SURENDRANATH CENTENARY SCHOOL, DIPATOLI, RANCHI-9
SESSION – 2026-27
ANNUAL PEDAGOGICAL PLAN
CLASS XII

Stream : Science

Sl. No.	Subject Code	Subject	
1	301	English Core	
2	042	Physics	
3	043	Chemistry	
4	044	Biology	
5	041	Mathematics	
6	083	Computer Science	
7	065	Informatics Practices	
8	030	Economics	
9	048	Physical Education	
10	049	Painting	
11	844	Data Science	
12	803	Web Applications	
13	841	Yoga	

SURENDRANATH CENTENARY SCHOOL
SESSION – 2026-27
ANNUAL PEDAGOGICAL PLAN
CLASS XII

Subject : ENGLISH CORE Books : FLAMINGO ; VISTAS
Subject Code: 301

Month	Chapter	No. of periods	Topics	Learning Objective	Learning Outcome	UT/PT/HY Pre-Board I&II
April '26	**Notice Writing** **My Mother At Sixty Six** **The Last Lesson** **The Third Level**	21	**Notice-** Use of notice, language, format **My Mother At Sixty Six-** Old age and the problems; Responsibility and constraints of offsprings; Volatile and demanding world **The Last Lesson**- War and its futility; Importance of learning mother tongue/ indigenous language; Ill effects of procrastination; Education; Patriotism **The Third Level-** Stress a common problem; Facing adversity and picking up the gauntlet is the only way out; Fantasy VS reality	To enable the learners: **Notice**- learn the format and permissible language of notice. **My Mother At Sixty Six-** Understand different genres of poems**.** Discuss poetic devices and the impact it creates. **The Last Lesson**- To be familiar with keywords/ phrases. Teach them to analyse text and interpret. Make them creative and language proficient. **The Third Level-** Find solution to the underlying problem expressed in the chapter.	Learners will be able to: **Notice**- Draft notices of different kinds correctly. **My Mother At Sixty Six-** Recite poem with voice modulation, identifies literary devices, linguistic features. Appreciates the impact of literary devices in poetry. Analyses the use of literary devices in the poem. **The Last Lesson-** Infer implicit meanings of unfamiliar vocabulary words, phrases etc. Explain themes and interprets text. **The Third Level-** Converse about personal experiences clearly and independently. Infers implicit meanings of unfamiliar vocabulary words, phrases etc. Explain themes and interprets text.	**Unit Test 1** 20/04/26 Notice; My Mother at Sixty Six; Reading Comprehension

May '26	**Writing Invitations and Replies** **Lost Spring** **Writing Letter to the Editor** **The Tiger King**	15	**Invitations and Replies-** Use of invitations and replies; Formal and informal invitations and replies **Lost Spring**- Poverty a great challenge; Progress of a nation depends on population control; Need for education; Government, politicians and their role in uplifting the lives of people below poverty line **Letter to the Editor-** Use of such letters to bring change in society; Topics related to society **The Tiger King-** Wild life, need for conservation; Authenticity of prophecies and predictions- superstition; Corruption imposed by powerful people on the innocent people	To enable the learners: **Invitations and Replies-** Learn about formats, language and kinds of invitations and replies. **Lost Spring-** Understand poverty and its vicious circle. Infer social issues mentioned in text. Help learners in drawing comparisons and contrasts between both parts of the lesson. Teach how to write character sketch. **Letter to the Editor-** Understand that these letters are written for issues which pertain to the society, or nation as a whole. Highlight the difference between national daily and local daily, use of formal language, format and CODER. **The Tiger King-** Understand the underlying problem expressed in the chapter. Help in drawing comparisons and contrasts. Teach to write character sketch. Teach to read the narrative, comprehend and draw inferences. Help learners for groups and prepare role play.	Learners will be able to: **Invitations and Replies-** Draft different kinds of invitations and replies correctly. **Lost Spring-** Read narrative nonfiction and draws comparisons. Compare and contrasts two ideas within a text. Make predictions about characters' actions. Infer cause and effect relationships between the events in the text. **Letter to the Editor-** Write letters based on topics given and relate them with real life experiences in correct format. Write proper observation and suggestions **The Tiger King-** Read the text to identify the complexity of ideas, enjoy the humour in text. Infer character traits based on their actions and feelings. Predict an alternative ending for the story. Present the lesson in the form of play.	

June '26	**Deep Water** **Writing Article** **Keeping Quiet**	11	**Deep Water-** Discussion on phobias; types of phobias; ways of overcoming phobia, role of family and friends in removing phobia **Writing Article-** Writing effective articles- format, content and expression **Keeping Quiet-** Discussion on meaning and importance of introspection and retrospection	To enable the learners: **Deep Water-** Read the narrative, comprehend and draw inferences. Train them to speak about their fear and ask them to overcome strategically as part of a very important life skill. **Writing Article-** Learn format, importance of headline, byline, a proper introduction, coherence, cohesion, formal tone, argument and conclusion. Revise use of CODER. **Keeping Quiet-** Discuss poetic devices and the impact it creates. Teach voice modulation, pronunciation and punctuation. Discuss what we can achieve by introspection in our lives.	Learners will be able to: **Deep Water-** Read with comprehension and identify the complexity of ideas and relate learning with personal, social experiences in writing and speech. Converse about personal experiences clearly and independently. **Writing Article-** Write clear and coherent articles following correct format, using suitable vocabulary and formal tone and demonstrating awareness of audience and purpose. **Keeping Quiet-** Read poetry with deeper understanding, appreciates the impact of literary devices in poetry and infers the poet's message. Compose a short poem independently.	

July '26	**Journey to the End of the Earth** **Report Writing** **The Rattrap** **A Thing Of Beauty** **The Enemy** **Indigo**	23	**Journey to the End Of the Earth-** Climate change; SDGs and purpose of SDGs; Initiatives taken at national and international levels; Role of individuals in protecting environment and eco system **Report Writing-**Format, language, rules, different types of reports, use of correct tense in report writing **The Rattrap-** Theme of loneliness; Presence of essential goodness in man; Power of positivity; Effect of kindness and understanding **A Thing Of Beauty**- Beauty is an eternal truth; It never diminishes or fades; Imagery; Metaphor **The Enemy**- Humanism transcends all man-made prejudices and barriers- a great lesson of peace, dilemma, ethics, responsibilities, sympathy and humanism. **Indigo-** Relation between history and the chapter. Life of Gandhiji and his contribution. Importance of critical understanding in taking decisions	To enable the learners: **Journey to the End Of the Earth-** Discuss climate change, SDGs, Antarctica and its physical features. Make learners familiar with Students On Ice Programme. **Report Writing-** Learn the format of report writing. Use of past tense, correct person and grammatically error free formal language. **The Rattrap-** Learn about the style of writing, symbolic use of rattrap, presence of essential goodness in every human. Help the learners empathize with the character of peddler. **A Thing Of Beauty**- Learn the meaning of beauty, the central idea of the poem and the poetic devices used.. Teach how beautiful objects provide comfort and inspiration, contrast between human suffering and beauty **The Enemy**- Realise the essential worth of human life and universal brotherhood, teach special terminology used and critically analyze war and its aftermath. **Indigo-** Understand the importance of a good leader and team work. Research history of indigo farming in pre-independent India. Teach to read the narrative, mprehend and draw inferences.	Learners will be able to: **Journey to the End Of the Earth** Write similar articles on topics related to climate change, role of students in conserving wild life/fossil fuel/ natural resources. Students write a report on latest trip of 'Students On Ice'. **Report Writing-** Write reports of different kinds with proper tenses and format, using correct grammar, formal language and phrases in expressing. **The Rattrap-** Read like critics, explain symbolic use of 'Rattrap', write character sketch and come up with a creative writing task of giving a different ending to the story. **A Thing Of Beauty**- Explain the eternal theme of beauty, identify the poetic devices used in the poem, relate the poem to real life experience and write/draw creatively on themes related to beauty and nature. **The Enemy**- Analyse characters, explain their dilemma. Write about importance of peace and brotherhood. Learners relate the lesson to the present war situation in the world and its repercussion. **Indigo-** Research Gandhiji's life, understand historical context and appreciate Gandhiji's contribution for India.	**Unit Test 2** 13/07/26 Letter to the Editor; Deep Water; The Tiger King; Keeping Quiet

August '26	**A Roadside Stand** **Poets and Pancakes** **On the Face of It** **The Interview**	20	**A Roadside Stand**- Contrast between the rich and the poor, city dwellers and miserable villagers; Question the distribution of resources and opportunities in society **Poets and Pancakes**- Film industry; Humour and Satire; Gemini Studios; Screenplay; Literary influence **On the Face of It**- Highlight the issue of disability, acid attacks; Trauma suffered by the victims; Role of family and society; Importance of being decisive in life **The Interview**- Power, ethics and significance of Interviews; Art of communication; Celebrity culture and journalism	To enable the learners: **A Roadside Stand**- Understand the plight of roadside stand owners, contrast between urban prosperity and rural deprivation depicted in the poem. Relate the poem to the current situation of present India and discuss poetic devices. **Poets and Pancakes**- Make learners familiar with Gemini Studios and its functioning, elements of humour and satire in literature, the theme of **On the Face of It**- Act as the characters of the play, help them read with proper voice modulation. Teach learners theme of identity, importance of being optimistic in life and be empathetic towards the victims who suffered from trauma of any kind. **The Interview**- Understand journalism and ethics, role of interviews in media. Eco's views on writing, language and success.	Learners will be able to: **A Roadside Stand**- Identify and interpret poetic devices, interpret the tone of the poem, express personal views on issues like poverty, development and social justice. **Poets and Pancakes**- Describe the working environment, hierarchy, characters clearly, appreciate humour and satire in prose and relate the lesson to real life workplace situation. **On the Face of It**- Act as the characters of the play, write character sketch and relate the lesson to real life situation. Communicate ideas clearly with written expression. **The Interview**- Analyse different viewpoints on interviews, develop communication and questioning skill. Conduct interviews in pairs (mock interview).	**Practice Test 1** 31/08/26 The Last Lesson; Lost Spring; Deep Water; A Thing of Beauty; The Third Level, Invitations and Replies; Letter to the Editor; Reading Comprehension

September '26	**Job Application** **Going Places** **Revision**	11	**Job Application**- Formal job application in proper format and bio-data/resume writing **Going Places**- Dreams, reality and Adolescent imagination; Theme of escapism Conduct ASL for Half Yearly Exam	To enable the learners: **Job Application**- Understand the purpose, format, important components of a job application with resume and appropriate tone and use of language. **Going Places**- Examine the role of socio-economic background in shaping aspiration, Sophie's tendency to fantasize. Express personal views on dreams Vs reality.	Learners will be able to: **Job Application**- Write a well-structured job application and prepare a clear and organised bio-data/ resume. Edit and improve their writing based on teacher's feedback. **Going Places**- Write character sketch of the protagonist, research adolescent psychology and aspirations, Relate the story to real life experiences.	**Half Yearly Exam** 17th September to 30th September The Last Lesson; Lost Spring; Deep Water; The Rattrap; Indigo; Poets and Pancakes; The Interview; My Mother at Sixty Six; Keeping Quiet; A Thing of Beauty; A Roadside Stand; The Third Level; The Tiger King; Journey to the End of the Earth; The Enemy; On the Face of It Writing: Notice; Invitations and Replies; Letter to the Editor; Job Application; Report; Article Reading Comprehension

