ST.THOMAS SCHOOL

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CLASS-X

SYLLABUS

(2025-26)

Subject	UT-I	Half-Yearly Exam		Pre - Board Exam
			Project	
English Language	1.Grammar: i. Phrasal Verbs, ii.Transformation of Sentences 2. Letter Writing i.Formal Letter ii.Informal Letter 3.Notice and Email	**1. Composition** i. Story Writing ii. Descriptive iii. Narrative iv. Debate v. Picture Composition **2. Letter Writing** i. Formal Letter ii. Informal Letter **3. Notice and Email** **4. Unseen Passage/Poem** **5. Grammar** i. Subject Verb Concord ii. Phrasal Verbs iii. Sentence Synthesis [MCQ'S] iv. Sentence Transformation [MCQ'S]	1.You had participated in a musical festival and stayed in a hotel in Goa. While checking out, you forgot your guitar at the hotel. Write a letter to the manager of the hotel, requesting him to locate the guitar and if he succeeds, to send you through courier. Give relevant details which you think will assist in tracing the instrument.	**1. Composition** i. Story Writing ii. Descriptive iii. Narrative iv. Debate v. Picture Composition **2. Letter Writing** i. Formal Letter ii. Informal Letter **3. Notice and Email** **4. Unseen Passage/Poem** **5. Grammar** i. Subject Verb Concord ii. Phrasal Verbs iii. Sentence Synthesis [MCQ'S] iv. Sentence Transformation [MCQ'S]
			2. The Residents' Welfare Association (RWA) of your colony is organising a 'Dental Check-up Camp' for the residents of that area. Write a notice to be put up outside the RWA office informing them about the event and inviting them to get their dental check-up done. 3.Write an email to the Superintendent of a hospital in your area requesting him/her to send a team of dentists to conduct the Dental Check-up Camp. 4.Write a self-composed story of not more than 300 words.You will even have to learn this story for your oral assessment during invigilation by externals.iv. Sentence Transformation [MCQ'S]	

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English Literature	Treasure Chest: Poetry 11. The Haunted Houses Treasure Chest: Prose 11. With the Photographer Julius Caesar: Play - Act-3 Scene-1, 2, 3	**Treasure Chest**: Poetry 11- Haunted Houses Poetry 12- The Glove and the Lion Poetry 13- When Great Trees Fall **Treasure Chest**- Prose 11- With the Photographer Prose 12- The Elevator Prose 13- The Girl Who Can **Julius Caesar**- Act 4, Scene-1 **Julius Caesar**- Act 4, Scene-2 **Julius Caesar**- Act 4, Scene-3	*Prose:* Paraphrase the prose "With the Photographer" by Stephen Leacock maintaining its original meaning. *Poetry:* Give the thematic analysis of the poem "Haunted Houses" by H W Longfellow. *Play:* Assume the persona of one of the characters from Julius Caesar, Act 3 and record a diary entry of a particular incident. Note: The project is to be prepared on interleaf pages in a Thread File. The total content of complete Literature project must not exceed 1500 words. Paste the picture of the author and the poet on the plane side of the sheet.	**Treasure Chest-** Poetry 11- The Haunted Houses Poetry 12- The Glove and the Lion Poetry 13- When Great Trees Fall Poetry 14- A Considerable Speck Poetry 15- The Power of Music **Treasure Chest-** Prose 11- With the Photographer Prose 12- The Elevator Prose 13- The Girl Who Can Prose 14- The Pedestrian Prose 15- The Last Lesson **Julius Caesar**- Act 3 **Julius Caesar**- Act 4 **Julius Caesar**- Act 5

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Hindi	पाठ 5. अपना अपना भाग्य पाठ 6 बड़े घर की बेटी पाठ 7 संदेह 'खण्ड क'- लेखन भाग- प्रस्ताव लेखन,पत्र (औपचारिक एवं अनौपचारिक)अपठित गद्यांश, व्यावहारिक व्याकरण :-एकार्थी शब्द समोच्चारित , भिन्नार्थक, विराम-चिन्ह ,उपसर्ग, प्रत्यय ।लिंग,भाववाचक संज्ञा, पर्यायवाची,विपरीतार्थक शब्द, वाक्य विचार, विशेषण , तत्सम- तद्भव शब्द, अशुद्ध-शुद्ध शब्द, मुहावरे , वाक्यांश के लिए एक शब्द , विराम चिन्ह , लोकोक्ति ,विकारी-शब्द, विराम-चिन्ह ,उपसर्ग, प्रत्यय	खण्ड क'- लेखन भाग- प्रस्ताव लेखन,पत्र (औपचारिक एवं अनौपचारिक)अपठित गद्यांश, व्यावहारिक व्याकरण :-एकार्थी शब्द समोच्चारित , भिन्नार्थक, विराम-चिन्ह ,उपसर्ग, प्रत्यय ।लिंग,भाववाचक संज्ञा, पर्यायवाची,विपरीतार्थक शब्द, वाक्य विचार, विशेषण , तत्सम- तद्भव शब्द, अशुद्ध-शुद्ध शब्द, मुहावरे , वाक्यांश के लिए एक शब्द , विराम चिन्ह , लोकोक्ति ,विकारी-शब्द, विराम-चिन्ह ,उपसर्ग, प्रत्यय।(समस्त बोर्ड पाठ्यक्रमानुसार) 'खण्ड ख'-(गद्य)-संक्षिप्त कहानियाँ-पाठ-1 बात अठन्नी की लेखक-सुदर्शन पाठ-2 काकी लेखक- सियारामशरण गुप्त पाठ-3महायज्ञ का पुरस्कार लेखक- 'यशपाल' पाठ-4नेताजी का चश्मा लेखक-स्वयं प्रकाश पाठ-5 अपना-अपना भाग्य लेखक-जैनेंद्र कुमार पाठ-6बड़े घर की बेटी लेखक-प्रेमचंद पाठ-7संदेह लेखक-'जयशंकर प्रसाद'	"2.आभार 3.विषय सूची 1.हिंदी भाषा क)चित्र लेखन (2.5page) ख)प्रस्ताव लेखन (सूक्ति पर आधारित नैतिक कहानी लिखिए) 3page ग)पत्र (औपचारिक और अनौपचारिक) घ)मुहावरे (साहित्य सागर पाठ्यपुस्तिका में से,शरीर के अंगों पर आधारित खाद्य सामग्री पर आधारित)-30 मुहावरे(अर्थ एवं वाक्य प्रयोग) हिंदी साहित्य गद्य भाग i)कहानी का नाम- भेड़ें और भेड़िए कहानीकार का नाम - हरिशंकर परसाई (दो कहानियों का) क)कहानी का सारांश ख)कहानीकार का परिचय ग)शीर्षक की सार्थकता घ)मुख्य पात्रों का चरित्र चित्रण- पद्य भाग कविता का नाम - भिक्षुक कवि- सूर्यकांत त्रिपाठी निराला'	खण्ड क'- लेखन भाग- प्रस्ताव लेखन,पत्र (औपचारिक एवं अनौपचारिक)अपठित गद्यांश, व्यावहारिक व्याकरण :-एकार्थी शब्द समोच्चारित , भिन्नार्थक, विराम-चिन्ह ,उपसर्ग, प्रत्यय ।लिंग,भाववाचक संज्ञा, पर्यायवाची,विपरीतार्थक शब्द, वाक्य विचार, विशेषण , तत्सम- तद्भव शब्द, अशुद्ध-शुद्ध शब्द, मुहावरे , वाक्यांश के लिए एक शब्द , विराम चिन्ह , लोकोक्ति ,विकारी-शब्द, विराम-चिन्ह ,उपसर्ग, प्रत्यय।(समस्त बोर्ड पाठ्यक्रमानुसार) 'खण्ड ख'-(गद्य)-संक्षिप्त कहानियाँ- पाठ-1 बात अठन्नी की लेखक-सुदर्शन पाठ-2 काकी लेखक- सियारामशरण गुप्त पाठ-3महायज्ञ का पुरस्कार लेखक- 'यशपाल' पाठ-4नेताजी का चश्मा लेखक-स्वयं प्रकाश पाठ-5 अपना-अपना भाग्य लेखक-जैनेंद्र कुमार पाठ-6बड़े घर की बेटी लेखक-प्रेमचंद पाठ-7संदेह लेखक-'जयशंकर प्रसाद' पाठ-8भीड़ में खोया आदमी लेखक-'लीलाधर शर्मा पर्वतीय'

		पाठ-8भीड़ में खोया आदमी लेखक-'लीलाधर शर्मा पर्वतीय' पाठ-9 भेड़ें और भेड़िए लेखक 'हरिशंकर परसाई'। (पद्य) पाठ-1साखी कवि 'कबीरवास' पाठ-2 गिरिधर की कुंडलियाँ कवि 'गिरिधर कविराय' पाठ-3 स्वर्ग बना सकते हैं कवि 'रामधारी सिंह 'दिनकर' पाठ-4वह जन्मभूमि मेरी कवि 'सोहनलाल द्विवेदी' पाठ-5 मेघ आए कवि 'सर्वेश्वर दयाल सक्सेना' पाठ-6 सूर के पद कवि 'सूरदास'। पाठ-7विनय के पद कवि 'तुलसीदास ' पाठ-8भिक्षुक कवि सूर्यकांत त्रिपाठी 'निराला' पाठ-9चलना हमारा काम है। कवि- 'शिवमंगल सिंह 'सुमन'	(दो कविताओं का) क)कवि का परिचय ख)कविता का उद्देश्य ग)कविता का भावार्थ घ)कवि की अन्य एक कविता । ङ)सहायक ग्रंथ "	पाठ-9 भेड़ें और भेड़िए लेखक 'हरिशंकर परसाई'। पाठ-10 दो कलाकार लेखक-मन्नू भंडारी। (पद्य) पाठ-1साखी कवि 'कबीरवास' पाठ-2 गिरिधर की कुंडलियाँ कवि 'गिरिधर कविराय' पाठ-3 स्वर्ग बना सकते हैं कवि 'रामधारी सिंह 'दिनकर' पाठ-4वह जन्मभूमि मेरी कवि 'सोहनलाल द्विवेदी' पाठ-5 मेघ आए कवि 'सर्वेश्वर दयाल सक्सेना' पाठ-6 सूर के पद कवि 'सूरदास'। पाठ-7विनय के पद कवि 'तुलसीदास ' पाठ-8भिक्षुक कवि सूर्यकांत त्रिपाठी 'निराला' पाठ-9चलना हमारा काम है। कवि- 'शिवमंगल सिंह 'सुमन' पाठ-10मातृ मंदिर की ओर' कवि सुभद्रा कुमारी चौहान।

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Mathematics	**Commercial Mathematics** (i) Goods and Services Tax (GST) Computation of tax including problems involving discounts, list-price, profit, loss, basic/cost price including inverse cases. Candidates are also expected to find price paid by the consumer after paying State Goods and Service Tax (SGST) and Central Goods and Service Tax (CGST) the different rates as in vogue on different types of items will be provided. Problems based on corresponding inverse cases are also included.	**1. Commercial Mathematics** (i) Goods and Services Tax (GST) Computation of tax including problems involving discounts, list-price, profit, loss, basic/cost price including inverse cases. Candidates are also expected to find price paid by the consumer after paying State Goods and Service Tax (SGST) and Central Goods and Service Tax (CGST) the different rates as in vogue on different types of items will be provided. Problems based on corresponding inverse cases are also included. **(ii) Banking** Recurring Deposit Accounts: computation of interest and maturity value using the **(iii) Shares and Dividends** (a) Face/Nominal Value, Market Value, Dividend, Rate of Dividend, Premium. (b) Formulae Income dividend number of shares rate of FV. Return (Income / Investment) 100. Note: Brokerage and fractional shares not included.	Prepare the project file on the budget planning of 10 families including GST.	Complete Syllabus

