all types), toString()Mathematical Library Functions:pow(x,y), log(x), sqrt(x), ceil(x), floor(x), rint(x),abs(a), max(a, b), min(a,b), random( ), sin(x), cos(x),tan(x), asin(), acos(), atan().
November	**Constructors** Constructor and its types. Default constructor, parameterized constructor, constructor with default parameter and constructor overloading
December	**Arrays** Arrays storing, retrieving and arranging data, Arrays and their uses, sorting algorithms - selection sort and bubble sort; Search algorithms œ linear search and binary search Example of a composite type. Array creation. Sorting and searching algorithms should be discussed
January	**Ethical Issues in computing** : intellectual property rights, protection of individual rights to privacy, data protection on the internet, protection against spam, software piracy, cyber crime, hacking, protection against malicious intent and malicious code.
February	Final Term

PHYSICS Investigative/Experimental Projects For (Class XII) ISC Batch – 2022-2024

Projects on Electrostatics

- ➢ To investigate how a series of capacitors charges and discharges in R-C Circuit
- ➢ To Research and Build a Capacitor Storage Circuit LED
- ➢ To Research and Build a Capacitor Charge Oscillator Circuit to Research the Electric Dipole Moment:
- ➢ To examine and contrast the two capacitors when used in series and parallel

Projects on Magnetic Effects Of Current

- ➢ To research the impact of applied voltage and magnetic field
- ➢ To Research the Bar Magnet as a Comparative Solenoid
- ➢ To research using magnetic levitation in elevators
- ➢ Moving Coil Galvanometer to Study the Magnetic Force on the Current-Carrying Conductor
- ➢ To investigate the torque that a current loop experiences in a consistent magnetic field.
- ➢ To study the magnetic force between two parallel current- carrying conductors by experimenting with magnetic field lines surrounding them.

Projects on OPTICS

- ➢ To Study the Phenomenon Of Diffraction Of light
- ➢ To Study the Law Of Polarization Of light
- ➢ To Study Double Slit Interference
- ➢ Finding Refractive Indices Of water and Oil using a plane mirror and lens of known indices
- ➢ Study of the intensity of light through many Polarizers at various angles
- ➢ By Using laser light scattering determine the type of Particle in an Air Sample

Projects on Electromagnetic Induction And Alternating Currents

- ➢ To Research AC/DC converter (Full wave Rectifier)
- ➢ To Research the self designed Transformer concept
- ➢ To research using magnetic levitation in elevators
- ➢ To research and Measure the AC current Strength
- ➢ To investigate the Magnetic induction in an AC Generator

Projects on CURRENT Electricity

- ➢ Future Of Electricity : A study Of Wireless Energy
- ➢ Studying the Operation of wheatstone bridge Circuit and its use
- ➢ To Study the variation of electrical resistance variation
- ➢ To Research Current variation Using an LDR

Suggested Evaluation Criteria for Theory Based Projects:

▪ Title of the Project
▪ Introduction
▪ Contents
▪ Analysis/ material aid (graph, data, structure, pie charts, histograms, diagrams, etc.)
▪ Originality of work (the work should be the candidates' original work,)
▪ Conclusion/comments

Suggested Evaluation Criteria for Model Based Projects:

▪ Title of the Project
▪ Model construction
▪ Concise Project report

Suggested Evaluation Criteria for Investigative Projects:

▪ Title of the Project
▪ Theory/principle involved
▪ Experimental setup
▪ Observations calculations/deduction and graph work
▪ Result/ Conclusions

Important note : Originality of the work means HANDWRITTEN.
Typed Projects will NOT be accepted