October '26	**Aunt Jennifer's Tigers** **Memories of Childhood**	15	**Aunt Jennifer's Tigers**- Constraints of married life experienced by a woman; Gender roles; Art as expression of freedom **Memories of Childhood**- Theme of discrimination, inequality, marginalization; The trauma faced in childhood; Overcoming injustice	To enable the learners: **Aunt Jennifer's Tigers**- Aware of male dominance, empathize with the victims of male chauvinism. Understand that man and women are equal. Help learners analyse symbolism and list the poetic devices. **Memories of Childhood**- Understand and reflect on the right perspective of treating underprivileged and marginalized. Discussion on the movie Article 15. The then society and its beliefs.	Learners will be able to: **Aunt Jennifer's Tigers**- Identify irony, analyse figurative language, poetic devices and their use in the poem. Relate the theme with real life experiences. **Memories of Childhood**- Bridge gaps between different castes, social background, foster understanding, and advocate for a more inclusive and compassionate world. Explain issues of discrimination and display social awareness through writing tasks.	**Practice Test 2** 13/10/26 Indigo; Poets and Pancakes; Going Places; A Roadside Stand; Journey to the End of the Earth; On the Face of It; Report writing; Article writing; Reading Comprehension
November '26	**Revision**	05	Conduct ASL for Pre Board Exam I			**Pre Board I** 12th November onwards Complete Syllabus
December '26	**Revision**		Conduct ASL for Pre Board Exam II			**Pre Board II** 19th December onwards Complete Syllabus
January '27	**Revision**		Conduct ASL for CBSE-SSCE Examination 2027			
February '27			Board Examination 2027			
March '27			Board Examination 2027			

SURENDRANATH CENTENARY SCHOOL, RANCHI

ANNUAL PEDAGOGICAL PLAN (2026-2027)

CLASS: XII
SUBJECT: PHYSICS (042)

BOOKS : NCERT TEXTBOOK,
NCERT EXEMPLAR & S.L.ARORA
LAB MANUAL(Blue Print)

MONTH	CHAPTER	NO.OF PERIODS	TOPICS	LEARNING OBJECTIVES	LEARNING OUTCOMES	UT/TERM
APRIL	**Chapter–1**: Electric Charges and Fields SDG-9:Industry innovation & Infrastructure	**14**	➢ Electric Charges; Conservation of charge, Coulomb's law. forces between multiple charges; superposition principle and continuous charge distribution. ➢ Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field. ➢ Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly. wire, uniformly charged infinite plane sheet and uniformly charged thin	**To help the learners** ➢ Explain the theoretical and mathematical concepts of Electric Charges and its Properties and Electrostatics forces and fields of different charge distributions. ➢ To evaluate Electrostatics forces and fields of different charge distributions ➢ To explain and evaluate The concept of electric flux. ➢ To differentiate	**Students will able to** ➢ Compare the basic knowledge of Electric charges, concept of electrostatic force in vector form different distribution of charges ➢ List the phenomena of charging of a body with daily life. ➢ Relate the Electrical potential with electric field ➢ Apply, analyze and evaluate the Gauss law and its application in numerical. ➢ evaluate the electric potential due to different charges. ➢ Student will be able to solve	

	Chapter–2: Electrostatic Potential and Capacitance – SDG-12: Responsible Consumption & Production	**12**	spherical shell (field inside and outside). ➢ Electric potential electric potential due to a point charge, a dipole and system of charge; equi-potential surfaces, electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field ➢ Conductors and insulators, free charges and bound charges inside a conductor. ➢ Dielectrics and electric polarization , capacitors and capacitance, combination of and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor (no derivation, formulae only)	the concept of Electric potential due to different charge distributions and its relation between electric field. * To learn the concept of Electric potential due to different charge distributions. * To apply about the capacitance, dielectrics and its polarization. The student will able to learn about the application and evaluation based problems on capacitance.	remembering based questions the working of charge storing device i.e, capacitor. ➢ The student will able to apply the application and evaluation based problems on capacitance	**UT : 01** **27/04/26**

			➢ ***PRACTICAL 1*** To determine the resistivity of two/three wires by plotting a graph between potential difference versus current. ***<u>PRACTICAL 2</u>*** To find the resistance of a given wire/standard resistor using a metre bridge.	To determine the resistance per cm of a given wire by plotting graph of potential difference versus current, and hence to determine its resistivity.	**Learners will able to** Performed Ohm's law. To find the relation between voltage, current and resistance. To calculate the resistivity of the material of a given wire.	
MAY	**Chapter–3:** Current Electricity SDG-7: Affordable & clean energy	**18**	➢ Electric current, flow of electric charges in a metallic conductor. Drift velocity, mobility and their relation with electric current; Ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity. ➢ Internal resistance of a cell,	**To help the learners** To make the learners to differentiate the concept of different electrical devices	*Students will be able to solve the practical application of resistors and cells and it different combination in real life. *The student will able to apply the application and evaluation based problems on Ohm's Law. 4. Students are able to	

			potential difference and emf of a cell, combination of cells in series and in parallel 3) Kirchhoff's laws and simple applications, Wheatstone bridge **PRACTICAL 3:-** To verify the laws of combination (series) of resistances using a meter bridge. OR To verify the laws of combination (parallel) of resistances using a meter bridge.	To differentiate the concept of different electrical devices like wheat stone bridge and its application in meter bridge and potentiometer with real life application.	apply ,analyze and evaluate the concept of Potential difference and current and also the process of finding the unknown current in a loop using KVL and KCL. **Students will be able to** Operate different electrical instruments like POT, Meter bridge, Galvanometer, Voltmeter, ammeter etc	
SUMER VACCATION(14th May to 13th June)						
JUNE SDG-4:Quality Education	**Chapter–4:** Moving Charges and Magnetism	**15**	➢ Concept of magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop ➢ Ampere's law and its applications to infinitely long straight wire. Straight solenoid (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields.	**To help the learners** ➢ Apply Ampere's law to determine the magnetic field due to an infinitely long straight wire. Explain qualitatively the **magnetic field**	**Students will be able to** ➢ Operate different electrical instruments like POT, Meter bridge, Galvanometer, Voltmeter, ammeter etc. also they learned to find the least count of given measuring	

			➢ Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; Current loop as a magnetic dipole and its magnetic dipole moment, moving coil galvanometer- its current sensitivity and conversion ➢ to ammeter and voltmeter. ***<u>PRACTICAL 4:-</u>*** To convert the given galvanometer (of known resistance and figure of merit) into a voltmeter of desired range and to verify	inside and outside a solenoid. ➢ Explain the construction and working of a moving coil galvanometer. Define **current sensitivity** and its dependence on physical parameters. Analyze conversion of galvanometer into: **Ammeter** (using shunt resistance) **Voltmete**(using series resistance) **To help the learners** To determine the resistance of a galvanometer by half deflection	instrument Compute force between parallel conductors using given parameters. Explain and apply the **definition of ampere** in quantitative problems. Analyze real-life implications in electrical transmission systems **Students will able to** ➢ Identify the various components used in the experiment. ➢ To apply the	

			the same. OR To convert the given galvanometer (of known resistance and figure of merit) into an ammeter of desired range and to verify the same.	method and to find its figure of merit. learners to identify the concept different measuring devices like galvanometer, voltmeter and ammeter and interrelation between them	concept, 'figure of merit'. ➢ To apply the conversion of galvanometer into ammeter and voltmeter of desired range	
JULY SDG-4:Quality Education	**Chapter–5:** Magnetism and Matter	**10**	➢ Bar magnet, bar magnet as an equivalent solenoid (qualitative treatment only), magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis (qualitative treatment only), torque on a magnetic dipole (bar magnet) in a uniform magnetic field (qualitative treatment only), magnetic field lines. ➢ Magnetic properties of materials- Para-, dia- and ferro – magnetic substances with examples, Magnetization of materials, effect of temperature on magnetic properties.	**To help the learners** To make the learner to identify the different kinds of magnetic material and earth's magnetic field. To explain the magnetic properties of matter, including the concepts of diamagnetismpar amagnetism, and ferromagnetism.	**Learner's will able to** ➢ Explain different kinds of magnetic materials.Explain the concept of a **bar magnet as an equivalent solenoid** using current loop analogy. ➢ Analyze the **magnetic field pattern** produced by a bar magnet and relate it to field lines. ➢ Differentiate between **uniform and non-uniform magnetic fields** using field line diagrams.	**UT 02 :- 20/07/2026**

	Chapter:-06 Electromagnetic induction SDG-7:Affordable & clean energ **Chapter–7:** Alternating Current SDG-7:Affordable & clean energy	**10** **14**	Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Self and mutual induction. ➢ Alternating currents, peak and RMS value of alternating current/voltage; reactance and impedance ➢ LCR series circuit (phasors only), resonance, power in AC circuits, power factor, wattles current. AC generator, Transformer.	To learn the concept Electromagnetic Induction of single and double coil. List the different method to induce an emf in a given conductor Explain the concept of Mutual and self induction, **Apply Basics of AC** Define alternating current (AC) and direct current (DC) Explain how AC varies sinusoid ally with time. **Explain Important Terms** Define and calculate Peak value (maximum current/voltage)	➢ Explain the **properties of magnetic field lines** (closed loops, direction, density). ➢ Analyze the **magnetic dipole moment** and its physical significance. ➢ Explain the variation of magnetic field along: o axial position o equatorial position ➢ Compare the **strength and direction** of magnetic fields at axial vs equatorial points. ➢ Analyze how distance affects field intensity of a dipole. ➢ Explain how a magnetic dipole behaves in a uniform magnetic field.	

				RMS value (effective value) Average value Frequency and time period Angular frequency ➢ Generator and transformer. ➢ Deduce the Principle construction working and real life application of Transformer and Dynamo.	➢ Analyze the **factors affecting torque** on a dipole. ➢ Predict the **orientation of dipole** in stable and unstable equilibrium positions. ➢ Describe alternating current and its advantages over DC Represent AC using mathematical equations and graphs Calculate inductive reactance and capacitive reactance Find impedance of LCR circuits ➢ Explain working principle of **AC generator** using electromagnetic induction. ➢ Analyze construction and functioning of **transformer**. ➢ Differentiate	

			PRACTICAL 5:- To find the value of v for different values of u in the case of a concave mirror and to find the focal length.	**To help the learners** To find the value of v for different values of u in the case of a concave mirror.	between: ○ step-up transformer ○ step-down transformer ➢ Explain **energy losses in transformers** and methods to reduce them. ➢ **Students will able to** Establish the relationship between u ,v & f and will draw the graph.	
AUGUST	**Chapter–8:** Electromagnetic Waves SDG-3:Good health & well being	**04**	➢ Basic idea of displacement current, Electromagnetic waves, their characteristics, their transverse nature (qualitative idea only). ➢ Electromagnetic spectrum (radio waves,	**Understand the concept of electromagnetic waves** 1.Explain what electromagnetic (EM) waves are 2.Understand how they are produced by accelerating charges 3. **Learn properties**	**Students will able to** ➢ Apply the Practical application of EMW in our Daily life and ➢ analyze and comparison between different EM waves. ➢ Describe how EM waves are produced by accelerating	**First Practice test- 27/08/26**

	Chapter–9: Ray Optics and Optical Instruments SDG-12:Responsible consumption & Production	**20**	microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses. ➢ Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibers, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. ➢ Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.	**of EM waves** *Travel in vacuum (no medium needed) *Carry energy and momentum *Show reflection, refraction, interference, diffraction **Analyse basic concepts of ray optics** ➢ Explain light as rays and laws of reflection & refraction ➢ Applyrectilinear propagation of light ➢ Define critical angle Explain conditions for TIR .Learn applications like optical fibre. Working of: • Microscope	charges ➢ State that they do not require a material medium **Students will be able to:-Explain reflection and refraction clearly** ➢ **Solve conceptual questions based on laws** **Solve numerical problems** ➢ Using mirror formula, lens formula, magnification ➢ Apply correct sign convention **Explain & Apply optical instruments.**	

	Chapter–10: Wave Optics SDG-12:Responsible consumption & Production	**10**	➢ Wave front and Huygens's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygens's principle.	• Telescope **Explain wave nature of light** ➢ Explain why light behaves as a wave ➢ Apply and analyse Huygens' Principle **Explain Huygens' Principle** Use it to explain: Reflection Refraction	**Explain wave behavior of light** ➢ Justify interference and diffraction phenomena ➢ Explain reflection and refraction conceptually ➢ Using fringe width formula ➢ Calculate wavelength, slit separation, distance. **Analyze interference patterns** ➢ Identify bright and dark fringes ➢ Solve questions based on YDSE **Explain diffraction patterns** ➢ Describe central maximum and secondary maxima	