	(ii) Banking Recurring Deposit Accounts: computation of interest and maturity value using the	**2. Algebra** **(i) Linear Inequations** Linear Inequations in one unknown for Solving Algebraically and writing the solution in set notation form. Representation of solution on the number line. (ii) **Quadratic Equations in one variable** (a) Nature of roots Two distinct real roots if b2−4ac>0 Two equal real roots if b2−4ac=0 No real roots if b2−4ac<0 (b) Solving Quadratic equations by: Factorisation Using Formula. (c) Solving simple quadratic equation problems. **(iii) Ratio and Proportion** (a) Proportion, Continued proportion, mean proportion (b) Componendo, dividendo, alternendo, invertendo properties and their combinations. (c) Direct simple applications on proportions only. **(iv) Factorisation of polynomials:** (a) Factor Theorem. (b) Remainder Theorem. (c) Factorising a polynomial completely after obtaining one factor by factor theorem. Note: f(x) not to exceed degree 3. **(v) Matrices** (a) Order of a matrix. Row and column matrices. (b) Compatibility for addition multiplication. (c) Null and Identity matrices. and (d) Addition and subtraction of 2×2 matrices. (e) Multiplication of a 2×2 matrix by a non-zero rational number a matrix. **(vi) Arithmetic and Geometric Progression** Finding their General term. Finding Sum of their first n' terms. Simple Applications. (vii) **Co-ordinate Geometry** (a) **Reflection** (i) **Reflection of a point in a line**: x=0 y=0, x=a y=a, the origin.		

		(ii) Reflection of a point in the origin. (iii) Invariant points. (b) Co-ordinates expressed as (x,y), Section formula, Midpoint formula, Concept of slope, equation of a line, Various forms of straight lines. (i) Section and Mid-point formula (Internal section only, co-ordinates of the centroid of a triangle included). (ii) Equation of a line:		
		5. Trigonometry (a) Using Identities to solve/prove simple algebraic trigonometric expressions (b) Heights and distances: Solving 2-D problems involving angles of elevation and depression using trigonometric tables. Note: Cases involving more than two right angled triangles excluded.		
		6. Statistics Statistics basic concepts, Mean, Median, Mode. Histograms and Ogive. (a) Computation of: Measures of Central Tendency: Mean, median, mode for raw and arrayed data. Mean*, median class and modal class for grouped data. (both continuous and discontinuous).		

		6. Statistics Statistics basic concepts, Mean, Median, Mode. Histograms and Ogive. (a) Computation of: **Measures of Central Tendency**: Mean, median, mode for raw and arrayed data. Mean*, median class and modal class for grouped data. (both continuous and discontinuous). ● **Mean by all 3 methods included: Direct method Short-cut method Step-deviation method** (b) **Graphical Representation**. Histograms and Less than Ogive. Finding the mode from the histogram, the upper quartile, lower Quartile and median etc. from the ogive. Calculation of inter Quartile range. 7. **Probability** Random experiments, Sample space, Events, definition of probability, Simple problems on single events		

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PHYSICS	(i) Refraction of light through a glass block and a triangular prism qualitative treatment of simple applications such as real and apparent depth of objects in water and apparent bending of sticks in water. Applications of refraction of light. Partial reflection and refraction due to change in medium. Laws of refraction; the effect on speed (V), wavelength ( ) and frequency (f) due to refraction of light; conditions for a light ray to pass undeviated. Values of speed of light (c) in vacuum, air, water and glass; refractive index . Values of for common substances such as water, glass and diamond; experimental verification; refraction through glass block; lateral displacement; multiple images in thick glass plate/mirror; refraction through a glass prism, simple applications: real and apparent depth of objects in water; apparent bending of a stick under water.	(i) Refraction of light through a glass block and a triangular prism qualitative treatment of simple applications such as real and apparent depth of objects in water and apparent bending of sticks in water. Applications of refraction of light. Partial reflection and refraction due to change in medium. Laws of refraction; the effect on speed (V), wavelength ( ) and frequency (f) due to refraction of light; conditions for a light ray to pass undeviated. Values of speed of light (c) in vacuum, air, water and glass; refractive index . Values of for common substances such as water, glass and diamond; experimental verification; refraction through glass block; lateral displacement; multiple images in thick glass plate/mirror; refraction through a glass prism, simple applications: real and apparent depth of objects in water; apparent bending of a stick under water.	Not Required	Complete Syllabus
	(ii) Total internal reflection: Critical angle; examples in triangular glass prisms; comparison with reflection from a plane mirror (qualitative only). Applications of total internal reflection. Transmission of light from a denser medium (glass/water) to a rarer medium (air) at different angles of incidence; critical angle (C) μ=1/sin C. Essential conditions for total internal reflection. Total internal reflection in a triangular glass prism; ray diagram, different cases - angles of prism use of right angle prism to obtain (ray diagram); comparison of total internal reflection from a prism and reflection from a plane mirror.	(ii) Total internal reflection: Critical angle; examples in triangular glass prisms; comparison with reflection from a plane mirror (qualitative only). Applications of total internal reflection. Transmission of light from a denser medium (glass/water) to a rarer medium (air) at different angles of incidence; critical angle (C) μ=1/sin C. Essential conditions for total internal reflection. Total internal reflection in a triangular glass prism; ray diagram, different cases - angles of prism use of right angle prism to obtain (ray diagram); comparison of total internal reflection from a prism and reflection from a plane mirror.		

	(iii) Lenses (converging and diverging) including characteristics of the images formed (using ray diagrams only); magnifying glass; location of images using ray diagrams and thereby determining magnification. Types of lenses (converging and diverging), convex and concave, action of a lens as a set of prisms; technical terms; centre of curvature, radii of curvature, principal axis, foci, focal plane and focal length; detailed study of refraction of light in spherical lenses through ray diagrams; formation of images principal rays or construction rays; location of images from ray diagram for various positions of a small linear object on the principal axis; characteristics of images. Sign convention and direct numerical problems using the lens formula are included (derivation of formula not required). Scale drawing or graphical representation of ray diagrams not required. Power of a lens (concave and convex) [simple direct numerical problems]: magnifying glass or simple microscope: location of image and magnification from ray diagram only [formula and numerical problems not included]. Applications of lenses.	(iii) Lenses (converging and diverging) including characteristics of the images formed (using ray diagrams only); magnifying glass; location of images using ray diagrams and thereby determining magnification. Types of lenses (converging and diverging), convex and concave, action of a lens as a set of prisms; technical terms; centre of curvature, radii of curvature, principal axis, foci, focal plane and focal length; detailed study of refraction of light in spherical lenses through ray diagrams; formation of images principal rays or construction rays; location of images from ray diagram for various positions of a small linear object on the principal axis; characteristics of images. Sign convention and direct numerical problems using the lens formula are included (derivation of formula not required). Scale drawing or graphical representation of ray diagrams not required. Power of a lens (concave and convex) [simple direct numerical problems]: magnifying glass or simple microscope: location of image and magnification from ray diagram only [formula and numerical problems not included]. Applications of lenses.		
		(iv) Using a triangular prism to produce a visible spectrum from white light; Electromagnetic spectrum. Scattering of light. Deviation produced by a triangular prism; dependence on colour (wavelength) of light; dispersion and spectrum; electromagnetic spectrum: broad classification (names only arranged in order of increasing wavelength); properties common to all electromagnetic radiations; properties and uses of infrared and ultraviolet radiation. Simple application of scattering of light e.g. blue colour of the sky.		

		Sound (i) Reflection of Sound Waves; echoes: their use; simple numerical problems on echoes. Production of echoes, condition for formation of echoes; simple numerical problems; use of echoes by bats, dolphins, fishermen, medical field. SONAR. (ii) Natural vibrations, Damped vibrations, Forced vibrations and Resonance a special case of forced vibrations. Meaning and simple applications of natural, damped, forced vibrations and resonance. (iii) Loudness, pitch and quality of sound: Characteristics of sound: loudness and intensity; subjective and objective nature of these properties; sound level in decibel(dB) (as unit only); noise pollution; interdependence of: pitch and frequency; quality and waveforms (with examples).		
		Electricity and Magnetism : (i) Ohm's Law; concepts of emf, potential difference, resistance; resistances in series and parallel, internal resistance. Concepts of pd (V), current (I), resistance (R) and charge (Q). Ohm's law: statement, V=IR, Sl units; experimental verification; graph of V vs I and resistance from slope; ohmic and non-ohmic resistors, factors affecting resistance (including specific resistance) and internal resistance; super conductors, electromotive force (emf); combination of resistances in series and parallel and derivation of expressions for equivalent resistance. Simple numerical problems using the above relations. [Simple network of resistors].		

		Electricity and Magnetism : (ii) Electrical power and energy. Electrical energy; examples of heater, motor, lamp, loudspeaker, etc. Electrical power; measurement of electrical energy, W=QV= VIt from the definition of pd. Combining with ohm's law and electrical power P. Units: SI and commercial; Power rating of common appliances, household consumption of electric energy; calculation of total energy consumed by electrical appliances; W=Pt (kilowatt hour = kWh), [simple numerical problems].		
		Electricity and Magnetism : (iii) Household circuits main circuit; switches; fuses; earthing; safety precautions; three-pin plugs; colour coding of wires. House wiring (ring system), power distribution; main circuit (3 wires-live, neutral, earth) with fuse / MCB, main switch and its advantages - circuit diagram; two- way switch, staircase wiring, need for earthing, fuse, 3-pin plug and socket; Conventional location of live, neutral and earth points in 3 pin plugs and sockets. Safety precautions, colour coding of wires.		

		Electricity and Magnetism : (iv) Magnetic effect of a current (principles only, laws not required); electromagnetic induction (elementary); transformer. Oersted's experiment on the magnetic effect of electric current; magnetic field (B) and field lines due to current in a straight wire (qualitative only), right hand thumb rule magnetic field due to a current in a loop; Electromagnets: their uses; comparisons with a permanent magnet; Fleming's Left Hand Rule, the DC electric motor- simple sketch of main parts (coil, magnet, split ring commutators and brushes); brief description and type of energy transfer(working not required): Simple introduction to electromagnetic induction; frequency of AC in house hold supplies, Fleming's Right Hand Rule, AC Generator Simple sketch of main parts, brief description and type of energy transfer(working not required). Advantage of AC over DC. Transformer- its types, characteristics of primary and secondary coils in each type (simple labelled diagram and its uses).		