			PRACTICAL 6:- To find the focal length of a concave lens using a convex lens.	**To help the learners** To find the focal length of the given concave lens	➢ Solve basic numericals **Students will able to** differentiate different types of mirrors and their image properties. Establish the mirror formula.	
SEPTEMBER	**CONT…….** **Wave Optics**		➢ Interference, Young's double slit experiment and expression for fringe width (No derivation final expression only), coherent sources and sustained interference of light, diffraction due to a single	**Apply interference of light** ➢ Explain constructive and destructive interference	**Explain diffraction patterns** ➢ Describe central maximum and secondary maxima ➢ Solve basic numericals.	**TERM I EXAM 17TH Sept. to 30th Sept.**

	Chapter–11: Dual Nature of Radiation and Matter SDG-7:Affordable & clean energy	**08**	slit, width of central maxima (qualitative treatment only). ➢ Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. ➢ Experimental study of photoelectric effect Matter waves-wave nature of particles, de-Broglie relation.	➢ Study Young's Double Slit Experiment (YDSE) **Explain And apply the concept of dual nature** ➢ Explain that radiation and matter show both wave and particle nature **Study photoelectric effect** ➢ Apply the phenomenon of emission of electrons from a metal surface ➢ **Learn key terms:** ○ Threshold	**Differentiate key concepts** ➢ Interference vs diffraction ➢ Wave optics vs ray optics Students will be able to: **Explain dual nature clearly** ➢ Describe wave-particle duality with examples **Analyze photoelectric effect** ➢ Explain graphs and experimental results ➢ Identify stopping potential, threshold frequency **Differentiate concepts** ➢ Intensity vs frequency effects ➢ Wave theory vs particle theory **Explain development of**	

	Chapter–12: Atoms SDG-15:Life on land	**08**	➢ Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom ➢ Expression for radius of nth possible orbit, velocity and energy of electron in nth orbit, hydrogen line spectra (qualitative treatment only). ***PRACTICA L 7-*** To determine the angle of minimum deviation for a given prism by plotting a graph between the angle of incidence and the angle of deviation.	frequency o Work function **Explain Rutherford's experiment** ➢ Understand Alpha Particle Scattering Experiment ➢ Learn its observations and limitations **Bohr's atomic model** ➢ Study Bohr Model of Atom ➢ Learn Bohr's postulates **Explain refraction through a prism** ➢ Learn how light bends when passing through a prism ➢ Understand	**atomic models** ➢ Compare Thomson, Rutherford, and Bohr models **Describe Rutherford experiment clearly** ➢ Write observations, conclusions, and limitations **Solve numerical problems** ➢ Based on energy levels and transitions **Students Will able to Perform the experiment independently** ➢ Take readings of angle of incidence and deviation correctly	

				angle of deviation.		
OCTOBER	**Chapter–13:** Nuclei SDG-15:Life on land **Chapter–14:** Semiconductor Electronics: Materials, Devices and Simple Circuits SDG-13:Climate Action	**07** **10**	➢ Composition and size of nucleus, nuclear force ➢ Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion. ➢ Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction ➢ Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.	**Explain basic nuclear concepts** ➢ Structure of nucleus (protons and neutrons) ➢ Terms like atomic number (Z), mass number (A) **Explain binding energy** ➢ Binding energy and binding energy per nucleon ➢ Stability of nucleus **Explain p-n junction** ➢ Formation of depletion region ➢ Barrier potential	**Student are able to** ➢ Explain nuclear structure ➢ Solve numerical problems ➢ Analyze stability of nuclei **Differentiate n-type and p-type** ➢ Explain doping and its effect **Interpret diode characteristics** ➢ Draw and explain V-I graph ➢ Distinguish forward and reverse bias	**Second practice test- 12/10/26**

			PRACTICAL 8 To determine refractive index of a glass slab using a travelling microscope.	**To help the learners** To determine the refractive index of a Glass slab using travelling microscope	**Student's will able** To evaluate different refractive index of different materials .	
NOVEMBER	**REVISION**	**10**	**REVISION**	Students will be able to solve PYQs and Sample Paper Questions		**PRE-BOARD-1** **12/11/2026**
DECEMBER	**REVISION**	**22**	**REVISION**	Student will able to recapitulate the previous knowledge +PYQs		**PRE-BOARD-2** **19/12/2026**
JANUARY 2027	**REVISION**	**10**	**REVISION**	Student will able to recapitulate the previous knowledge		**Tentative Board Practical.**

SURENDRANATH CENTENARY SCHOOL ,RANCHI
ANNUAL PEDAGOGICAL PLAN CLASS – XII
CHEMISTRY
(Session 2026 – 27)

BOOKS: NCERT CHEMITRY TEXTBOOK FOR CLASS XII, NCERT EXEMPLAR						
MONTHS	**CHAPTER**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
APRIL	CH- 1 **Solutions**	10	*Solubility: solubility of solid in liquid and factors affecting it. Solubility of gas in a liquid and factors affecting it (Henry's law and its application) *Vapour pressure of liquid solutions and factors affecting it. *Raoult' s law for solution containing volatile solute and non – volatile solute. *Ideal and non – ideal solution, Types of non – ideal solution, Azeotropic mixture and types of Azeotropic mixture. *Colligative property: *Elevation in boiling point,, *Depression in freezing point, *Relative lowering of vapour pressure , *Osmosis, osmotic pressure,	Students will: * Understand the formation of different types of solutions. * gain knowledge about concentration of solution in different units *understand Henry`s law and Raoult`s law. * acquire knowledge to differentiate between ideal and non -ideal solutions *understand deviations of real solutions from Raoult`s law Types of solution, expressing concentration of solutions. *gain knowledge about Colligative properties of	Students should be able to: * Explain the formation of different types of solutions. *Write the formula of concentration terms and solve its numerical *state and explain Henry`s law and  Raoult`s law. *Classify solution as ideal and ideal *Define colligative properties and discuss different reasoning questions. *describe colligative properties of solutions and correlate these with molar masses of the solutes	

			Reverse *Osmosis and its application, *Abnormal molecular mass, *Van't Hoff factor. **ACTIVITY- 1** **Experiential Learning:** Children will make ice cream using the concept of depression in freezing point concept during summer vacation and relate it to the technique used by kulfiwala in making ice cream. **Skills:** Experimental and analytical skill. **ACTIVITY -2**: **Art integrated:** collage making on practical application of colligative properties in our daily live. **Skills:** Creative thinking **ACTIVITY -3** Discussion about RO water purification technique and ways to reuse RO waste water. **Skills**: problem solving.	solution and correlation with molar masses of solute *know about Abnormal molecular mass, *Vant Hoff's factor *Understand and explain abnormal colligative properties exhibited by some solutes in solutions.	*explain abnormal colligative properties exhibited by some solutes in solutions.	

	CH-2 **Electrochemistry**	10	*Redox reactions, Electrochemical cell, cell representation and function of salt – bridge, Electrode potential, Cell potential, EMF *Measurement of electrode potential and cell potential, Nernst equation, equilibrium constant from Nernst equation, *Electrochemical cell and Gibbs energyof reaction. *Conductance, specific conductance, molar conductivity describe an electrochemical cell and differentiate between galvanic and electrolytic cells. *Variation of conductance, conductivity and molar conductivity with concentration. *Kohlrausch law of independent migration of ions and its application. *Electrolytic cell, Faraday's law of electrolysis. *Batteries: primary batteries and secondary battery, fuel -cell. *Corrosion and methods to prevent corrosion.	Students will : *Understand the concept of Redox reactions, Electrochemical cell, cell representation function of salt – bridge, *acquire knowledge of Electrode potential, Cell potential, EMF. *gain knowledge of Measurement of electrode potential and cell potential, *get the understanding of Electrochemical cell and Gibbs energy of reaction *understand the meaning of Conductance, specific conductance, molar conductivity *acquire the concept to apply Nernst equation for calculating emf of galvanic cell and define standard potential of the cell. *understand relation between standard potential of the cell,	Students should be able to : *Explain the Redox reactions, Electrochemical cell, cell representation and function of salt –bridge, Electrode potential, Cell potential, EMF. *Discuss the measurement of electrode potential and cell potential, Nernst equation, equilibrium constant from Nernst equation, *Derive the relation between electrochemical cell and Gibbs energy of reaction *Define Conductance, specific conductance,molar conductivity*describe anelectrochemical cell and differentiate between galvanic and electrolytic cells *Solve Nernst equation to calculating emf of galvanic cell and define standard potential of the cell. *derive relation between standard potential of the cell, Gibb`s energy of cell reaction and its equilibrium constant.	

			ACTIVITY -1 **Experiential learning :** Children will perform experiment to calculate the emf of a galvanic cell and also electroplate spoon in the laboratory. **Skills:** Curiosity , analytical skill **ACTIVITY-2:** Children will do a survey on the different types of batteries available in the market and compare them with respect to utility, pollution and economically viability and make a presentation on it. **Skills:** Critical thinking	*gain knowledge of Gibb`s energy of cell reaction and its equilibrium constant. *understand the difference between ionic and electronic conductivity. *understand variation of conductance, conductivity and molar conductivity with concentration. *Gain knowledge of Kohlrausch law of independent migration of ions and its application. *Enhance concept of electrolytic cell, Faraday's law of electrolysis. *Gain knowledge about batteries: primary batteries and secondary battery, fuel - cell. *Understand corrosion and methods to prevent corrosion.	*differentiate between ionic and electronic conductivity. *Discuss variation of conductance, conductivity and molar conductivity with concentration. *State of Kohlrausch law of independent migration of ions and its application. *Explain electrolytic cell and state Faraday's law of electrolysis. *Recall Batteries: primary batteries and secondary battery, fuel - cell. *Discuss corrosion and methods to prevent corrosion.	

MAY	CH- 3 **Chemical kinetics**	10	*Average and instantaneous rate of a reaction *Factors affecting rate of reaction *Order and molecularity of reaction *Rate law and specific rate constant: integrated rate equation and half life only for zero and first order. *Concept of collision theory only elementary idea. **ACTIVITY 1:** To observe the rate of reaction by varying the concentration and temperature for a given reaction and document their observation in the form of a project. **Skills**: analytical skill	Students will : * understand the average and instantaneous rate of a reaction *gain knowledge to express the rate of a reaction in terms of change in concentration of either of the reactants or products with time. *understand difference between elementary and complex reactions. * acquire knowledge about rate constant. and dependence of rate of reactions on concentration, temperature and catalyst *acquire the concept to derive integrated rate equations for the zero and first order reactions *understand collision theory	Students should be able to : *write the average and instantaneous rate of a reaction *express the rate of a reaction in terms of change in concentration of either of the reactants or products with time. *distinguish between elementary and complex reactions. *define rate constant. *discuss the dependence of rate of reactions on concentration,temperature and catalyst *derive integrated rate equations for the zero and first order reactions *determine the rate constants for zero and first order reactions *describe collision theory	

MAY	CH-6 **Haloalkanes and haloarenes** **SDG No 3**: Good health and well being	08	Haloalkanes Nomenclature, nature of C-X bond , physical and chemical properties , mechanism of SN , optical rotation **Haloarenes:** Nature of C-X bond, substitution reaction,monosubstituted compounds. Uses and environmental effects of polyhalogen compounds. **<u>ACTIVITY :1</u>** **Group discussion**- "Can we do away with the use of DDT completely ''	Students will : *Acquire knowledge to name haloalkanes and haloarenesaccording to the IUPAC system of nomenclature from their given structures. *understand the reactions involved in the preparation of haloalkanes and haloarenes and understand various reactions that they undergo. *gain concept to correlate the structures of haloalkanes and haloarenes with the various types of eactions. *understand use of stereochemistry as a tool to get the reaction mechanism.	Students should be able to : *Write the name of haloalkanes and haloarenes according to the IUPAC system of nomenclature from their given structures. *Recall the reactions involved in the preparation of haloalkanes and haloarenes and understand various reactions that they undergo. *correlate the structures of haloalkanes and haloarenes with the various types of reactions. * discuss stereochemistry as a tool to understand the reaction mechanism. *recall the applications of organo-metallic compound and highlight the environmental effects of polyhalogen compounds.	**UNIT TEST –I** **10/06/2026** **SOLUTION & Electrochemistry**