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			Project	
Chemistry	1. Periodic Properties and variations of Properties – Physical and Chemical (i) Periodic properties and their variations in groups and periods. Definitions and trends of the following periodic properties in groups and periods should be studied: • atomic size • metallic character • non-metallic character • ionisation potential • electron affinity • electronegativity (ii) Periodicity on the basis of atomic number for elements. • The study of modern periodic table up to period 3 (students to be exposed to the complete modern periodic table but no questions will be asked on elements beyond period 3 – Argon); • Periodicity and other related properties to be explained on the basis of nuclear charge and shells (not orbitals). (Special reference to the alkali metals and halogen groups)	**(Including UT-I syllabus)** **4. Analytical Chemistry-** (i) Action of Ammonium Hydroxide and Sodium Hydroxide on solution of salts: colour of salt and its solution; formation and colour of hydroxide precipitated for solutions of salts of Ca, Fe, Cu, Zn and Pb; special action of ammonium hydroxide on solutions of copper salt and sodium hydroxide on ammonium salts. On solution of salts: • Colour of salt and its solution. • Action on addition of Sodium Hydroxide to solution of Ca, Fe, Cu, Zn, and Pb salts drop by drop in excess. Formation and colour of hydroxide precipitated to be highlighted with the help of equations. • Action on addition of Ammonium Hydroxide to solution of Ca, Fe, Cu, Zn, and Pb salts drop by drop in excess. Formation and colour of hydroxide precipitated to be highlighted with the help of equations.		**(Including Half-Yearly Syllabus)** **7. Metallurgy-** (i) Occurrence of metals in nature: • Mineral and ore - Meaning only. • Common ores of iron, aluminium and zinc. (ii) Stages involved in the extraction of metals. (a) Dressing of the ore – hydrolytic method, magnetic separation, froth flotation method. (b) Conversion of concentrated ore to its oxide- roasting and calcination (definition, examples with equations). (c) Reduction of metallic oxides- some can be reduced by hydrogen, carbon and carbon monoxide (e.g. copper oxide, lead (II) oxide, iron (III) oxide and zinc oxide) and some cannot (e.g. Al2O3, MgO) - refer to activity series). Active metals by electrolysis e.g. sodium, potassium and calcium. (reference only). Equations with conditions should be given. (d) Electro refining – reference only

	2. Chemical Bonding Electrovalent, covalent and co-ordinate bonding, structures of various compounds, Electron dot structure. (a) Electrovalent bonding: • Electron dot structure of Electrovalent compounds NaCl, MgCl2, CaO. • Characteristic properties of electrovalent compounds – state of existence, melting and boiling points, conductivity (heat and electricity), dissociation in solution (b) Covalent Bonding: • Electron dot structure of covalent molecules on the basis of duplet and octet of electrons • Polar Covalent compounds – based on difference in electronegativity: • Characteristic properties of Covalent compounds – state of existence, melting and boiling points, conductivity (c) Coordinate Bonding: • Definition • The lone pair effect of the oxygen atom of the water molecule	• Special action of Ammonium Hydroxide on solutions of copper salts and sodium hydroxide on ammonium salts. (ii) Action of alkalis (NaOH, KOH) on certain metals, their oxides and hydroxides. The metals must include aluminium, zinc and lead, their oxides and hydroxides, which react with caustic alkalis (NaOH, KOH), showing the amphoteric nature of these substances.		(iii) Extraction of Aluminium. (a) Chemical method for purifying bauxite by using NaOH – Baeyer's Process. (b) Electrolytic extraction – Hall Heroult's process: Structure of electrolytic cell - the various components as part of the electrolyte, electrodes and electrode reactions. Description of the changes occurring, purpose of the substances used and the main reactions with their equations. (iv) Alloys – composition and uses. Stainless steel, duralumin, brass, bronze, fuse metal / solder.

	3. Study of Acids, Bases and Salts (i) Simple definitions in terms of the molecules and their characteristic properties. (ii) Ions present in mineral acids, alkalis and salts and their solutions; use of litmus and pH paper to test for acidity and alkalinity. • Examples with equation for the ionisation/dissociation of ions of acids, bases and salts. • Acids form hydronium ions (only positive ions) which turn blue litmus red, alkalis form hydroxyl ions (only negative ions) with water which turns red litmus blue. • Salts are formed by partial or complete replacement of the hydrogen ion of an acid by a metal. (To be explained with suitable examples). • Introduction to pH scale to test for acidity, neutrality and alkalinity by using pH paper or Universal indicator. (iii) Definition of salt; types of salts. Types of salts: normal salts, acid salt, basic salt, definition and examples.	**5. Mole Concept and Stoichiometry** (i) Gay Lussac's Law of Combining Volumes; Avogadro's Law. • Idea of mole – a number just as a dozen, a gross (Avogadro's number). • Avogadro's Law - statement and explanation. • Gay Lussac's Law of Combining Volumes. – Statement and explanation. • Understanding molar volume- "the mass of 22.4 litres of any gas at S.T.P. is equal to its molar mass". (Questions will not be set on formal proof but may be taught for clear understanding). • Simple calculations based on the molar volume and Gay Lussac's law. (ii) Refer to the atomicity of hydrogen, oxygen, nitrogen and chlorine (proof not required). The explanation can be given using equations for the formation of HCl, NH3, and NO. (iii)Vapour Density and its relation to relative molecular mass: • Molecular mass = 2×vapour density (formal proof not required) • Deduction of simple (empirical) and molecular formula from:		**8. Study of Compounds** **A. Hydrogen Chloride Hydrogen chloride:** preparation of hydrogen chloride from sodium chloride; refer to the density and solubility of hydrogen chloride (fountain experiment); reaction with ammonia; acidic properties of its solution. • Preparation of hydrogen chloride from sodium chloride; the laboratory method of preparation can be learnt in terms of reactants, product, condition, equation, diagram or setting of the apparatus, procedure, observation, precaution, collection of the gas and identification. • Simple experiment to show the density of the gas (Hydrogen Chloride) –heavier than air. • Solubility of hydrogen chloride (fountain experiment); setting of the apparatus, procedure, observation, inference. • Method of preparation of hydrochloric acid by dissolving the gas in water- the special arrangement and the mechanism by which the back suction is avoided should be learnt. • Reaction with ammonia

	(iv) Action of dilute acids on salts. Decomposition of hydrogen carbonates, carbonates, sulphites and sulphides by appropriate acids with heating if necessary. (Relevant laboratory work must be done). (v) Methods of preparation of Normal salts with relevant equations. (Details of apparatus or procedures not required). Methods included are: • Direct combination • Displacement • Precipitation (double decomposition) • Neutralization of insoluble base • Neutralisation of an alkali (titration) • Action of dilute acids on carbonates and bi-carbonates.	(a) the percentage composition of a compound. (b) the masses of combining elements. (iv) Mole and its relation to mass. • Relating mole and atomic mass; arriving at gram atomic mass and then gram atom; atomic mass is a number dealing with one atom; gram atomic mass is the mass of one mole of atoms. • Relating mole and molecular mass arriving at gram molecular mass and gram molecule – molecular mass is a number dealing with a molecule, gram molecular mass is the mass of one mole of molecules. • Simple calculations based on relation of mole to mass, volume and Avogadro's number. (v) Simple calculations based on chemical equations Related to weight and/or volumes of both reactants and products.		• Acidic properties of its solution - reaction with metals, their oxides, hydroxides and carbonates to give their chlorides;decomposition of carbonates, hydrogen carbonates, sulphides, sulphites. • Precipitation reactions with silver nitrate solution and lead nitrate solution. B. Ammonia Ammonia: its laboratory preparation from ammonium chloride and collection; ammonia from nitrides like Mg3N2 and AlN and ammonium salts. Manufacture by Haber's Process; density and solubility of ammonia (fountain experiment); aqueous solution of ammonia; its reactions with hydrogen chloride and with hot copper (II) oxide and chlorine; the burning of ammonia in oxygen; uses of ammonia. • Laboratory preparation from ammonium chloride and collection; (the preparation to be studied in terms of, setting of the apparatus and diagram, procedure, observation, collection and identification) • Ammonia from nitrides like Mg3N2 and AlN using warm water.

				Ammonia from ammonium salts using alkalies. The reactions to be studied in terms of reactants, products, conditions and equations. • Manufacture by Haber's Process. • Density and solubility of ammonia (fountain experiment). • The burning of ammonia in oxygen. • The catalytic oxidation of ammonia (with conditions and reaction) • Its reactions with hydrogen chloride and with hot copper (II) oxide and chlorine (both chlorine in excess and ammonia in excess). All these reactions may be studied in terms of reactants, products, conditions, equations and observations. • Aqueous solution of ammonia - reaction with sulphuric acid, nitric acid, hydrochloric acid and solutions of iron(III) chloride, iron(II) sulphate, lead nitrate, zinc nitrate and copper sulphate. • Uses of ammonia - manufacture of fertilizers, explosives, nitric acid, refrigerant gas (Chlorofluro carbon – and its suitable alternatives which are nonozone depleting), and cleansing agents.

				C. Nitric Acid Nitric Acid: one laboratory method of preparation of nitric acid from potassium nitrate or sodium nitrate. Large scale preparation. Nitric acid as an oxidizing agent. • Laboratory preparation of nitric acid from potassium nitrate or sodium nitrate; the laboratory method to be studied in terms of reactants, products, conditions, equations, setting up of apparatus, diagram, precautions, collection and identification. • Manufacture of Nitric acid by Ostwald's process (Only equations with conditions where applicable). • As an oxidising agent: its reaction with copper, carbon, sulphur. D. Sulphuric Acid Large scale preparation, its behaviour as an acid when dilute, as an oxidizing agent when concentrated - oxidation of carbon and sulphur; as a dehydrating agent - dehydration of sugar and copper (II) sulphate crystals; its non-volatile nature.

				• Manufacture by Contact Process Equations with conditions where applicable. • Its behaviour as an acid when dilute - reaction with metal, metal oxide, metal hydroxide, metal carbonate, metal bicarbonate, metal sulphite, metal sulphide. • Concentrated sulphuric acid as an oxidizing agent - the oxidation of carbon and sulphur. • Concentrated sulphuric acid as a dehydrating agent- (a) the dehydration of sugar (b) Copper (II) sulphate crystals. • Non-volatile nature of sulphuric acid - reaction with sodium or potassium chloride and sodium or potassium nitrate.

		6. Electrolysis- (i) Electrolytes and non-electrolytes. Definitions and examples. (ii) Substances containing molecules only, ions only, both molecules and ions. • Substances containing molecules only ions only, both molecules and ions. • Examples; relating their composition with their behaviour as strong and weak electrolytes as well as non-electrolytes. (iii)Definition and explanation of electrolysis, electrolyte, electrode, anode, cathode, anion, cation, oxidation and reduction (on the basis of loss and gain of electrons). (iv)An elementary study of the migration of ions, with reference to the factors influencing selective discharge of ions (reference should be made to the activity series as indicating the tendency of metals, e.g. Na, Mg, Fe, Cu, to form ions) illustrated by the electrolysis of: • Molten lead bromide • acidified water with platinum electrodes • Aqueous copper		**9. Organic Chemistry-** (i) Introduction to Organic compounds. • Unique nature of Carbon atom – tetra valency, catenation. • Formation of single, double and triple bonds, straight chain, branched chain, cyclic compounds (only benzene). (ii) Structure and Isomerism. • Structure of compounds with single, double and triple bonds. • Structural formulae of hydrocarbons. Structural formula must be given for: alkanes, alkenes, alkynes up to 5 carbon atoms. • Isomerism – structural (chain, position) (iii)Homologous series – characteristics with examples. Alkane, alkene, alkyne series and their gradation in properties and the relationship with the molecular mass or molecular formula. (iv) Simple nomenclature. Simple nomenclature of the hydrocarbons with simple functional groups – (double bond, triple bond, alcoholic, aldehydic, carboxylic group) longest chain rule and smallest number for functional groups rule – trivial and IUPAC names (compounds with only one functional group).

		(II) sulphate with copper electrodes; electron transfer at the electrodes. The above electrolytic processes can be studied in terms of electrolyte used, electrodes used, ionization reaction, anode reaction, cathode reaction, use of selective discharge theory, wherever applicable. (v) Applications of electrolysis. • Electroplating with nickel and silver, choice of electrolyte for electroplating. • Electro refining of copper. Reasons and conditions for electroplating; names of the electrolytes and the electrodes used should be given. Equations for the reactions at the electrodes should be given for electroplating, refining of copper.		(v) Hydrocarbons: alkanes, alkenes, alkynes. • Alkanes - general formula; methane (greenhouse gas) and ethane - methods of preparation from sodium ethanoate (sodium acetate), sodium propanoate (sodium propionate), from iodomethane (methyl iodide) and bromoethane (ethyl bromide). Complete combustion of methane and ethane, reaction of methane and ethane with chlorine through substitution. • Alkenes – (unsaturated hydrocarbons with a double bond); ethene as an example. Methods of preparation of ethene by dehydro halogenation reaction and dehydration reactions. • Alkynes - (unsaturated hydrocarbons with a triple bond); ethyne as an example of alkyne; Methods of preparation from calcium carbide and 1,2 dibromoethane ethylene dibromide). Only main properties, particularly addition products with hydrogen and halogen namely Cl2, Br2 and I2 pertaining to alkenes and alkynes. • Uses of methane, ethane, ethene, ethyne.

				(vi) Alcohols: ethanol – preparation, properties and uses. • Preparation of ethanol by hydrolysis of alkyl halide. • Properties – Physical: Nature, Solubility, Density, Boiling Points. Chemical: Combustion, action with sodium, ester formation with acetic acid, dehydration with conc. Sulphuric acid to prepare ethene. • Denatured and spurious alcohol. • Important uses of Ethanol. (vii) Carboxylic acids (aliphatic - mono carboxylic acid): Acetic acid – properties and uses of acetic acid. • Structure of acetic acid. • Properties of Acetic Acid: Physical properties – odour (vinegar), glacial acetic acid (effect of sufficient cooling to produce ice like crystals). Chemical properties – action with litmus, alkalis and alcohol (idea of esterification). • Uses of acetic acid.

Subject	UT-I	Half-Yearly Exam		Pre - Board Exam
			Project	
Biology	Unit 1- Basic Biology Chapter 2- Structure of chromosomes, Cell cycle and Cell Division (i) Cell Cycle and Cell Division. Cell cycle – Interphase (G1, S, G2) and Mitotic phase. Cell Division: • Mitosis and its stages. • A basic understanding of Meiosis as a reduction division (stages not required). • A brief idea of homologous chromosomes and crossing over leading to variations. • Significance and major differences between mitotic and meiotic division. (ii) Structure of chromosome. Basic structure of chromosome with elementary understanding of terms such as chromatin, chromatid, gene structure of DNA and centromere. Chapter 3- Genetics – Some Basic Fundamentals Mendel's laws of inheritance and sex-linked inheritance of diseases. • The three laws of Mendel. • Monohybrid cross – phenotype and genotype. • Dihybrid cross – Only phenotype. • The following terms to be covered: gene, allele, heterozygous, homozygous, dominant, recessive, mutation, variation, phenotype, genotype. • Sex determination in human beings.	**Unit 1- Basic Biology** **Chapter 2-Structure of chromosomes, Cell cycle and Cell Division** (i) Cell Cycle and Cell Division. Cell cycle – Interphase (G1, S, G2) and Mitotic phase. Cell Division: • Mitosis and its stages. • A basic understanding of Meiosis as a reduction division (stages not required). • A brief idea of homologous chromosomes and crossing over leading to variations. • Significance and major differences between mitotic and meiotic division. (ii) Structure of chromosome. Basic structure of chromosome with elementary understanding of terms such as chromatin, chromatid, gene structure of DNA and centromere.		**Unit 1- Basic Biology** **Chapter 2-Structure of chromosomes, Cell cycle and Cell Division** (i) Cell Cycle and Cell Division. Cell cycle – Interphase (G1, S, G2) and Mitotic phase. Cell Division: • Mitosis and its stages. • A basic understanding of Meiosis as a reduction division (stages not required). • A brief idea of homologous chromosomes and crossing over leading to variations. • Significance and major differences between mitotic and meiotic division. (ii) Structure of chromosome. Basic structure of chromosome with elementary understanding of terms such as chromatin, chromatid, gene structure of DNA and centromere.

	Unit 6- Pollution Chapter 16- Pollution- A Rising Environmental Problem (i) Types and sources of pollution; major pollutants. • Air: Vehicular, industrial, burning garbage, brick kilns. • Water: Household detergents, sewage, industrial waste, oil spills. • Thermal pollution. • Soil: Industrial waste, urban commercial and domestic waste, chemical fertilizers. • Biomedical waste – used and discarded needles, syringes, soiled dressings etc. • Radiation: X-rays; radioactive fallout from nuclear plants. • Noise: Motor Vehicles, Industrial establishments, Construction Sites, Loudspeakers etc. (ii) Biodegradable and Non-biodegradable wastes Biodegradable wastes: meaning and example; paper, vegetable peels, etc. Non-biodegradable wastes: meaning and example; plastics, glass, Styrofoam etc. Pesticides like DDT etc. (iii)Effects of pollution on climate, environment, human health and other organisms; control measures.	**Chapter 3- Genetics – Some Basic Fundamentals** Mendel's laws of inheritance and sex-linked inheritance of diseases. • The three laws of Mendel. • Monohybrid cross – phenotype and genotype. • Dihybrid cross – Only phenotype. • The following terms to be covered: gene, allele, heterozygous, homozygous, dominant, recessive, mutation, variation, phenotype, genotype. • Sex determination in human beings. Sex linked inheritance of diseases to include only X-linked like haemophilia and colour blindness.		**Chapter 3- Genetics – Some Basic Fundamentals** Mendel's laws of inheritance and sex-linked inheritance of diseases. • The three laws of Mendel. • Monohybrid cross – phenotype and genotype. • Dihybrid cross – Only phenotype. • The following terms to be covered: gene, allele, heterozygous, homozygous, dominant, recessive, mutation, variation, phenotype, genotype. • Sex determination in human beings. Sex linked inheritance of diseases to include only X-linked like haemophilia and colour blindness.

		Unit 2. Plant Physiology **Chapter 4- Absorption by Roots- The processes involved** Absorption by roots, imbibition, diffusion and osmosis; osmotic pressure, root pressure; turgidity and flaccidity; plasmolysis and deplasmolysis; the absorption of water and minerals; active and passive transport (in brief); The rise of water up to the xylem; Forces responsible for ascent of sap. • Understanding of the processes related to absorption of water by the roots. • Characteristics of roots, which make them suitable for absorbing water. • Structure of a single full-grown root hair. • A general idea of Cohesive, Adhesive forces and transpirational pull. • Experiments to show the conduction of water through the xylem.		**Unit 2. Plant Physiology** **Chapter 4- Absorption by Roots- The processes involved** Absorption by roots, imbibition, diffusion and osmosis; osmotic pressure, root pressure; turgidity and flaccidity; plasmolysis and deplasmolysis; the absorption of water and minerals; active and passive transport (in brief); The rise of water up to the xylem; Forces responsible for ascent of sap. • Understanding of the processes related to absorption of water by the roots. • Characteristics of roots, which make them suitable for absorbing water. • Structure of a single full-grown root hair. • A general idea of Cohesive, Adhesive forces and transpirational pull. • Experiments to show the conduction of water through the xylem.

		Chapter 5- Transpiration Process and significance. Ganong's potometer and its limitations. The factors affecting rate of transpiration. Experiments on transpiration. A brief idea of guttation and bleeding. • Concept of transpiration and its importance to plants • Experiments related to transpiration: (a)Loss in weight of a potted plant or a leafy shoot in a test tube as a result of transpiration. (b)Use of cobalt chloride paper to demonstrate unequal rate of transpiration in a dorsiventral leaf. • Mechanism of stomatal transpiration on the basis of potassium ion exchange theory. • Adaptations in plants to reduce transpiration. • A brief idea of guttation and bleeding.		**Chapter 5- Transpiration** Process and significance. Ganong's potometer and its limitations. The factors affecting rate of transpiration. Experiments on transpiration. A brief idea of guttation and bleeding. • Concept of transpiration and its importance to plants • Experiments related to transpiration: (a)Loss in weight of a potted plant or a leafy shoot in a test tube as a result of transpiration. (b)Use of cobalt chloride paper to demonstrate unequal rate of transpiration in a dorsiventral leaf. • Mechanism of stomatal transpiration on the basis of potassium ion exchange theory. • Adaptations in plants to reduce transpiration. • A brief idea of guttation and bleeding.

		Chapter 6- Photosynthesis . The process and significance of Photosynthesis. • The internal structure of chloroplast to be explained to give an idea of the site of light and dark reactions. • Opening and closing of stomata based on potassium ion exchange theory. • Overall balanced chemical equation to represent photosynthesis. • Introduction of the terms "photochemical" for light phase and "biosynthetic" for dark phases. • Light reaction - activation of chlorophyll followed by photolysis of water, release of O2, formation of ATP (photophosphorylation) and NADPH. • Dark reaction - only combination of hydrogen released by NADP with CO2 to form glucose. (detailed equations are not required). • Adaptations in plants for photosynthesis. • Experiments with regard to the factors essential for photosynthesis; emphasis on destarching and the steps involved in starch test. • A diagrammatic representation of “carbon cycle”		**Chapter 6- Photosynthesis** . The process and significance of Photosynthesis. • The internal structure of chloroplast to be explained to give an idea of the site of light and dark reactions. • Opening and closing of stomata based on potassium ion exchange theory. • Overall balanced chemical equation to represent photosynthesis. • Introduction of the terms "photochemical" for light phase and "biosynthetic" for dark phases. • Light reaction - activation of chlorophyll followed by photolysis of water, release of O2, formation of ATP (photophosphorylation) and NADPH. • Dark reaction - only combination of hydrogen released by NADP with CO2 to form glucose. (detailed equations are not required). • Adaptations in plants for photosynthesis. • Experiments with regard to the factors essential for photosynthesis; emphasis on destarching and the steps involved in starch test. • A diagrammatic representation of “carbon cycle”
		Chapter 7- Chemical Coordination in Plants • A brief idea of the physiological effects of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene in regulating the growth of plants. • A basic understanding of the tropic movements in plants with reference to – Phototropism, Geotropism, Hydrotropism, Thigmotropism and Chemotropism (supported with suitable examples).		Chapter 7- Chemical Coordination in Plants • A brief idea of the physiological effects of Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene in regulating the growth of plants. • A basic understanding of the tropic movements in plants with reference to – Phototropism, Geotropism, Hydrotropism, Thigmotropism and Chemotropism (supported with suitable examples).