				*understand the applications of organo-metallic compounds and the environmental effects of polyhalogen compounds.		
JUNE	CH-7 **Alcohols, phenols and ethers.**	10	**Alcohols** : * nomenclature, preparation of alcohols,physical and chemical properties (of primary alcohols only), *identification of primary, secondary and tertiary alcohols mechanism of dehydration, uses with special reference to methanol and ethanol. **Phenols** : - *Nomenclature , methods of preparation, physical chemical properties, acidic nature of phenol, electrophilic Substitution reactions, uses of phenols. **Ethers**: - *Nomenclature, methods of preparation, physical and chemical properties, uses.	Students will be : *Understand Nomenclature of alcohols, phenols and ether according to the IUPAC system of nomenclature. *acquire knowledge the reactions involved in the preparation of alcohols, phenols and ethers *gain knowledge to correlate physical properties of alcohols, phenols and ethers with their structures. *Understand the chemical reactions of the three classes of compounds on the basis of their functional groups.	Students should be able to: *Write the name of alcohols, phenols and ether according to the IUPAC system of nomenclature. *Recall the reactions involved in the preparation of alcohols, phenols and ethers *Discuss the physical properties of alcohols, phenols and ethers with their structures. *Recall the chemical reactions of the three classes of compounds on the basis of their functional groups	

			<u>ACTIVITY 1:</u> Identification of primary , secondary and tertiary alcohols by experimentation in laboratory. **<u>Skills</u>:** analytical skill.			
JUNE + JULY	CH-9 **Amines** **SDG No 4 :** **QUALIT**	10	*Nomenclature, Classification and structure of amines *Methods of preparation, *Physical Properties, Chemical properties *Identification of primary secondary &tertiaryamines. *Diazonium salts: Preparation, Chemical reactions&importance in synthetic organic chemistry. **<u>ACTIVITY 1 :</u>** 'Group discussion': To	Students will *Understand the classification of amines *Gain knowledge of nomenclature of *Understand the methods of preparation of amines. *acquire the knowledge about properties of amines * understand preparation and properties of Benzene	Students will be able to *Recall classification of amines *Discuss the IUPAC names of amines * Recall the preparation of amines and Benzenediazonium chloride. *Recall the properties of amines and benzene diazonium chloride *Discuss the distinguish B/W different amines with a chemical test.	

JULY	**Y IN EDUCATION** CH- 10 **Biomolecules**	10	understand the uses/application of amines in everyday life with various examples i.e.inExplosives like TNT,TNB insecticides etc. **Skills:**Analytical skill *Classification (aldoses &ketoses), Monosaccharides (Glucose&Fructose), D-Lconfiguration, *Oligosaccharides (Sucrose,Lactose&Maltose) * Polysaccharides(Starch, Cellulose & Glycogens), *Importance of carbohydrates *Proteins: Elementary idea of amino acid, peptide bond &Polypeptides. *Proteins ,structure of proteins – primary, Secondary,tertiary structure & Quartenary structure (Qualitative Idea only) *Denaturation of proteins. *Enzymes , Hormones	diazonium compound Students will : *gain knowledge about classification of carbohydrates,proteins, vitamins *understand the structure &functions of carbohydrates & protein. *understand functions of vitamins *acquire the knowledge of DNA & RNA structure and functions	Students will be able to : *Recall the classification of carbohydrates, proteins, vitamins *Discuss the structure &functions of carbohydrates &proteins *Recall the functions of vitamins *Explain the structure and functions of DNA & RNA.	

			(elementary idea excluding structure) *Vitamins: Classification&Functions *Nucleic Acids–DNA &RNA **<u>ACTIVITY-1</u>:** EXPERIENTIALACTIVITY: Prepare modals of the structure of DNA ,RNA ,Proteins for easy understanding. **<u>ACTIVITY-2</u>:** To prepare mind map for easy revision. **Skills**: Creativity			

AUGUST	**Chapter-4** **d and f block elements**	12	*General introduction, electronic configuration, occurrence and *characteristics of transition elements, general trends In properties of the first row transition metal, metallic character, ionization enthalpy, oxidation state, ionic radii, colour Catalytic property, magnetic property, interstitial compounds, alloy formation. *Preparation and properties of $K_2Cr_2O_7$ and $KMnO_4$. ***Lanthanoids** – Electronic configuration, oxidation state, chemical reactivity and lanthanoids contraction and its consequences. ***Actinoids** – Electronic configuration, oxidation states and comparison with lanthanoids **<u>ACTIVITY 1:</u>** **Art Integrated:** Children to develop pneumonic of d and f block elements. **Skill:** Creative thinking.	Students will : *gain knowledge about the electronic configuration of the d and f block elements in the periodic table. *understand the relative stability of various oxidation states in terms of electrode potential values *acquire knowledge about the preparation, properties structures and uses of some important compounds such as $K_2Cr_2O_7$ and $KMnO_4$ *Understand the general characteristics of the d and f block elements and the general horizontal and group trends in them and the properties of the f block elements and give a comparative account of the lanthanoids and actinoids with respect to their electronic configurations, oxidation states and chemical behaviour.	Student will be able to: *Write the electronic configuration of the d and f block elements in the periodic table. *Appreciate the relative stability of various oxidation states in terms of electrode potential values *Describe the preparation, , properties structures and uses of some important compounds such as $K_2Cr_2O_7$ and $KMnO_4$ *Recall the general characteristics of the d and f block elements and the general horizontal and group trends in them *Explain the properties of the f block elements and give a comparative account of the lanthanoids and actinoids with respect to their Electronic configurations, oxidation states and chemical behaviour	**UNIT TEST – II** **10-08-2026** **Amines & Biomolecules**

SEPTEMBER						**FIRST PRACTISE TEST 01-09-2026**
OCTOBER	**CH-5 Coordination Chemistry**	12	*Introduction, ligands, coordination number, colour, magnetic properties and shapes, *IUPAC nomenclature of mononuclear coordination compounds Bonding, Werner's theory, *VBT and CFT, structure and stereoisomerism * Importance of coordination compounds (in qualitative inclusion) **Activity1 :** Power point presentation to	Students will : *Understand the postulates of Werner`s theory of coordination compounds *gain knowledge about the terms : coordination entity, central atom, ligand , coordination number, coordination sphere, coordination polyhedron, oxidation number, homoleptic and heteroleptic *acquire understanding of rules nomenclature of	Students will be able to : *Recall the postulates of Werner`s theory of coordination compounds. *Define the terms : coordination entity, central atom, ligand , coordination number, coordination sphere, coordination polyhedron, oxidation number, homoleptic and heteroleptic *Write the nomenclature of coordination compounds *write the formulas and names of mononuclear coordination compounds	

			demonstrate CFT in octahedral and tetrahedral complexes **Skills:** Creative thinking	coordination compounds *gain knowledge about the formulas and names of mononuclear coordination compounds *understand different types of isomerism in coordination compounds *acquire concept about the nature of bonding in coordination compounds in terms of VBT and CFT *enhance knowledge about importance and applications of coordination compounds in our day to day life.	*define different types of isomerism in coordination compounds *Discuss the nature of bonding in coordination compounds in terms of VBT and CFT. *Recall the importance and applications of coordination compounds in our day to day life.	
TERM- I			**CHAPTER- 1,2,3,4,6,9,10**			
OCTOBER & NOVEMBER	CH- 8 Aldehyde, Ketone&CarboxylicAcid **SDG: No 4 : QUALITY**	10	*Nomenclature of aldehyde ketone carboxylic acid : * Nature of Carbonyl group.Acidic natureof carboxylic acid *Methods of preparation of AldehydeKetone &CarboxylicAcid. *Physical and Chemical properties. *Mechanism of nucleophilic addition.	Students will : *Understand nomenclature of aldehydes, ketones, carboxylic acids. *Gain knowledge about basic Concepts of nature ofcarbonyl group. *understand the methods of preparation of aldehydes, ketones and carboxylic acid	Students will be able to: *Write the nomenclature of aldehydes, ketones, carboxylic acids.. *Discuss the basic Concepts of nature of carbonylgroup. *Recall methods of preparation of aldehydes, ketones and carboxylic acid *Discuss on physical and Chemical properties of aldehydes, ketones and	**SECOND PRACTISE TEST** **26-10-2026**

	EDUCATIO		*Reactivityof alpha-Hydrogen in Aldehydes. **<u>ACTIVITY-1</u>** **<u>Experiential learning</u>:** Tounderstandthe uses/applicationofAldehyde , Ketone and Carboxylic acid in everyday life withvarious examples i.e. in medicines ,dyes ,paints,polymerindustries etc **<u>ACTIVITY 2</u> :** To distinguish aldehyde , ketone & Carboxylic acid by chemical test. **Skill:** Curiosity **<u>ACTIVITY3</u>:** Topreparemindmapforeasyrevision. **Skill**: problem solving, analytical skills	*Acquire knowledge physical and chemical properties of aldehydes, ketones and carboxylic acid	carboxylic acid	
NOVEMBER	**REVISION**		**PRE- BOARD--I (Full syllabus)**			
DECEMBER			**REVISION**			
JANUARY			**PRE- BOARD-II**			

SURENDRANATH CENTENARY SCHOOL
ANNUAL PLAN (2026-2027)

CLASS: XII **SUBJECT: MATHEMATICS (041)**			**BOOKS: NCERT MATHEMATICS TEXTBOOK, R.S. AGGARWAL, LAB MANUAL (Blue Print)**			
MONTH	**CHAPTER**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
APRIL	CH-3. MATRIX CH:4 DETERMINANTS	20	Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices. Invertible matrices and proof of uniqueness of inverse, if it exists; (Here all matrices have real entries). Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. **Experiential Learning:** Will learn addition and multiplication of matrices. **Skills:** Curiosity, Critical Thinking ACTIVITY -1 They will also learn how to find area of a triangle by determinant method. **Skills:** Curiosity, Critical Thinking	➢ Perform the matrix operation of addition, multiplication and transposition. ➢ Express a system of simultaneous linear equations in matrix form. ➢ Solve a system of linear equations. ➢ Will know about invertible matrices and uniqueness of inverse. ➢ Area of a triangle by determinant method.	To add 2 matrices, Expressing matrix as sum of symmetric and skew symmetric matrices, To findinverse of a matrix by using elementary row transformations. To find area of triangle, To understand properties to simplifydeterminants, To solve system of equations using matrices.	

MAY	CH-4 DETERMINANTS CH-1 RELATIONS AND FUNCTIONS	13	Adjoint and inverse of a square matrix. Consistency, inconsistency & number of solutions of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix. Relations and Functions: Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions.	➢ Will be able to solve system of linear equations using matrix method. ➢ Will know about different types of relations and functions.	To identify one to one, onto andinvertible functions, To find inverse of a function if it exists., To identify whether the binary operation is associative, commutative., To find identity and inverse of binary operations	**UT I-** **04/05/2026** PORTION: MATRICES AND DETERMINANTS.
JUNE	CH-2 INVERSE TRIGONOMETRIC FUNCTIONS. CH-5 CONTINUITY AND DIFFERENTIABILITY	21	Inverse Trigonometric Functions. Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions. Continuity & Differentiability chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. **Subject Enrichment:** To observe how to represent linear equations in matrix form, and get the value of unknowns. ACTIVITY -1 Graphs of inverse trigonometric functions. **Art Integrated:** Model of graphical representation of inverse trigonometric functions. **Skills:** Creative Thinking ACTIVITY-3	➢ Will know about domain, range and principal value branch, ➢ Will know about continuity and differentiability of a function.	To identify one to one, onto andinvertible functions., To find inverse of a function if it exists., To identify whether the binary operation is associative, commutative., To find identity and inverse of binary operations To identify points of discontinuityof functions, To identify points ofnon-differentiability of functions,To find derivatives of exponential and logarithmic functions, To findderivatives of functions in parametric form	

			Graphs of continuous functions. **<u>Subject Enrichment:</u>** Will know about relation between Continuity and Differentiability.			
JULY	CH-6 APPLICATIONS OF DERIVATIVES CH-7 INTEGRALS **SDG**: Industry, innovation and infrastructure(9).	**30**	Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives. Applications of Derivatives: rate of change of bodies, increasing/decreasing functions, maxima and minima (1st derivative test motivated geometrically and 2nd derivative test given as probable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real- life situations). Integrals: Integration as inverse process of differentiation. Integration of a variety of functions by substitution. Integration using Partial fraction and by parts. Evaluation of simple integrals of the following types and problems based on them. $\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{a^2 - x^2},$ $\int (x^2 - a^2)dx, \int (a^2 \pm x^2)\,dx$ $\int \frac{dx}{ax^2 + bx + c},$ $\int \frac{px + q}{\sqrt{ax^2 + bx + c}}dx,$	➢ Will know about exponential and logarithmic functions. ➢ Will know about Application of derivatives. ➢ How integration is used as inverse process of differentiation. ➢ Integration of variety of functions by substitution and using formula.	To find Rate of change of dependent variable due to change in independent variable, To identify increasing and decreasing functions, To find equation of tangent and normal at a point on the given curve, To find error in a variable due to error in another variable, To find approximate values of quantities using derivatives, To find maximaand minima points of a function. To solve both indefinite anddefinite integrals	**UT- II** **27/07/2026** CONTINUITY AND DIFFERENTIABILITY, DIFFERENTIATION.