		Unit 4- Human Evolution **Chapter 14- Human Evolution** Basic introduction to Human evolution and Theories of evolution: Lamarck's theory of inheritance; Darwin's theory of evolution by natural selection. • A brief idea of human ancestors – Australopithecus, Homo habilis, Homo erectus, Neanderthals, Cro-Magnon and Homo sapiens sapiens (Modern Man) with reference to the following characteristics: - Bipedalism - Increasing Cranial capacity - Reduction of size of canine teeth - Forehead and brow ridges - Development of chin - Reduction in body hair - Height and Posture • Lamarck's theory of inheritance of acquired characteristics – with reference to use of organs (e.g.: neck and forelimbs of giraffe) and disuse of organs (e.g.: vestigial organs in humans like wisdom teeth, vermiform appendix, pinnae). • Darwin's theory of Natural selection: Survival of the fittest - e.g. adaptation of peppered moth.		**Unit 3- Human Anatomy and Physiology** **Chapter 8- The Circulatory System** Circulatory System: Blood and lymph, the structure and working of the heart, blood vessels, circulation of blood (only names of the main blood vessels entering and leaving the heart, liver and kidney will be required). Lymphatic system. • Composition of blood (structure and functions of RBC, WBC and platelets). • Brief idea of tissue fluid and lymph. • Increase in efficiency of mammalian red blood cells due to absence of certain organelles; reasons for the same. • A brief idea of blood coagulation. • Structure and working of the heart along with names of the main blood vessels entering and leaving the heart, the liver and the kidney. • Concept of systole and diastole; concept of double circulation. • Brief idea of pulse and blood pressure. • Blood vessels: artery, vein and capillary to be explained with the help of diagrams to bring out the relationship between their structure and function. • Brief idea of the lymphatic organs: spleen and tonsils. • ABO blood group system, Rh factor. • Significance of the hepatic portal system

				Chapter 9- The Excretory System • A brief idea of different excretory organs in the human body. • External and internal structure of the kidney; • Parts of the urinary system along with the blood vessels entering and leaving the kidney; functions of various parts of the urinary system (emphasis on diagram with correct labelling). A general idea of the structure of a kidney tubule/ nephron. • A brief idea of ultra-filtration (emphasis on the diagram of malpighian capsule); selective reabsorption and tubular secretion in relation to the composition of blood plasma and urine formed

				Chapter 10- The Nervous System Structure of Neuron; central, autonomous and peripheral nervous system (in brief); brain and spinal cord; reflex action and how it differs from voluntary action. Sense organs – Eye: Structure, functions, defects and corrective measures: Ear: Parts and functions of the ear. • Parts of a neuron. • Various parts of the external structure of the brain and its primary parts: Medulla Oblongata, Cerebrum, Cerebellum, Thalamus, Hypothalamus and Pons; their functions. • Reference to the distribution of white and gray matter in Brain and Spinal cord. • Voluntary and involuntary actions – meaning with examples. • Diagrammatic explanation of the reflex arc, showing the pathway from receptor to effector. • A brief idea of the peripheral and autonomic nervous system in regulating body activities. • Differences between natural and acquired reflex.

				Chapter 11- Sense Organs Sense organs – Eye: Structure, functions, defects and corrective measures: Ear: Parts and functions of the ear. • External and Internal structure and functions of the Eye and Ear and their various parts. • A brief idea of stereoscopic vision, adaptation and accommodation of eye. • Defects of the eye (myopia, hyperopia hypermetropia, presbyopia, astigmatism and cataract) and corrective measures (diagrams included for myopia and hyperopia only) • The course of perception of sound in human ear. • Role of ear in maintaining balance of the body.

				Chapter 12- The Endocrine System General study of the following glands: Adrenal, Pancreas, Thyroid and Pituitary. Endocrine and Exocrine glands. • Differences between Endocrine and Exocrine glands. • Exact location and shape of the endocrine glands in the human body. • Hormones secreted by the following glands: Pancreas: insulin and glucagon; Thyroid: only thyroxin; Adrenal gland: Cortical hormones and adrenaline; Pituitary: growth hormone, tropic hormones, ADH and oxytocin. • Effects of hypo secretion and hyper secretion of hormones. • A brief idea of Feedback mechanism with reference to TSH.

				Chapter 13- The Reproductive System Organs, fertilisation functions of placenta in the growth of the embryo Menstrual cycle. • Functions of Male and Female reproductive organs and male accessory glands. An idea of secondary sexual characters. • Structure and functions of the various parts of the sperm and egg. • Explanation of the terms: Fertilization, implantation, placenta, gestation and parturition. • A brief idea of the role of placenta in nutrition, respiration and excretion of the embryo; its endocrinal function. • Functions of Foetal membranes and amniotic fluid. • Menstrual cycle outline of menstrual cycle. • Role of Sex hormones: Testosterone, Oestrogen and Progesterone in reproduction. • Identical and fraternal twins: meaning and differences only

		Unit 5- Population **Chapter 15- Population- The Increasing Numbers and Rising Problems** Population explosion in India; need for adopting control measures - population control. • Main reasons for the sharp rise in human population in India and in the world. • A brief explanation of the terms: demography, population density, birth rate, death rate and growth rate of population. • Problems faced due to population explosion: unemployment, over exploitation of natural resources, low per capita income, price rise, pollution, unequal distribution of wealth. • Methods of population control: Surgical methods – Tubectomy and vasectomy.		**Unit 4- Human Evolution** **Chapter 14- Human Evolution** Basic introduction to Human evolution and Theories of evolution: Lamarck's theory of inheritance; Darwin's theory of evolution by natural selection. • A brief idea of human ancestors – Australopithecus, Homo habilis, Homo erectus, Neanderthals, Cro-Magnon and Homo sapiens sapiens (Modern Man) with reference to the following characteristics: - Bipedalism - Increasing Cranial capacity - Reduction of size of canine teeth - Forehead and brow ridges - Development of chin - Reduction in body hair - Height and Posture • Lamarck's theory of inheritance of acquired characteristics – with reference to use of organs (e.g.: neck and forelimbs of giraffe) and disuse of organs (e.g.: vestigial organs in humans like wisdom teeth, vermiform appendix, pinnae). • Darwin's theory of Natural selection: Survival of the fittest - e.g. adaptation of peppered moth.

		Unit 6- Pollution **Chapter 16- Pollution- A Rising Environmental Problem** (i) Types and sources of pollution; major pollutants. • Air: Vehicular, industrial, burning garbage, brick kilns. • Water: Household detergents, sewage, industrial waste, oil spills. • Thermal pollution. • Soil: Industrial waste, urban commercial and domestic waste, chemical fertilizers. • Biomedical waste – used and discarded needles, syringes, soiled dressings etc. • Radiation: X-rays; radioactive fallout from nuclear plants. • Noise: Motor Vehicles, Industrial establishments, Construction Sites, Loudspeakers etc. (ii) Biodegradable and Non-biodegradable wastes Biodegradable wastes: meaning and example; paper, vegetable peels, etc. Non-biodegradable wastes: meaning and example; plastics, glass, Styrofoam etc. Pesticides like DDT etc. (iii)Effects of pollution on climate, environment, human health and other organisms; control measures. • Brief explanation of: Greenhouse effect and Global warming, Acid rain, Ozone layer depletion. • Measures to control pollution:		**Unit 5- Population** **Chapter 15- Population- The Increasing Numbers and Rising Problems** Population explosion in India; need for adopting control measures - population control. • Main reasons for the sharp rise in human population in India and in the world. • A brief explanation of the terms: demography, population density, birth rate, death rate and growth rate of population. • Problems faced due to population explosion: unemployment, over exploitation of natural resources, low per capita income, price rise, pollution, unequal distribution of wealth. • Methods of population control: Surgical methods – Tubectomy and vasectomy.

				Unit 6- Pollution **Chapter 16- Pollution- A Rising Environmental Problem** (i) Types and sources of pollution; major pollutants. • Air: Vehicular, industrial, burning garbage, brick kilns. • Water: Household detergents, sewage, industrial waste, oil spills. • Thermal pollution. • Soil: Industrial waste, urban commercial and domestic waste, chemical fertilizers. • Biomedical waste – used and discarded needles, syringes, soiled dressings etc. • Radiation: X-rays; radioactive fallout from nuclear plants. • Noise: Motor Vehicles, Industrial establishments, Construction Sites, Loudspeakers etc. (ii) Biodegradable and Non-biodegradable wastes Biodegradable wastes: meaning and example; paper, vegetable peels, etc. Non-biodegradable wastes: meaning and example; plastics, glass, Styrofoam etc. Pesticides like DDT etc. (iii)Effects of pollution on climate, environment, human health and other organisms; control measures. • Brief explanation of: Greenhouse effect and Global warming, Acid rain, Ozone layer depletion. • Measures to control pollution:

Subject	UT-I	Half-Yearly Exam		Pre - Board Exam
			Project	
History/Civics	SECTION A: CIVICS 1. The Union Legislature Meaning of the federal setup in India. (i) Lok Sabha - term, composition, qualifications for membership. Parliamentary procedures: a brief idea of sessions, quorum, question hour, types of questions-meaning of starred, unstarred and short notice questions, zero hour, adjournment and no-confidence motion. Anti-Defection Law provisions, Passing of Ordinary and Money Bills. Speaker – election, removal; and functions. (ii) Rajya Sabha – composition, qualifications for membership, election, term, Presiding Officer. Powers and functions of Union Parliament – (legislative, financial, judicial, electoral, amendment of the Constitution, control over executive). Exclusive powers of the two houses.	**SECTION A: CIVICS** **1. The Union Legislature** Meaning of the federal setup in India. (i) Lok Sabha - term, composition, qualifications for membership. Parliamentary procedures: a brief idea of sessions, quorum, question hour, types of questions-meaning of starred, unstarred and short notice questions, zero hour, adjournment and no-confidence motion. Anti-Defection Law provisions, Passing of Ordinary and Money Bills. Speaker – election, removal; and functions. (ii) Rajya Sabha – composition, qualifications for membership, election, term, Presiding Officer. Powers and functions of Union Parliament – (legislative, financial, judicial, electoral, amendment of the Constitution, control over executive). Exclusive powers of the two Houses.	* Make an illustrative study of the life and work of Subhash Chandra Bose. * Make an illustrative study of the life and work of any three national leaders, between 1857 and 1914 and describe their contributions to the Nation. * Highlight the work and achievements of any one Nobel Laureate - Malala Yousafzai or Kailash Satyarthi. * Make a presentation on the influence of Gandhian principles on Martin Luther King / Nelson Mandela. * Prepare a report on the contributions of any one of the following agencies of the United Nations – UNESCO / WHO / UNICEF / ILO / UNDP / FAO. * Present a case study of any recent human rights violations and redressal mechanisms available to prevent such instances in the future. Project Anyone from the above	**SECTION A: CIVICS** **1. The Union Legislature** Meaning of the federal setup in India. (i) Lok Sabha - term, composition, qualifications for membership. Parliamentary procedures: a brief idea of sessions, quorum, question hour, types of questions-meaning of starred, unstarred and short notice questions, zero hour, adjournment and no-confidence motion. Anti-Defection Law provisions, Passing of Ordinary and Money Bills. Speaker – election, removal; and functions. (ii) Rajya Sabha – composition, qualifications for membership, election, term, Presiding Officer. Powers and functions of Union Parliament – (legislative, financial, judicial, electoral, amendment of the Constitution, control over executive). Exclusive powers of the two Houses.