			$\int \frac{px+q}{ax^2+bx+c}\,dx$, $\int \sqrt{ax^2+bx+c}\,dx$ **Group discussion**- Discussion on Integrals as inverse process of differentiation. Differentiation and Integration of variety of functions. ACTIVITY-1 Students will be asked to maximize or minimize a given fixed geometrical figure, when a particular condition is given.			
AUGUST	CH-8 APPLICATIONS OF INTEGRALS CH-9 DIFFERENTIAL EQUATIONS. CH-10 VECTORS.	30	Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals. Applications of the Integrals: Applications in finding the area under simple curves, especially lines, parabolas; area of circles /ellipses (in standard form only). Differential Equations: Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables. Homogeneous and Linear differential equations. Vectors: Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point,	➢ Will know about definite integrals. ➢ Application of integrals in finding areas of simple curves. ➢ Will know about order and degree of a differential equation. ➢ Idea about general and particular solution. ➢ Concept of vectors.	To find Area using integration. To identify degree and order of adifferential equation, To form differential equation when solution is given, To solve differential equations using variable separable, homogeneous, Linear DE method. To find dot product and cross product of 2 vectors, To find Scalar triple product of 3 vectors,To find projection of one vector on another , To analyze vectors ifdot product or cross product is	

			negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. ACTIVITY – 1 Students will be asked to find the area of a bounded region under some given condition. **Subject Enrichment:** Will get the concept of finding area of a region using application of integrals.		zero	
SEPTEMBER	CH-11 3-D GEOMETRY	15	• Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors. • 1ST TERMINAL EXAM • 1ST TERMINAL EXAM • 3-D Geometry: Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, coplanar and skew lines, shortest distance between two lines. Cartesian and vector equation of a plane. Distance of a point from a plane.	➢ Concept of 3-D geometry and hence concept of 3-dimensional figure.	To find equation of line in space in Cartesian and vector form, To find equation of plane in Cartesian and vector form , To find angle between 2 lines using DCS, To find distance between 2 lines, To find angle between 2 planes using normal lines, To find distance between a point from aplane	1ST **PRACTICE TEST: 03/09/2026** Relations and Functions, ITF, Matrices and Determinants, Continuity & Differentiability Application of derivatives **TERM I EXAM** **(80)** **17/09/2026 to 30/09/2026** Relations and Functions, ITF, Matrices and Determinants,

						Continuity & Differentiability, Differentiation, Application of Derivatives, Integrals.
OCTOBER	CH-12 LINEAR PROGRAMMING CH-13 PROBABILITY SDG/Life Skills/Values: No poverty(1), reduced inequality(10), peace, justice and	22	• PUJA VACATION • Linear Programming: Introduction, related terminology such as constraints, objective function. • Optimization, graphical method of solution for problems in two variables, feasible and infeasible regions(bounded or unbounded), feasible and infeasible solutions, optimal feasible solution (up to three non -trivial constraints). • Problem solving from LPP. ACTIVITY- 1 students will be asked to form models, where to maximize profit and minimize loss. **Experiential Learning:** Children will learn to apply LPP, to maximize profit and minimize loss in business. **Skills:** Curiosity, Critical Thinking. ACTIVITY -2 can do activity based on factories, by applying LPP, maximum profit at minimum fuel cost.	➢ Will learn about Linear Programming Problem. ➢ Will learn, how to maximize profit and minimize costs.	Will know about Conditional probability and multiplication theorem on probability. Will also know linear events and Baye's theorem.	**2ND PRACTICE TEST: 27/10/2026** Continuity and Differentiability Application of derivatives, Integrals Applications of the Integrals , Differential Equations.

	strong institution(16).		**Skills:** Curiosity, Critical Thinking.			
NOVEMBER	CH-13 PROBABILITY SDG/Life Skills: Good health and wellbeing (3), life on land (15).	7	• Probability: Conditional probability, multiplication theorem on probability • Independent events, total probability theorem, Bayes' theorem. ACTIVITY1 Activity based on simple events, compound events and conditional probability. **Skills:** Creative Thinking.	To find probability using conditional probability formula. To identify and solve problem byBayes' theorem.	Students Learn about: Bayes' theorem.	**PRE BOARD-I** **12/11/2026** **ENTIRE SYLLABUS** **(80)**
DECEMBER	*		*	*	*	
JANUARY	*		*	*	*	**PRE BOARD-II** **19/12/2026** **ENTIRE SYLLABUS** **(80)**

SURENDRANATH CENTENARY SCHOOL
SESSION – 2026-27
ANNUAL PEDAGOGICAL PLAN
CLASS XII

Subject - BIOLOGY
Subject Code- 044

Book- NCERT SCIENCE TEXTBOOK FOR CLASS XII

Month	Chapter	No. of pd.	Topics	Learning Objective	Learning Outcome	UT/ TERM
April 26	CH- 1 Sexual Reproduction in Flowering Plants CH-2 Human Reproduction SDG (15): Life on Land	19	**Unit- VI Reproduction** • Flower structure; development of male and female gametophytes; pollination- types, agencies and examples; out breeding devices; pollen-pistil interaction; double fertilization. • Post fertilization events development of endosperm and embryo, development of seed and formation of fruit; special modes- apomixis, parthenocarpy, polyembryony; significance of seed dispersal and fruit formation • Male and female reproductive systems- microscopic anatomy of testis and ovary; gametogenesis - spermatogenesis and oogenesis, menstrual cycle, fertilization, embryo development up to blastocyst formation, implantation, pregnancy and placenta formation(elementary idea), parturition and lactation (elementary idea) **Practical :** 1. Study the pollen germination on the slide.	To enable the learners: ➢ State the structure and function of floral parts including Sepal, petal, stamen, carpel ➢ Identify various techniques of outbreeding devices. ➢ Learn the formation of gametophytes and sporophytes ➢ List the events taking place during microsporogenesis and megasporogenesis ➢ Explain development of embryo and seed & food supply ➢ Classify plants as monocotyledon or dicotyledon and distinguish between them. ➢ Explain importance of apospory for hybrid seed production.	Learners will be able to: ➢ Explain the role of each floral part in sexual reproduction ➢ list the various techniques of outbreeding devices ➢ Describe the process of microsporogenesis and megasporogenesis ➢ List post fertilization changes ➢ Draw diagram of monocotyledonous and dicotyledonous flowers ➢ Draw flow chart on the steps of gamete formation, fertilization and	UT-I 11/05/2026 (CH-1 & 2)

			2. Flowers adapted to pollination by different agencies. 3. Pollen germination through a permanent slide ACTIVITY - 1 Art Integrated Learning: Projects On Reproduction .		post fertilization changes	
May 26	CH- 3 Reproductive Health CH-4 Principles of Inheritance and Variation-Heredity and variation	7	• Need for reproductive health and prevention of Sexually Transmitted Diseases • (STDs);birth control - need and methods, contraception and medical termination of pregnancy (MTP);amniocentesis; infertility and assisted • assisted reproductive technologies - IVF, ZIFT,GIFT (elementary idea for general awareness) **UNIT -VII Genetics and Evolution** • Mendelian inheritance; deviations from • Mendelism – incomplete dominance, co- dominance, multiple alleles and inheritance of blood groups. Pleiotropy; elementary idea of polygenic inheritance	➢ Define reproductive health ➢ Discuss how the reproductive health related problem can be overcome. ➢ Rationalise the use of amniocentesis ➢ Identify the reasons of population explosion. ➢ Interprets the relation between MMR, IMR and population explosion. ➢ Identify various contraceptive methods, their use, advantage and their side effects. ➢ Develop awareness on different assisted reproductive technology for childless couple and their need	➢ Explain how reproductive health related problem can be overcome . ➢ Students develop awareness on different assisted reproductive technology for childless couple and their need for the society . ➢ List the causes of population explosion ➢ Realise the importance of contraceptive devices and list their advantages ➢ List the advantages of different assisted reproductive technology for childless couple	

June 26		13	• Chromosome theory of inheritance; chromosomes and genes; sex determination- in humans, birds and honeybee; linkage and crossing over; • Sex linked inheritance – haemophilia, colour blindness; Mendelian disorders in humans – thalassemia; chromosomal disorders in humans; Down's syndrome, Turner's and Klinefelter's syndromes **Practical:** 4. Collect and study soil to study for texture, moisture and water holding capacity. 5. Identification of stages of gametes development. 6. Meiosis through permanent slides. ACTIVITY1 Experiential Learning: Flowcharts depicting pedigree	➢ Define DNA, RNA, Replication, Transcription, Genetic code, Translation, Regulation of gene expression. ➢ Differentiate between transcription and translation ¬ Prepare the model of DNA, RNA, Nucleotide, Nucleoside. ➢ learn different stages of gamete development in humans and plants.	➢ List the terms like replication, Transcription, Genetic code, Translation, Regulation of gene expression. ➢ Differentiate transcription and translation ➢ Identify the stages of meiosis and gamete formation ➢ Prepare a model of DNA, RNA, Nucleotide, Nucleoside	
July 26	CH-5 Molecular Basis of Inheritance Ch-6 Evolution	24	• Search for genetic material and DNA as genetic material; Structure of DNA and RNA; DNA packaging; DNA replication • Central Dogma; transcription, genetic code, translation; gene expression and regulation – lac Operon • Genome, Human and rice genome projects; DNA fingerprinting • Origin of life, biological evolution and evidences for biological evolution	➢ Learn the structure of DNA and RNA ➢ Define genome and describe fingerprinting ➢ Describe the evolutionary steps. ➢ Define Central Dogma; transcription, translation; gene expression and regulation – lac Operon ➢ Learn Darwin's contribution, modern	➢ Make a model of RNA and DNA ➢ Develop awareness on the ancestors and evidences of evolution. ➢ Define the different principle in evolution. ➢ Describe Central Dogma; transcription,	