	SECTION B 3. The Contemporary World (a) The First World War Causes (Nationalism and Imperialism, Armament Race, division of Europe and Sarajevo crisis) and Results (Treaty of Versailles, formation of League of Nations, Objectives of the League of Nations). (b) Rise of Dictatorships Causes for the rise of Fascism in Italy and the rise of Nazism in Germany. Similarity between the ideologies of Fascism and Nazism. (c) The Second World War Causes (Dissatisfaction with the Treaty of Versailles, Rise of Fascism and Nazism, Policy of Appeasement, the Japanese invasion of China, Failure of the League of Nations and Hitler's invasion of Poland). Brief mention of the attack on Pearl Harbour and bombing of Hiroshima and Nagasaki. Consequences (Defeat of Axis Powers, Formation of the United Nations and Cold War). Cold War - meaning, NATO and WARSAW (Only meaning).	**2. The Union Executive** (a) The President: Qualifications for election, composition of Electoral College, reason for indirect election, term of office, procedure for impeachment. Powers (executive, legislative, financial, judicial, discretionary and emergency)- any two effects of each emergency). (b) The Vice-President: Qualifications for election, removal, term of office and powers. (c) Prime Minister and Council of Ministers: Appointment, formation of Council of Ministers, tenure, functions - policy making, administrative, legislative, financial, emergency. Position and powers of the Prime Minister. Collective and individual responsibility of the members of the Cabinet. Distinction between the Council of Ministers and the Cabinet.		**2. The Union Executive** (a) The President: Qualifications for election, composition of Electoral College, reason for indirect election, term of office, procedure for impeachment. Powers (executive, legislative, financial, judicial, discretionary and emergency)- any two effects of each emergency). (b) The Vice-President: Qualifications for election, removal, term of office and powers. (c) Prime Minister and Council of Ministers: Appointment, formation of Council of Ministers, tenure, functions - policy making, administrative, legislative, financial, emergency. Position and powers of the Prime Minister. Collective and individual responsibility of the members of the Cabinet. Distinction between the Council of Ministers and the Cabinet.

		3. The Judiciary (a) The Supreme Court: Composition, qualifications of judges, appointment, independence of judiciary from the control of executive and legislature; Jurisdiction and functions: Independence of Judiciary, Original, Appellate, Advisory, Revisory, Judicial Review and Court of Record. Enforcement of Fundamental Rights and Writs. (b) The High Courts: Composition, qualifications of judges, appointment; Jurisdiction and functions: Original, Appellate, Revisory, Judicial Review and Court of Record. Enforcement of Fundamental Rights and Writs. (c) Subordinate Courts: Distinction between Court of the District Judge and Sessions Court. Lok Adalats: meaning and advantages.		3. The Judiciary (a) The Supreme Court: Composition, qualifications of judges, appointment, independence of judiciary from the control of executive and legislature; Jurisdiction and functions: Independence of Judiciary, Original, Appellate, Advisory, Revisory, Judicial Review and Court of Record. Enforcement of Fundamental Rights and Writs. (b) The High Courts: Composition, qualifications of judges, appointment; Jurisdiction and functions: Original, Appellate, Revisory, Judicial Review and Court of Record. Enforcement of Fundamental Rights and Writs. (c) Subordinate Courts: Distinction between Court of the District Judge and Sessions Court. Lok Adalats: meaning and advantages.
		SECTION B: HISTORY 1. The Indian National Movement (1857 - 1917) (a) The First War of Independence, 1857 Only the causes (political, socio-religious, economic and military) and consequences – (Only changes in the administration, Queen Victoria's Proclamation, Relation with Princely states and Changes in the Army) will be tested. [The events, however, need to be mentioned in order to maintain continuity and for a more comprehensive understanding.] (b) Factors leading to the growth of Nationalism – economic exploitation, repressive colonial policies, socio-religious reform movements (any two contributions of Raja Rammohan Roy, Jyotiba Phule, Swami Dayananda Saraswathi and Swami Vivekananda) and role of the Press.		SECTION B: HISTORY 1. The Indian National Movement (1857 - 1917) (a) The First War of Independence, 1857 Only the causes (political, socio-religious, economic and military) and consequences – (Only changes in the administration, Queen Victoria's Proclamation, Relation with Princely states and Changes in the Army) will be tested. [The events, however, need to be mentioned in order to maintain continuity and for a more comprehensive understanding.] (b) Factors leading to the growth of Nationalism – economic exploitation, repressive colonial policies, socio-religious reform movements (any two contributions of Raja Rammohan Roy, Jyotiba Phule, Swami Dayananda Saraswathi and Swami Vivekananda) and role of the Press.

		Foundation of the Indian National Congress - The year of formation and name of the Founder Immediate objectives of the Indian National Congress - the first two sessions and their Presidents should be mentioned. (c) First Phase of the Indian National Movement (1885-1907) - objectives and methods of struggle of the Early Nationalists. Any two contributions of Dadabhai Naoroji, Surendranath Banerjee and Gopal Krishna Gokhale. Second Phase of the Indian National Movement (1905-1916) - Brief mention of the causes of the Partition of Bengal and its perspective by the Nationalists. Reasons for Surat Split of 1907; objectives and methods of struggle of Assertive Nationalists. Any two contributions of Bal Gangadhar Tilak, Bipin Chandra Pal and Lala Lajpat Rai. The Muslim League; Year of formation, Factors leading to the formation of the Muslim League and its objectives. The Lucknow Pact - 1916. Signatories of the Pact and its impact		Foundation of the Indian National Congress - The year of formation and name of the Founder Immediate objectives of the Indian National Congress - the first two sessions and their Presidents should be mentioned. (c) First Phase of the Indian National Movement (1885-1907) - objectives and methods of struggle of the Early Nationalists. Any two contributions of Dadabhai Naoroji, Surendranath Banerjee and Gopal Krishna Gokhale. Second Phase of the Indian National Movement (1905-1916) - Brief mention of the causes of the Partition of Bengal and its perspective by the Nationalists. Reasons for Surat Split of 1907; objectives and methods of struggle of Assertive Nationalists. Any two contributions of Bal Gangadhar Tilak, Bipin Chandra Pal and Lala Lajpat Rai. The Muslim League; Year of formation, Factors leading to the formation of the Muslim League and its objectives. The Lucknow Pact - 1916. Signatories of the Pact and its impact

		3. The Contemporary World (a) The First World War Causes (Nationalism and Imperialism, Armament Race, division of Europe and Sarajevo crisis) and Results (Treaty of Versailles, formation of League of Nations, Objectives of the League of Nations). (b) Rise of Dictatorships Causes for the rise of Fascism in Italy and the rise of Nazism in Germany. Similarity between the ideologies of Fascism and Nazism. (c) The Second World War Causes (Dissatisfaction with the Treaty of Versailles, Rise of Fascism and Nazism, Policy of Appeasement, the Japanese invasion of China, Failure of the League of Nations and Hitler's invasion of Poland). Brief mention of the attack on Pearl Harbour and bombing of Hiroshima and Nagasaki. Consequences (Defeat of Axis Powers, Formation of the United Nations and Cold War).		3. The Contemporary World (a) The First World War Causes (Nationalism and Imperialism, Armament Race, division of Europe and Sarajevo crisis) and Results (Treaty of Versailles, formation of League of Nations, Objectives of the League of Nations). (b) Rise of Dictatorships Causes for the rise of Fascism in Italy and the rise of Nazism in Germany. Similarity between the ideologies of Fascism and Nazism. (c) The Second World War Causes (Dissatisfaction with the Treaty of Versailles, Rise of Fascism and Nazism, Policy of Appeasement, the Japanese invasion of China, Failure of the League of Nations and Hitler's invasion of Poland). Brief mention of the attack on Pearl Harbour and bombing of Hiroshima and Nagasaki. Consequences (Defeat of Axis Powers, Formation of the United Nations and Cold War).
		Cold War - meaning, NATO and WARSAW (Only meaning). (d) United Nations (i) The objectives of the U.N. The composition and functions of the General Assembly, the Security Council, and the International Court of Justice. Major agencies of the United Nations: UNICEF, WHO and UNESCO – headquarters and functions only. (ii) Universal Declaration of Human Rights – (Only meaning) (e) Non-Aligned Movement Brief meaning; objectives; Panchsheel- only meaning, principles need to be taught only for understanding and not for testing; role of Jawaharlal Nehru; Names of the architects of NAM.		Cold War - meaning, NATO and WARSAW (Only meaning). (d) United Nations (i) The objectives of the U.N. The composition and functions of the General Assembly, the Security Council, and the International Court of Justice. Major agencies of the United Nations: UNICEF, WHO and UNESCO – headquarters and functions only. (ii) Universal Declaration of Human Rights – (Only meaning) (e) Non-Aligned Movement Brief meaning; objectives; Panchsheel- only meaning, principles need to be taught only for understanding and not for testing; role of Jawaharlal Nehru; Names of the architects of NAM.

				Mass Phase of the National Movement (1915- 1947) (a) Mahatma Gandhi - Non-Cooperation Movement : causes (Khilafat Movement, Rowlatt Act, Jallianwala Bagh Tragedy), programme and suspension – Chauri Chaura incident and impact of the Movement; the Civil Disobedience Movement: causes (reaction to the Simon Commission (clauses will not be tested) Declaration of Poorna Swaraj at the Lahore Session of 1929), Dandi March, programme and impact of the Movement, Gandhi-Irwin Pact and the Second Round Table Conference; Reason for renewal of the Civil Disobedience Movement the Quit India Movement: causes (failure of the Cripps Mission (clauses will not be tested), Japanese threat), Quit India Resolution and the significance of the Movement. (b) Forward Bloc (objectives) and INA (name of the founder objectives and contribution of Subhas Chandra Bose). (c) Independence and Partition of India – Cabinet Mission Plan (clauses only);

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GEOGRAPHY	**Chapter- 3. Climate** Distribution of Temperature, Rainfall, winds in Summer and Winter and factors affecting the climate of India (latitudes, altitude, distance from sea, winds, Himalayas, jet streams, and El Nino). Monsoon and its mechanism. Seasons: Summer; Monsoon, Retreating Monsoon and Winter. Temperature and pressure conditions, wind movements, local winds, precipitation and interpretation of climate data. **4. Soil Resources** * Types of soil (alluvial, black, red and laterite), mode of formation, distribution, composition and characteristics such as colour, texture, minerals and crops associated. * Soil Erosion – meaning, agents and causes.	**MAP WORK** 1. Interpretation of Topographical Maps (a) Locating features with the help of a four figure or a six-figure grid reference. (b) Definition of contour and contour interval. Identification of landforms marked by contours (steep slope, gentle slope, hill, ridge, escarpment), triangulated height, spot height, relative height/ depth. (c) Interpretation of colour tints and conventional symbols used on a topographical survey of India map. (d) Identification and definition of types of scale given on the map (Statement scale, Representative Fraction and Linear Scale). Measuring distances (direct distance only) and calculating area (full grid square) using the scale given therein.	1. Local Geography: (a) Land use pattern in different regions of India– a comparative analysis. (b) The survey of a local market on the types of shops and services offered. 2. Environment: Wildlife conservation efforts in India. 3. Current Geographical Issues: Development of tourism in India. 4. Transport in India: Development of Road, Rail, Water and Air routes.	**MAP WORK** 1. Interpretation of Topographical Maps (a) Locating features with the help of a four figure or a six-figure grid reference. (b) Definition of contour and contour interval. Identification of landforms marked by contours (steep slope, gentle slope, hill, ridge, escarpment), triangulated height, spot height, relative height/ depth. (c) Interpretation of colour tints and conventional symbols used on a topographical survey of India map. (d) Identification and definition of types of scale given on the map (Statement scale, Representative Fraction and Linear Scale). Measuring distances (direct distance only) and calculating area (full grid square) using the scale given therein.