			(paleontology, comparative anatomy, embryology and molecular evidences); • Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution- variation(mutation and recombination) and natural selection with examples, types of natural selection • Gene flow and genetic drift, Hardy -Weinberg's principle adaptive radiation; human evolution **Practical:** 7. To study presence of living organisms in water. 8. Study of blastula through slides. 9. Mendelian inheritance using seeds. 10. Observation of pedigree charts. **ACTIVITY-1** Subject Enrichment Research work on genetic disorders. Project files to be made.	synthetic theory of evolution; mechanism of evolution- variation(mutation and recombination) and natural selection with examples, types of natural selection ➢ Learn Hardy -Weinberg principle, adaptive radiation and Human evolution	translation; gene expression and regulation – lac Operon ➢ State Darwin's contribution, modern synthetic theory of evolution; mechanism of evolution- variation(mutation and recombination) and natural selection with examples, types of natural selection ➢ State Hardy - Weinberg principle, adaptive radiation and Human evolution	
August 26	CH-7 Human Health and Diseases CH-8 Microbes in Human Welfare CH-9 Biotechnology-principles and Processes	20	**Unit- VIII Biology in Human Welfare** • Pathogens; parasites causing human diseases (malaria, dengue, chikungunya, filariasis, ascariasis, typhoid, pneumonia, common cold, amoebiasis, ring worm) and their control • Basic concept of immunology – vaccines, cancer, HIV and AIDS; Adolescence- drug and alcohol abuse **Unit – IX Biotechnology** • Microbes in food processing, industrial production, sewage treatment, energy generation and	➢ State causes of diseases and symptoms ➢ Differentiate between the infectious and non infectious diseases ➢ Describe the process of multiplication of HIV virus ➢ List out the name of microbes cause ringworm, filariasis, ascariasis and malaria. Describe the harmful effects of drugs and alcohol abuse. ➢ Define cancer and its types	➢ List the causes of diseases ➢ differentiate between the infectious and non infectious disease. ➢ List out the name of microbes cause ringworm, filariasis, ascariasis and malaria. ➢ Describe the process of multiplication	UT –II 03/08/26 (CH- 4&7)

			microbes as bio-control agents and biofertilizers. Antibiotics; production and judicious use • Genetic Engineering (Recombinant DNA technology **Practical:** 11/12. Study of plant population, density/frequencies by quadrant method. 13. Preparation of temporary mount onion root tip. ACTIVITY - 1 Investigatory projects on diseases/ PowerPoint Presentation on artificial insulin, vaccine, GMO	➢ Explain the role of microbes in in food processing, industrial production, sewage treatment, energy generation and microbes as bio-control agents and biofertilizers. Antibiotics; production and judicious use ➢ define terms related to Biotechnology.	of HIV virus ➢ Describe the harmful effects of drugs and alcohol abuse. ➢ define terms related to Biotechnology ➢ State the role of T cells ➢ Describe the process of multiplication of HIV virus	
September 26	CH-10 Biotechnology and its Applications	8	• Application of Biotechnology in health and agriculture; Human insulin and vaccine production, stem cell technology, gene therapy; genetically modified organism -Bt crops; transgenic animals; biosafety issues, biopiracy and patents .	➢ Learn Principle of technology, tools of recombinant DNA technology, selection of transferred and recombinant cell, mechanism of amplification of DNA ➢ Differentiate between DNA and recombinant DNA	➢ Explain Principle of technology, tools of recombinant DNA technology, selection of transferred and recombinant cell, mechanism of amplification of DNA ➢ distinguish between DNA and recombinant DNA	First Practice Test – 07/09/26 CH-3, 5 & 8 Half Yearly Exam CH- 1,2, 3, 4, 5, 6, 7 & 8
October 26	CH-11 Organisms and Populations CH-12 Ecosystem SDG(15): Life on Land	13	**Unit – X Ecology** • Population interaction - mutualism, competition, predation, parasitism • Ecosystems: Patterns, components; productivity and decomposition • Population attributes - growth, birth rate and death rate, age distribution • Ecosystems; patterns, components, productivity and decomposition; • Energy flow; pyramids of number, biomass, energy	➢ explain the different steps in decomposition ➢ distinguish primary and secondary productivity, detritus and grazing food chain. ➢ connect concepts of flow of energy through food chain and food web. ➢ acquire knowledge about	➢ List biotic and abiotic components, productivity, decomposition, energy flow, nutrient recycling, Detritus, humification, mineralization, standing crop, ecological	Second Practice Test – 28/10/26 CH- 9, 10, 11 & 12

				biotic and abiotic components, productivity, decomposition, energy flow	succession. ➢ Explain biotic and abiotic components, productivity, decomposition, energy flow	
	CH-13 Biodiversity and its Conservation SDG: Clean Water and Sanitation.	12	• Biodiversity- Concept, patterns, importance • Loss of biodiversity; biodiversity conservation; hotspots, endangered organisms, extinction, Red data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites. **Practical:** 16. Controlled pollination 17. Disease causing organism 18/19. Adaptation in animals and Plants. ACTIVITY1 Subject Enrichment: Research on air, water and chemical pollution.	➢ Justify the importance of biodiversity to maintain ecological balance ➢ Enhance awareness about environmental issues and their appropriate solutions. ➢ Develop awareness on hotspots, endangered organisms, extinction, Red data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.	➢ List the importance of biodiversity for maintaining ecological balance ➢ List the importance of different methods of biodiversity conservation. ➢ Define and identify hotspots, endangered organisms, extinction, Red data Book, Sacred Groves, biosphere reserves, national parks, wildlife, sanctuaries and Ramsar sites.	
November 2026						Pre Board I- CH- 1 to 13
December 2026						Pre Board II- CH- 1 to 13

SURENDRANATH CENTENARY SCHOOL, RANCHI
ANNUAL PEDAGOGICAL PLAN
Session : 2026-27

CLASS:XII
SUBJECT:COMPUTERSCIENCE(083)

BOOKS:COMPUTER SCIENCE by NCERT
Computer Science by Sumita Arora

MONTH	CHAPTER	No. of Periods	TOPICS	LEARNINGOBJECTIVES	LEARNINGOUTCOMES	UT/PT/T1
APRIL	Revision of Python topics coveredinClass XI. SDG(4)	20	Character Set, Tokens, Dynamic Typing,Data Types, Mutable and Immutable,Typecasting Flow of Control-- CompoundStatement,ifcondition,if-else,Nested if,if-elif LoopingStatements-- while, for,break,passetc range(),continue, MoreonLoops-- loopelse,nested loops Strings in Python, List, List of Functions, Tuples, Dictionary, Functions/ methods in Tuples / Dictionary. **ACTIVITY-1** -Identify various keywords/functions/Data Types/package/Modulesetc ACTIVITY-2 -Practical'sbased on looping, List, Tuples,Dictionariesetc.	➢ Develop the basiccomputationalskills ➢ Explain and use theconcept of datatypes	Studentshouldbeable toapply the concept of function.	**Unit Test-1** **1.Revision --** **Of Python topics covered in class XI**
MAY	Functions	12	Types of functions (built-in functions,functionsdefinedinmodule,userdefinedfunctions) Creating user defined function,argumentsandparameters,defaultparameters, positional parameters,**SuggestedPractical:** Writinguserdefinedfunctionsfordifferent tasks and using them in theprogram.	Apply the concept ofFunction Students learn about usinguserdefine functions.	Student should be ableto apply the concept offunction. Students will be able toknow about using userdefine functions.	

JUNE	Functions	12	Functionreturningvalue(s),flowofexecution, Scope of a variable (global scope, localscope).NameResolution,Casesin Scopes, Mutability/Immutability ofArguments and function calls**SuggestedPractical:** Writinguserdefinedfunctionsfordifferent tasks using return type andintegratingin theprogram. ACTIVITY1 Studentswillbeaskedtoidentifyvarious built-infunctions,userdefinedfunctionsetc. ACTIVITY –2 -Studentswillbeaskedtowritefunctions based on function returningvalues ACTIVITY-3 StudentswillbeaskedtowritefunctionsusingGlobal/LocalScope	Students learn aboutfunction and implementtheminpython program.	Students will able toimplement user defined functioninpythonprogram.	
JULY	Exception Handling Introduction tofilesTextfile **SDG(4)**	22	Introduction, handling exceptions using try-except-finally blocks Types of files (Text file, Binary file, CSVfile), Advantages and disadvantages ofText/BinaryFiles,Relativeandabsolutepaths Text file:Opening a text file, text fileopenmodes(r,r+,w,w+,a,a+),closing a text file, opening a file usingwithclause,writing/appendingdatatoatextfileusingwrite()andwritelines(),Reading from a text file using read(),readline() and readlines(), writing to atextfile, Seek and tell methods, manipulationof data in a text file, Programs basedon--Searching,updating,counting,andmergingtextfiles.	➢ Explain and use theconcept of filehandling Students learn about	Student should be ableto explain and use theconceptoffilehandling.	**Unit Test-2** 1. **Function** 2. **Exception handling** 3. **Text File**

			SuggestedPractical: Read a text file line by line and displayeachwordseparatedby a#. ● Readatextfileanddisplaythenumberofvowels/consonants/uppercase/lowercasecharactersinthefile. ● Removeallthelinesthatcontainthecharacter 'a' in a file and write it toanotherfile. ● Createabinaryfilewithnameandrollnumber.Searchforagivenrollnumberanddisplaythename,ifnotfound display appropriate message.**ACTIVITY-1** TopicdiscussiononProjectSynopsisforAISSCE-2023 Students will be asked to prepare listofProgramsbasedonFileHandling(TextFile)	usingtext file for storing andextractingdata.	Students will be able to usetext file for storing andextractingdata.	
AUGUST	**Binary file:** **CSVfile:**	21	Basic operations on a binary file: openusingfileopenmodes(rb,rb+,wb,wb+,ab, ab+) Closeabinaryfile,importpicklemodule,dump()andload()method,Read, write/create, search, seek, telletc Appendandupdateoperationsinabinary file.import csv module, open /closecsvfile, Writeintoacsvfileusingcsv.writerow() and read from a csv fileusingcsv.reader( ) **SuggestedPractical:** ● Createabinaryfilewithrollnumber,name and marks. Input a roll numberandupdate themarks. ● Writearandomnumbergeneratorthat generates random numbersbetween 1 and 6 (simulates a dice).**ACTIVITY–1:** StudentswillbeaskedtopreparelistofProgramsbasedonFileHandling	➢ Explain and use theconcept of BinaryFile Students learn about usingCSV file for storing andextractingdata.	Students will be able to useCSV file for storing andextracting data and applyvariousfunctions.	

			(CSVFile),TEXTfileandBinaryFile.			
SEPTEMBER	**Revision** **Data Structure**	10	**Doubts Clearance on importanttopics specially related with programimplementation** Stack,operationsonstack(push&pop), Implementationofstack usinglist. **SuggestedPractical:** Write a Python program toimplementa stackusinglist. ● CreateaCSVfilebyenteringuser-idand password,read andsearchthe password for given userid.ACTIVITY-1 : Students will be asked to prepareMenudrivenProgrambasedon StackusingLIST.	➢ Explain and use ofStack using PythonList Students learn about Stackandwriteprogramusing Listto implementstack.	Student should be ableto use basic data structure:Stacks Students will be able towrite program using List toimplementstack.	**TERM IEXAM** 1. Revision ofPythontopicscovere inClassXI. 2. FunctionsinPython 3. FileHandling inpyth 4. Data Structure
OCTOBER	**DatabaseManagement**	19	Database concepts: introduction todatabase concepts anditsneed Relational data model: relation, attribute,tuple,domain,degree,cardinality,keys(candidatekey,primarykey,alternatekey,foreignkey) Structured Query Language: introduction,DataDefinitionLanguageandDataManipulationLanguage,datatype(char(n),varchar(n),int,float,date),constraints(notnull,unique,primarykey), create database, use database,show databases, drop database, show tables, create table, describetable,altertable(addandremovean attribute,addandremoveprimarykey)	➢ Explain and use ofPythonandMysql ➢ Using MySQLconnector fetchingand displaying thedata ➢ Use of Joins inTables	Student should be able touseDatabaseconcepts,SQL along with connectivitybetweenPythonandSQL	

			,droptable,insert,delete,select, operators (mathematical,relational and logical), aliasing,distinctclause,whereclause,in,between,orderby,meaningofnull,isnull,isnotnull,like,updatecommand, delete command,aggregatefunctions(max,min,avg,sum,count),groupby,havingclause,joins:cartesianproductontwotables, equi-join and natural joinInterfaceofpythonwithanSQLdatabase: connecting SQL withPython,performinginsert,update,deletequeriesusing cursor,displaydatabyusingfetchone(),fetchall(),rowcount, creating databaseconnectivityapplications. **<u>SuggestedPractical:</u>** Create a student table and insert data.ImplementthefollowingSQLcommands onthe studenttable: o ALTER table to add new attributes /modifydatatype/dropattribute o UPDATEtabletomodifydata o ORDERBytodisplaydatainascending /descendingorder o DELETEtoremovetuple(s) o GROUPBYandfindthemin,max,sum, count andaverage ● IntegrateSQLwithPythonbyimportingsuitablemodule. **ACTIVITY-1**:Studentswillbeaskedtopreparepr ogram basedonPythonandMysql **ACTIVITY-2:**	Students learn about usingSQLcommandstocreatedatabase,tableandwritequeriestoretrievedatafromtable.	Students will be able to use SQL commands to create database, table and write queries to retrieve data from table and integrate with python to execute SQL commands.	