	5. Natural Vegetation * Importance of forests. * Types of vegetation; distribution and correlation with their environment (tropical evergreen, tropical deciduous, tropical desert, littoral and mountain). * Forest conservation – afforestation	(e) Marking directions between different locations, using eight cardinal points. (f) Identify: Site of prominent villages /towns/settlements, services available types of land use / land cover and means of transport (metalled, unmetalled, cart track, pack track, footpath) and communication with the help of the index given at the bottom of the sheet. (g) Identification of drainage (direction of flow and pattern - dendritic, trellised and radial) and settlement patterns (clustered and dispersed). (h) Identification of natural and man-made features.	5. List different type of industries in the States and collect information about the types of raw materials used, modes of their procurement and disposal of wastes generated. Classify these industries as polluting or environment friendly and suggest possible ways of reducing pollution caused by these units. 6. Need for industrialization in India, the latest trends and its impact on economy of India. 7. Visit a water treatment plant, sewage treatment plant or garbage dumping or vermicomposting sites in the locality and study their working.	(e) Marking directions between different locations, using eight cardinal points. (f) Identify: Site of prominent villages /towns/settlements, services available types of land use / land cover and means of transport (metalled, unmetalled, cart track, pack track, footpath) and communication with the help of the index given at the bottom of the sheet. (g) Identification of drainage (direction of flow and pattern - dendritic, trellised and radial) and settlement patterns (clustered and dispersed). (h) Identification of natural and man-made features.
		2. Map of India On an outline map of India, candidates will be required to locate, mark and name the following: (6 map features for marking and 4 features for identification) Mountains, Peaks and Plateaus (To be marked): Himalayas, Karakoram, Aravali, Vindhyas, Satpura, Western and Eastern Ghats, Nilgiris, Khasi, Mount Godwin Austin (K2), Mount Kanchenjunga. Deccan Plateau, Chota Nagpur Plateau. Plains (To be marked): Gangetic Plains and Coastal plains – (Konkan, Malabar, Coromandel, Northern Circars). Desert (To be marked): Thar (The Great Indian Desert) Rivers (To be identified): Indus, Ravi, Beas, Chenab, Jhelum, Satluj, Ganga, Yamuna, Ghaghra, Gomti, Gandak, Kosi, Chambal, Betwa, Brahmaputra, Narmada, Tapti, Mahanadi, Godavari, Krishna, Cauveri. Water Bodies (To be marked): Gulf of Kutch, Gulf of Khambhat, Gulf of Mannar, Palk Strait, Andaman Sea, Wular Lake.		2. Map of India On an outline map of India, candidates will be required to locate, mark and name the following: (6 map features for marking and 4 features for identification) Mountains, Peaks and Plateaus (To be marked): Himalayas, Karakoram, Aravali, Vindhyas, Satpura, Western and Eastern Ghats, Nilgiris, Khasi, Mount Godwin Austin (K2), Mount Kanchenjunga. Deccan Plateau, Chota Nagpur Plateau. Plains (To be marked): Gangetic Plains and Coastal plains – (Konkan, Malabar, Coromandel, Northern Circars). Desert (To be marked): Thar (The Great Indian Desert) Rivers (To be identified): Indus, Ravi, Beas, Chenab, Jhelum, Satluj, Ganga, Yamuna, Ghaghra, Gomti, Gandak, Kosi, Chambal, Betwa, Brahmaputra, Narmada, Tapti, Mahanadi, Godavari, Krishna, Cauveri. Water Bodies (To be marked): Gulf of Kutch, Gulf of Khambhat, Gulf of Mannar, Palk Strait, Andaman Sea, Wular Lake.

		Passes (To be marked): Karakoram. Latitude and Longitudes (To be identified): Tropic of Cancer, Standard Meridian (82° 30’E). Direction of Winds (To be marked): Southwest Monsoons (Arabian Sea and Bay of Bengal Branches), North East Monsoons and Western Disturbances. Distribution of Minerals (To be identified): Oil - Mumbai High (Offshore Oil Field) and Digboi. Iron – Singhbhum, Coal – Jharia. Soil Distribution (To be marked): Alluvial, Black and Red Soil. Cities (To be identified): Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Kochi, Allahabad. Population (To be marked): Distribution of Population (Dense and sparse).		Passes (To be marked): Karakoram. Latitude and Longitudes (To be identified): Tropic of Cancer, Standard Meridian (82° 30’E). Direction of Winds (To be marked): Southwest Monsoons (Arabian Sea and Bay of Bengal Branches), North East Monsoons and Western Disturbances. Distribution of Minerals (To be identified): Oil - Mumbai High (Offshore Oil Field) and Digboi. Iron – Singhbhum, Coal – Jharia. Soil Distribution (To be marked): Alluvial, Black and Red Soil. Cities (To be identified): Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Kochi, Allahabad. Population (To be marked): Distribution of Population (Dense and sparse).
		3. Climate Distribution of Temperature, Rainfall, winds in Summer and Winter and factors affecting the climate of India (latitudes, altitude, distance from sea, winds, Himalayas, jet streams, and El Nino). Monsoon and its mechanism. Seasons: Summer; Monsoon, Retreating Monsoon and Winter. Temperature and pressure conditions, wind movements, local winds, precipitation and interpretation of climate data.		3. Climate Distribution of Temperature, Rainfall, winds in Summer and Winter and factors affecting the climate of India (latitudes, altitude, distance from sea, winds, Himalayas, jet streams, and El Nino). Monsoon and its mechanism. Seasons: Summer; Monsoon, Retreating Monsoon and Winter. Temperature and pressure conditions, wind movements, local winds, precipitation and interpretation of climate data.

		4. Soil Resources • Types of soil (alluvial, black, red and laterite), mode of formation, distribution, composition and characteristics such as colour, texture, minerals and crops associated. • Soil Erosion – meaning, agents and causes. • Soil Conservation – importance and methods		4. Soil Resources • Types of soil (alluvial, black, red and laterite), mode of formation, distribution, composition and characteristics such as colour, texture, minerals and crops associated. • Soil Erosion – meaning, agents and causes. • Soil Conservation – importance and methods
		5. Natural Vegetation • Importance of forests. • Types of vegetation; distribution and correlation with their environment (tropical evergreen, tropical deciduous, tropical desert, littoral and mountain). • Forest conservation – afforestation, reforestation, social forestry, agroforestry and Van Mahotsav		5. Natural Vegetation • Importance of forests. • Types of vegetation; distribution and correlation with their environment (tropical evergreen, tropical deciduous, tropical desert, littoral and mountain). • Forest conservation – afforestation, reforestation, social forestry, agroforestry and Van Mahotsav
		6. Water Resources • Sources (Surface water and ground water). • Need for conservation • Rain water harvesting and its importance. • Irrigation: Importance and methods – wells, tube well, tanks, canal, drip and sprinkler irrigation.		6. Water Resources • Sources (Surface water and ground water). • Need for conservation • Rain water harvesting and its importance. • Irrigation: Importance and methods – wells, tube well, tanks, canal, drip and sprinkler irrigation.

		7. Mineral and Energy Resources • Iron ore, Manganese, Copper, Bauxite – uses and their distribution. (two leading states and their prominent mining areas) • Conventional Sources: Coal, Petroleum, Natural gas (distribution, advantages and disadvantages). • Hydel power - Bhakra Nangal Dam and Hirakud Projects and their benefits. • Non-conventional Sources: Solar, wind, tidal, geo-thermal, nuclear and bio-gas (important areas and advantages and disadvantages).		7. Mineral and Energy Resources • Iron ore, Manganese, Copper, Bauxite – uses and their distribution. (two leading states and their prominent mining areas) • Conventional Sources: Coal, Petroleum, Natural gas (distribution, advantages and disadvantages). • Hydel power - Bhakra Nangal Dam and Hirakud Projects and their benefits. • Non-conventional Sources: Solar, wind, tidal, geo-thermal, nuclear and bio-gas (important areas and advantages and disadvantages).
		8. Agriculture • Indian Agriculture – importance, problems and benefits; Green Revolution-meaning and impact of first green revolution. • Types of farming in India: subsistence and commercial: intensive, extensive, plantation and mixed. • Agricultural seasons (rabi, kharif, zayad). • Climatic conditions, soil requirements, methods of cultivation, and distribution (major producing states) of the following crops: - rice, wheat, millets and pulses. - sugarcane, oilseeds (groundnut, mustard and soya bean). - cotton, jute and tea		**8. Agriculture** • Indian Agriculture – importance, problems and benefits; Green Revolution-meaning and impact of first green revolution. • Types of farming in India: subsistence and commercial: intensive, extensive, plantation and mixed. • Agricultural seasons (rabi, kharif, zayad). • Climatic conditions, soil requirements, methods of cultivation, and distribution (major producing states) of the following crops: - rice, wheat, millets and pulses. - sugarcane, oilseeds (groundnut, mustard and soya bean). - cotton, jute and tea

				Manufacturing Industries Importance and classification (large scale, small scale, mineral-based, agro-based, public and private sector) * Agro based Industry - Sugar, Textile (Cotton and Silk). * Mineral based Industry – integrated Iron & Steel plants (Tata Steel, Rourkela, Vishakhapatnam) Petro Chemical and Electronics (some key centres) relevance in the modern world.
				10. Transport Importance and Modes * Roadways - Factors affecting its development, advantages and disadvantages. Expressways, national highways, NSEW Corridor andGolden Quadrilateral [meaning and importance) * Railways - Factors affecting its development, advantages and disadvantages. * Airways - Advantages and disadvantages. * Waterways - Inland and coastal, advantages and disadvantages. **11. Waste Management** * Impact of waste accumulation - spoilage of landscape, pollution, health hazards. * Need for waste management. * Understanding key terms – global warming, acid rain, eutrophication, biomagnification and thermal pollution (in brief). * Methods of safe disposal - segregation, dumping and composting. * Need and methods for reducing, reusing