			Studentswillwritequeriesandfind outputbasedonCasestudiesgiven usingMySQL			
NOVEMEBR	Computer Network	14	Evolution of networking:introduction to computer networks,evolution of networking (ARPANET,NSFNET, INTERNET) Data communication terminologies: concept of communication,componentsofdatacommunication(sender,receiver,message, communication media,protocols),measuringcapacityofcommunicationmedia(bandwidth, data transfer rate), IP address,switching techniques (Circuitswitching, Packet switching)Transmission media: Wiredcommunicationmedia(Twistedpaircable,Co-axialcable,Fiber-opticcable),Wirelessmedia(Radiowaves,Micro waves,Infrared waves) ● Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card) ● Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree) ● Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP Introduction to web services:	➢ Explain anddemonstration ofnetwork baseddevice and theiruses	Student should be able toexplain basics of computernetworks.	**TERM-II** **1. Databaseusing SQL2.ComputerNetworks**

			WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting **ACTIVITY - 1 :** Students will be asked to prepare List of device, Network and Topologies used in School Campus.			
December	**Revision**					
January	**Whole Syllabus**	**Preboard**				

SURENDRANATH CENTENARY SCHOOL
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CLASS: XII			TEXT BOOK: INFORMATICS PRACTICES by NCERT			
SUBJECT: INFORMATICS PRACTICES (065)			REFERENCE BOOKS: INFORMATICS PRACTICES by Sumita Arora / Preeti Arora			
MONTH	**CHAPTER/TOPIC**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
APRIL	**Introduction to Python libraries- Pandas,** SDG(4)	10 (TH) 15 (PR)	1. **Data structures in Pandas** - Series and data frames**.** **2. Series: Creation of series from List.** Dictionary, scalar value; mathematical operations; series attributes, head and tail 3. **Selection, indexing** and slicing of Series elements 4. Attributes of Series: Index, Columns, Size, Shape, dtype, Values etc. **Suggested Practical:** 1. Create a panda's series from a dictionary of values and a ndarray. 2. Given a Series, print all the elements that are above the 75th percentile.	1. Explain, Use and implementation of 2. Extracting, slicing data from Series 3. Implementation of attributes of Series	Students will be able to Create Series and apply various operations.	
MAY	**DataFrames in Pandas**	20 (TH) 30 (PR)	1. Creation of data frames from dictionary of series, list of dictionaries, text/CSV files, 2. Operations on rows and columns: add (insert /append) , select, delete (drop column	1. Explain, Use and implementation of 2. Extracting, slicing data from DataFrame. 3. Implementation of attributes of DataFrame.	Students will be able to Create Data frames and apply various operations.	

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MONTH	**CHAPTER/TOPIC**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
JUNE	**DataFrames in Pandas** **Continued...**		1. Rename, Head and Tail functions, indexing using labels, Boolean indexing. Attributes of Dataframe: Index, Columns, Size, Shape, dtype, Values etc. **Suggested Practical:** 3. Create a Data Frame quarterly sales where each row contains the item category, item 4. Create a data frame for examination result and display row labels, column labels data 5. Filter out rows based on different criteria such as duplicate rows. 6. Importing and exporting data between pandas and CSV file	1. Explain and use of functions in DataFrame.	Students will be able to Create Series, Data frames and apply various operations.	**UT I** **Series and DataFrame basics.**
JULY	**Data Visualization using Matplotlib** **SDG (4)**	10 (TH) 15 (PR)	1**. Data Visualization**: Purpose of plotting, drawing and saving of plots using Matplotlib 2. **Drawing Line charts**, Bar graph, Scatter Chart etc. 3. **Drawing Histogram**, Frequency Polygon, PIE chart, Boxplot etc. 4. **Customizing plots**: adding label, title, and legend in plots. **Suggested Practical:**	1. Explain and use of matplotlib and their predefined function for drawing different charts and graphs	Students will be able to Visualize data using relevant graphs.	

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MONTH	**CHAPTER/TOPIC**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
			1. Given the school result data, analyses the performance of the students on different 2. For the Data frames created above, analyze, and plot appropriate charts with title and 3. Take data of your interest from an open source (e.g. data.gov.in), aggregate and	and graphs		
AUGUST	**Societal Impacts**	14 (TH)	1. Digital footprint, net and communication etiquettes 2. Data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, 3. Free and open-source software (FOSS), LAMP, WAMP, Firewall, OSS, Browsers. 4. E-waste: hazards and management. Awareness about health concerns related to **ACTIVITY - 1** PPT for E-waste: hazards and management.	1.Explanation of general net etiquettes 2. Discussion of FOSS, LAMP, WAMP etc 3. E-waste hazards and their management	Students will be able to Understand the impact of technology on society	**UT II** **Data Visualization**
SEPTEMBER	**Revision**	• **Doubts Clearance on important topics specially related with program implementation.** • **Competency based questions based on CBSE board pattern.** • **Sample question paper and SSCE paper discussion.** • **Short tests based on important topics.**				**TERM I EXAM**

SURENDRANATH CENTENARY SCHOOL

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ANNUAL PEDAGOGICAL PLAN

CLASS: XII **SUBJECT: INFORMATICS PRACTICES (065)**			**TEXT BOOK: INFORMATICS PRACTICES by NCERT** **REFERENCE BOOKS: INFORMATICS PRACTICES by Sumita Arora / Preeti Arora**			
MONTH	**CHAPTER/TOPIC**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
OCTOBER	**Database Query using SQL**	20 (TH) 25 (PR)	1. Revision of topics covered in **Class XI** 2. **Math functions**: POWER (), ROUND (), MOD (). 3. **Aggregate Functions**: MAX (), MIN (), AVG (), SUM (), COUNT 4. **Text functions**: UCASE ()/UPPER (), LCASE ()/LOWER (), 5**. Date Functions**: NOW (), DATE (), MONTH (), Querying and manipulating data using Group by, Having, **Suggested Practical:** 1. Create a student table with the student id, name, and marks 2. Insert the details of a new student in the above table. 3. Delete the details of a student in the above table. 4. Use the select command to get the details of the students 5. Find the min, max, sum, and average of the marks in a 6. Find the total number of customers from each country in	1. Explain and use of MySQL built-in functions 2. Implementation of functions in the table data	Students will be able to Design SQL queries using Aggregate functions. Import/Export data between SQL database and Pandas.	

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MONTH	**CHAPTER/TOPIC**	**No. of Periods**	**TOPICS**	**LEARNING OBJECTIVES**	**LEARNING OUTCOMES**	**UT/PT/T1**
			7. Write a SQL query to order the (student ID, marks) table in			
NOVEMBER	**Introduction to Computer Networks**	15 (TH)	1. **Introduction to networks**, Types of networks: LAN, MAN, 2**. Introduction to Internet**, URL, WWW, and its applications- 3. **Website:** Introduction, difference between a website 4. **Web Browsers**: Introduction, commonly used browsers, **ACTIVITY - 1** Students will be asked to prepare List of device,	1. Explain and demonstration of network-based device and their uses 2. Explanation of website, webpage, webhosting, server, types of pages	Students will be able to Learn terminology related Identify internet security issues and configure	**Preboard-I** **Complete syllabus**
DECEMBER	**PREBOARD-II**		**Complete Syllabus**			
JANUARY	**PREBOARD-II**		**Complete Syllabus**			

SURENDRANATH CENTENARY SCHOOL, RANCHI
ANNUAL PEDAGOGICAL PLAN 2026-27
CLASS XII

Subject: ECONOMICS **Book : NCERT , SANDEEP GARG**
Subject Code:(030)

Month	Chapters	No. Of Pd	Topics	Learning Objective	Learning Outcome	UT/PT/T1
APRIL	**MACRO - NATIONAL INCOME AND RELATED AGGREGATES** **SDG 8:** Decent work and Economic growth	**21**	• An introduction- scope and significance of macroeconomics, basic concepts, classification of goods, concept and component of consumption and expenditure. • Concepts and components of investment, stock and flow, four sectors of economy, circular flow of income, domestic and national concept of income, concept of national income. • Gross and Net concepts, market price and factor costs. • Aggregates related to national income, nominal and real GDP and welfare, Methods of calculating national income- value added, income and expenditure method.	To enable the learners: □ Identify basic concepts as flow of money between household and firms. □ Compare between definitions and components of GNI and GDP and recognise them as measures of national income. □ Locate different between nominal and real GDP. □ Recognise various methods of calculating of national income- value added, income and expenditure method. □ Differentiate between national income, saving, consumption and investment. □ Learners will be able to measure income by adding the pre-tax income generated by the individuals and companies in the economy. □ Learners will also be helped in formulating policies for economic development	Learners will be able to: □ Recognise basic concepts as flow of money between household and firms. □ Analyse between definitions and components of GNI and GDP and recognise them as measures of national income. □ Able to differentiate between nominal and real GDP. □ Able to solve by implementing the formulas calculating of national income- value added income and expenditure method. □ Comparison between national income, saving, consumption and investment. □ Able to calculate income by adding the pre-tax income generated by the individuals and companies in the economy. □ Learners will be able to formulate policies for economic development.	

MAY	**CH-MONEY AND BANKING** **SDG 8;** Decent work and Economic growth	**10**	• Meaning and evolution of money, forms of money. • Supply of money, measurement of money supply. • Introduction, types of banks, money creation by the commercial bank, and control of money supply / credit supply by central bank in India.	Learner will be provided with an introduction of money and its evolution through explanation of barter exchange. Identify various theories of money supply and money demand. Identify the working of monetary policy. Identify the meaning and functions of central and commercial banks. Identify the facilities provided by commercial banks. Identify the money creation by commercial bank. Recognise the measures to control money supply.	Learner will recognise the meaning of money and its evolution through explanation of barter exchange. Recognise various theories of money supply and money demand. Implement the working of monetary policy. Recognise the meaning and functions of central and commercial banks. Recognise the facility provided by commercial banks. Analyse the money creation by commercial bank. Recognise the measures to control money supply.	
	CH-INDIAN ECONOMY ON THE EVE OF INDEPENDENCE **SDG 1:** No Poverty	**05**	• Indian economy on the eve of independence, low level of economic development under the colonial rule, Agriculture sector, foreign trade, demographic condition, infrastructure.	Analyse the state of Indian economy on the eve of independence. Discuss the factors that led to the under development and stagnation of the Indian economy.	Compare the state of Indian economy on the eve of independence. Relate the factors that led to the under development and stagnation of the Recognise the common goals of five year Plans.	
JUNE	**CH-INDIAN ECONOMY (1950-1991)**	**05**	• Introduction, goals of Five years Plans, Agriculture, industry and trade, trade policy, import substitution. • Indian economy during reforms- an assessment, conclusion, introduction, background, liberalisation,	Indian economy recognise the common goals of five year Plans. Identify the background of the reforms policies introduced in India in 1991. Identify the mechanism through which reforms were introduced.	Learners are able to relate the five- years plan with the developmental strategies of our country. Able to relate the background of the reforms policies introduced in India in 1991.	**UT-1 29.06.26** Ch-3: **(Macroeconomics)**

	SDG 1: No Poverty		privatisation and globalisation.	Comprehend the process of globalisation and its implications for India.	Recognise the mechanism through which reforms were introduced. Relate the process of globalisation and its implications for India.	Ch-4: **(Macroeconomics)** Ch-1 **(I.E.D)**
	CH- INDIAN ECONOMIC DEVELOPMENT – LPG : AN APPRAISAL.	**06**	• Indian economy during reforms- an assessment, conclusion, introduction, background, liberalisation, privatisation and globalisation.	Identify the mechanism through which reforms were introduced. Comprehend the process of globalisation and its implications for India.	Able to relate the background of the reforms policies introduced in India in 1991. Recognise the mechanism through which reforms were introduced. Relate the process of globalisation and its implications for India.	
JULY	**CH- HUMAN CAPITAL FORMATION SDG 4:** Quality Education	**06**	• Some essential concept, problems of deficient demand problem of excess demand, measures to correct excess and deficient demand.	Identify the concepts of human resources, human capital formation and human development. Recognise the link between investments in human capital. Identify the need for government spending on education and health. Compare the state of India's educational attainment.	Recognise the concepts of human resources, human capital formation and human development. Relate the link between investments in human capital. Acquire the need for government spending on education and health. Enumerate the state of India's educational attainment.	**PTM 03.07.26**
	CH- PROBLEM OF DEFICIENT DEMAND AND EXCESS	**07**	• Some essential concept, problems of deficient demand problem of excess demand, measures to correct excess and deficient demand.	Identify the concept and situation of excess and deficient demand. Compare the differences between excess and deficient demand. Recognise the methods to correct excess demand and deficient demand.	Recognise the concept and situation of excess and deficient demand. Evaluate the differences between excess and deficient demand. Able to solve through methods to correct excess demand and deficient demand.	