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Computer Applications	**Chapter 1 (Revision of class IX)** (i) Introduction to Object Oriented Programming concepts, (ii) Elementary Concept of Objects and Classes, (iii) Values and Data types, (iv) Operators in Java, (v) Input in Java	**Chapter 1 (Revision of class IX)** (i) Introduction to Object Oriented Programming concepts, (ii) Elementary Concept of Objects and Classes, (iii) Values and Data types, (iv) Operators in Java, (v) Input in Java	Design 2-2 JAVA programs based on the following topics: * User defined methods * Constructors * Library classes * Encapsulation	**Chapter 1 (Revision of class IX)** (i) Introduction to Object Oriented Programming concepts, (ii) Elementary Concept of Objects and Classes, (iii) Values and Data types, (iv) Operators in Java, (v) Input in Java
	Chapter 2 (Revision of class IX {contd.}) (vi) Mathematical Library Methods, (vii) Conditional constructs in Java, (viii) Iterative constructs in Java, (ix) Nested for loops.	**Chapter 2 (Revision of class IX {contd.})** (vi) Mathematical Library Methods, (vii) Conditional constructs in Java, (viii) Iterative constructs in Java, (ix) Nested for loops.		**Chapter 2 (Revision of class IX {contd.})** (vi) Mathematical Library Methods, (vii) Conditional constructs in Java, (viii) Iterative constructs in Java, (ix) Nested for loops.
	Chapter 3 (Class as the basis of all computation) Objects and Classes Objects encapsulate state and behaviour – numerous examples; member variables; attributes or features. Variables define state; member methods; Operations/methods/messages/ methods define behaviour. Classes as abstractions for sets of objects; class as an object factory; primitive data types, composite data types. Variable declarations for both types; difference between the two types. Objects as instances of a class. Consider real life examples for explaining the concept of class and object.	**Chapter 3 (Class as the basis of all computation)** Objects and Classes Objects encapsulate state and behaviour – numerous examples; member variables; attributes or features. Variables define state; member methods; Operations/methods/messages/ methods define behaviour. Classes as abstractions for sets of objects; class as an object factory; primitive data types, composite data types. Variable declarations for both types; difference between the two types. Objects as instances of a class. Consider real life examples for explaining the concept of class and object.		**Chapter 3 (Class as the basis of all computation)** Objects and Classes Objects encapsulate state and behaviour – numerous examples; member variables; attributes or features. Variables define state; member methods; Operations/methods/messages/ methods define behaviour. Classes as abstractions for sets of objects; class as an object factory; primitive data types, composite data types. Variable declarations for both types; difference between the two types. Objects as instances of a class. Consider real life examples for explaining the concept of class and object.

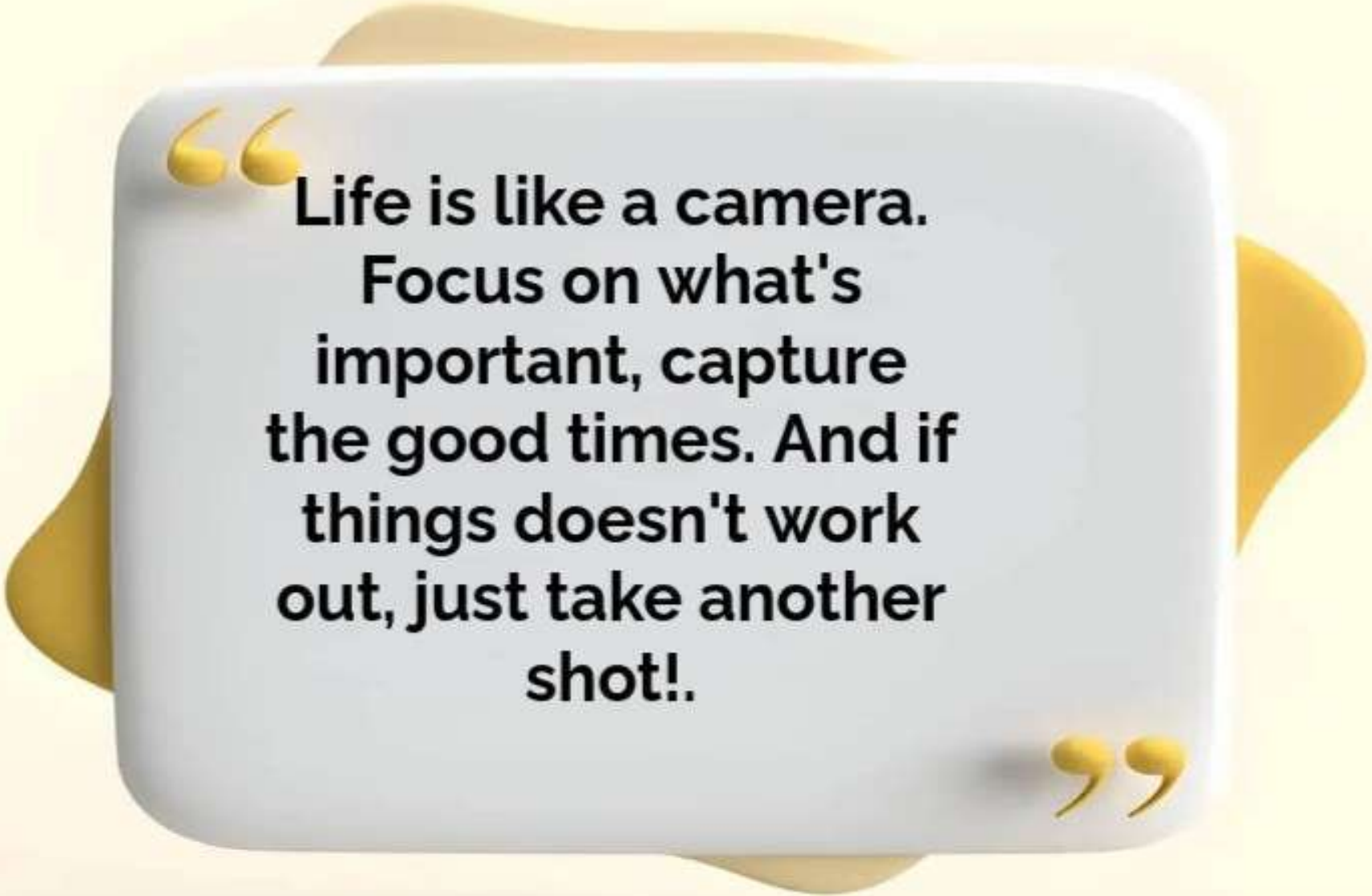
		Chapter 4 User - defined Methods Need of methods, syntax of methods, forms of methods, method definition, method calling, method overloading, declaration of methods, Ways to define a method, ways to invoke the methods – call by value [with programs] and call by reference [only definition with an example], Object creation - invoking the methods with respect to use of multiple methods with different names to implement modular programming, using data members and member methods, Actual parameters and formal parameters, Declaration of methods - static and non-static, method prototype / signature, - Pure and impure methods, - pass by value [with programs] and pass by reference [only definition with an example], Returning values from the methods , use of multiple methods and more than one method with the same name (polymorphism - method overloading).		**Chapter 4 User - defined Methods** Need of methods, syntax of methods, forms of methods, method definition, method calling, method overloading, declaration of methods, Ways to define a method, ways to invoke the methods – call by value [with programs] and call by reference [only definition with an example], Object creation - invoking the methods with respect to use of multiple methods with different names to implement modular programming, using data members and member methods, Actual parameters and formal parameters, Declaration of methods - static and non-static, method prototype / signature, - Pure and impure methods, - pass by value [with programs] and pass by reference [only definition with an example], Returning values from the methods , use of multiple methods and more than one method with the same name (polymorphism - method overloading).
		Chapter 5 Constructors Definition of Constructor, characteristics, types of constructors, use of constructors, constructor overloading. Default constructor, parameterized constructor, constructor overloading., Difference between constructor and method.		**Chapter 5 Constructors** Definition of Constructor, characteristics, types of constructors, use of constructors, constructor overloading. Default constructor, parameterized constructor, constructor overloading., Difference between constructor and method.

		Chapter 6 Library classes Introduction to wrapper classes, methods of wrapper class and their usage with respect to numeric and character data types. Autoboxing and Unboxing in wrapper classes. Class as a composite type, distinction between primitive data type and composite data type or class types. Class may be considered as a new data type created by the user, that has its own functionality. The distinction between primitive and composite types should be discussed through examples. Show how classes allow user defined types in programs. All primitive types have corresponding class wrappers. Introduce Autoboxing and Unboxing with their definition and simple examples. The following methods are to be covered: int parseInt(String s), long parseLong(String s), float parseFloat(String s), double parseDouble(String s), boolean isDigit(char ch),		**Chapter 6 Library classes** Introduction to wrapper classes, methods of wrapper class and their usage with respect to numeric and character data types. Autoboxing and Unboxing in wrapper classes. Class as a composite type, distinction between primitive data type and composite data type or class types. Class may be considered as a new data type created by the user, that has its own functionality. The distinction between primitive and composite types should be discussed through examples. Show how classes allow user defined types in programs. All primitive types have corresponding class wrappers. Introduce Autoboxing and Unboxing with their definition and simple examples. The following methods are to be covered: int parseInt(String s), long parseLong(String s), float parseFloat(String s), double parseDouble(String s), boolean isDigit(char ch), boolean isLetter(char ch),
				Chapter 7 Encapsulation Access specifiers and its scope and visibility. Access specifiers – private, protected and public. Visibility rules for private, protected and public access specifiers. Scope of variables, class variables, instance variables, argument variables, local variables.

				Chapter 8 Arrays Definition of an array, types of arrays, declaration, initialization and accepting data of single and double dimensional arrays, accessing the elements of single dimensional and double dimensional arrays. Arrays and their uses, sorting techniques - selection sort and bubble sort; Search techniques – linear search and binary search, Array as a composite type, length statement to find the size of the array (sorting and searching techniques using single dimensional array only). Declaration, initialization, accepting data in a double dimensional array, sum of the elements in row, column and diagonal elements [right and left], display the elements of two-dimensional array in a matrix format.
				Chapter 9 String handling String class, methods of String class, implementation of String class methods, String array The following String class methods are to be covered: String trim () String toLowerCase() String toUpperCase() int length( ) char charAt (int n) int indexOf(char ch) int lastIndexOf(char ch) String concat(String str) boolean equals (String str) boolean equalsIgnoreCase(String str) int compareTo(String str) int compareToIgnoreCase(String str) String replace (char oldChar,char newChar) String substring (int beginIndex)

Subject	UT-I	Half yearly Exam		Pre - Board Exam
			Project	
Value Education	NA	1.National and International Quest for Interfaith Values 2.The Makers of Our Constitution 3.Life Skills for Life A . Self-Awareness and Self-Assessment B. Thinking C. Creative Thinking D. Reasoning E. Problem-Solving F. Interpersonal Relationship	NA	3.Life Skills for Life G. Communication H. Ecological Communication I. Self-Reliance J. Self-Management Skills K. Team Spirit and Team Management L. Stress Management 4. Thanksgiving Day for Parents 5. Appreciation Day for Teachers

Subject	UT-I	Half yearly Exam		UT-II	Annual Exam	
			Project			Project
SUPW	N A	**Main Crafts/Services** Growing Medical Plants **Subsidiary Crafts/Services** First aid boxes **Other Class Assessment** Birthday Card Welcome and thank you Card Rangoli Design (on paper) Jewellery making Mosaic art	**SUPW (Allied Subject Craft)** Art - Weaving; Block Printing	N A	**Main Crafts/Services** Paramedical service **Subsidary Crafts/Services** Construction of wastepaper baskets **Other Class Assessment** Best out of Waste Paper Lanterns Clay Diya decoration Key holder board christmas ornaments	**SUPW (Allied Subject Craft)** Music - Indian -Vocal, Instumental Western - Piano or other instruments


“Life is like a camera. Focus on what's important, capture the good times. And if things doesn't work out, just take another shot!.”