	DEMAND					
	CH-PROBLEM OF DEFICIENT DEMAND AND EXCESS DEMAND	**07**	● Some essential concept, problems of deficient demand problem of excess demand, measures to correct excess and deficient demand.	▯ Identify the concept and situation of excess and deficient demand. ▯ Compare the differences between excess and deficient demand. ▯ Recognise the methods to correct excess demand and deficient demand.	▯ Recognise the concept and situation of excess and deficient demand. ▯ Evaluate the differences between excess and deficient demand. ▯ Able to solve through methods to correct excess demand and deficient demand.	
AUGUST	**CH-GOVERNMENT BUDGET**	**07**	● Concept of government budget, objectives, structure/ components of budget, budget receipts- revenue and capital receipts, budget expenditure- revenue and capital expenditure, budget deficit.	▯ Identify the various way o reallocations of resources. ▯ Identify the tax concessions and subsidies. ▯ Reducing inequalities of income and wealth. ▯ Compare the difference between revenue and capital receipts. ▯ Recognise the revenue deficits, fiscal deficits and primary deficit.	▯ Recognise the various way o reallocations of resources. ▯ Able to compute the tax concessions and subsidies. ▯ Reducing inequalities of income and wealth. ▯ Analyse the difference between revenue and capital receipts.	**UT-2 24.08.26** Ch-5: Ch-6: (MAC) Ch-2, Ch-3: (IED) **PTM 22.08.26**
	CH-BALANCE OF PAYMENTS SDG 17: Partnerships for the goals	**07**	● Introduction and meaning of balance of payment (BPO), components/ structure of BOP account: current, capital and official reserve account, equilibrium and disequilibrium in BOP- BOP deficit.	▯ Identify the levels of international economic activity. ▯ Examine the economic relationships underlying the two basic sub- components of BOP.	▯ . Recognise the levels of international economic activity. ▯ Evaluate the economic relationships underlying the two basic sub- components of BOP.	
	CH-RURAL DEVEL	**06**	● Introduction – rural development, credit and marketing in rural areas,	▯ Recognise the state of rural areas in our country.	▯ . Recognise the state of rural areas in our country.	

	OPMENT		agriculture market system, diversification into productive activities, organic system.	Identify the sectors need to be developed for rural development. To develop the farm, home, public service and village community.	Compare the sectors need to be developed for rural development. Compute the farm, home, public service and village community.	
SEPTEMBER	**CH-EMPLOYMENT**	**06**	• Employment growth, in formalisation and other related issues, worker and employment, participation of people in employment, self employed and hired worker, employment n firm, factories and offices, growth and change in structure of employment, in formalisation of Indian work force, unemployment government generations, conclusion.	Identify few basic concepts relating to employment such as economic activity. Identify the nature of participants of men and women in various economic activities.	Recognise few basic concepts relating to employment such as economic activity. Able to know the nature of participants of men and women in various economic activities.9	**PRACTICE TEST-1:** 02/09/26 **CH- 3 and 4 (MACRO) CH- 1 TO 3 (IED) TERM I EXAM-** 17/09/26 **CH- 1 TO 9 (MACROECONOMICS) CH- 1 TO 6 (IED)**
		06	• Revision of the CH- 3, 4 , 5 ,6 (MACRO) and CH- 1,2,	Learners will recall the knowledge gain by revising the chapter's taught.	Learners were able to answer the questions given to them	

OCTOBER	**CH-ENVIRONMENT AND SUSTAINABLE DEVELOPMENT**	**07**	• Introduction, environment definition and functions, state of India's environment, sustainable development, strategies for sustainable development, conclusion. • Puja Vacation.	Identify the techniques to restrain the use of natural resources to ensure their availability for future generations. Identify the importance of protecting the environment from getting exploited	Recognise the techniques to restrain the use of natural resources to ensure their availability for future generations. Recognise the importance of protecting the environment from getting exploited.	PRACTICE TEST -2 14/10/26 CH-10 TO 12 (MACRO) CH- 7,9,10 (IED)
	CH-DEVELOPMENT EXPERIENCES OF INDIA: A COMPARISON WITH NEIGHBOURS	**05**	• Introduction, developmental path- a snap shot view, demographic indicator, gross domestic product and sectors, indicators of human development, development strategies- An Appraisal, Conclusion. • Revision of unit- 1,2 (Macro) • Revision of unit- 3, 4, 5(Macro)	Able to figure out the trends in various economic and human development indicators of India and its neighbours. Assess the strategies of their governance of the countries.	Able to judge the trends in various economic and human development indicators of India and its neighbours. Able to assess and judge the strategies of their governance of the countries.	
NOVEMBER		**05**	• Revision of unit- 1,2 (Macro) • Revision of unit- 3, 4, 5(Macro)	Able to identify the formula used for solving the questions. Able to identify the way of framing the theoretical answer.	Able to solve the questions using the appropriate formula. Able to write the theoretical answer.	PRE-BOARD 1 COMPLETE SYLLABUS
DECEMBER		**15**	• Revision of unit- 6,7(IED) • Revision of unit- 7, 8 (IED) • Revision of unit- 6, 7 (Macro). **PRE- BOARD-2 BEGINS**	Able to figure out the trends in various economic and human development indicators of India and its neighbours. Assess the strategies of their governance of the countries	Able to judge the trends in various economic and human development indicators of India and its neighbours. Able to assess and judge the strategies of their governance of the countries.	PRE-BOARD 2 COMPLETE SYLLABUS **PTM**

JANUARY			• **BOARD PRACTICAL EXAMINATION**			

SURENDRANATH CENTENARY SCHOOL, RANCHI						
ANNUAL PEDAGOGICAL PLAN (2026-2027)						
Class :XII **SUBJECT Physical Education (o48)**			**BOOKS V.D. Sharma** **Physical Health Education** **LAB MANUAL (Blue Print)**			
Month	**Chapters**	**No.of Periods**	**TOPICS**	**Learning Objective**	**Learning Out Come**	**UT/PT/ T-1**
April	Management of Sporting Events SDG-8 Decent Work and orgnise idea .	20	1. Various committees and their Responsibilities 2. Advantages of knock out tournaments. Knock out, Combination, League cum knock- out Tournaments. 3. Procedure to draw Fixtures: Knock out, 4. Intramural and Extramural, Meaning,	1. To make them understand about various committees and their Responsibilities 2. To make them understand about Tournaments- Knock-out, league or Round Robin and combination. 3. To make them understand about	1. Students will be able to demonstrate the ability to apply on under stand of ethics of the professional arena. 2. Students will be able to demonstrate ability to think critically, to creatively	5th Subject UT-1 11.05.2026 6th Subject UT - 1 22.06.2026 Ch. 1 & 2

			objective and their significance Activity -1 Experiential Learning Skills to teach students how to conduct tournament.	Procedure to Draw Fixtures: 4. To make them understand about intramural and Extramural: objectives and their Significance.	problem solve and utilize analysis 3. Students will be able to demonstrate the ability to articulate the global scope of sport and recognize diversity issues in sport.	
May	Sports and nutrition.	10	1. Balance diet and Nutrition Macoro and Micro Nutrition. 2. Nutritive and Non-Nutritive components of diet. 3. Eating to control Healthy body weight the pitfalls of dieting.	1. To make them understand about balanced diet and nutrition: Macro and Micro Nutrients. 2. To make them understand about Nutritive and Non-	1. Students will be able to interpret and apply nutrition concepts to evaluate and improve the nutritional	

			4. Methods to control Healthy body weight the pitfalls of dieting. Activity -1 Subject Enrichment: Activity-2 Art Integrated Skills Creative Thinking.	nutritive components of Diet.	health of communitities. 2. Students will be able to improve the nutritional health of individual with medical conditions.	
Jun	Sports and Nutrition	10		3. To make them understand about Eating for Weight control-a Healthy weight, the pitfalls of dieting	3. Students will be able to apply management principles to evaluate human physical and fiscal resources in organization.	
July	Yoga and Lifestyle SDG-3 Good	22	1. Asanas as preventive measures Obesity, Procedure, Benefits	1. To make them understand about Obesity: Procedure,	1. Students will be able to intestate	

	Health and well being		and contraindications for Vajrasana, Pada Hastasana, Urdhva Hastasana, Trikonasana. 2.Diabrtes Bhujangasana, Paschimoftanasana, Pawanmuuktasana, Ardhmatseyendrasana. 3. Asthma, For Sukhasana, Chakrasana, Gomukhasan, Parvatasana, Ghujangasana. Paschimottanasana, 4. Hupertension, for tadasana, Vajrasana, Paeanmuktasana, Ardhachakrasana, Bhujagansan.	Benefits and Contraindication for Vajrasana, Pada Hastasana, Urdhva Hastasana, Trikonasana, Ardhmatseyendrasana. 2. To make them understand about Diabets: Procedure, Benefits and Contraindications for Bhujangasana, Pachimottanasana, Pawanmuktasana, Ardhmatseyendrasana. 3. To make them understand about Asthma: Procedurre, Benefits and	Ayareda to the existin health cure system for promotion prevention and control of non communicable disease. 2. Students will be able to reduse during dependency in chromic cases thrugh Ayurveda yoga Practices and lifestyle changes. 3. To carry out capacity building of	

			Activity -1 Subject Enrichment Group Discussion Discussion with students topic wise.	Contraindications for Sukhasana, Chakrasana, Gomukhasana, Parvatasana, Bhujangasana, Paschimottanasana, Matsyasana.	human resources.	
Aug	Physical Education and Sports for (CWSN)	20	1. Types of Disability. Their Causes and Nature, Disability, Intellectual disability. 2. Types of disorder, their causes and nature (ADHD, SPD, ASD, ODD, OCD) 3. Advantages of physical activities for children with special needs.	1. To make them understand about Concept of Disability and Disorder. 2. To make them understand about Types of disability, their Causes and Nature (Cognitive Disability, Intellectual Disability,	1. Knowledge about the role of Paralympics for promoting adaptive sports. 2. Modified of individualized programme that Ceters to the special needs of disabled students.	5th Subject UT – 2 03.08.2026 6th Subject UT – 2 17.08.2026

			4. Strategies to make physical activities accessible for children. Activity -1			
Sep	Children and Women in Sports	14	1. Motor Development and Factors Affectin, Common Postural Deformities. 2. Exercise guidelines at different stages of growth and development, corrective measures for postural, deformities. 3. Sports Participation of women in India. Special consideration Dys- function. 4. Female Athlete triad (Osteoporosis,	1. To make them understand about Motor Development and Factors Affecting it. 2. To make them understand about Exercise Guidelines at Different Stages of Growth and Development. 3. Common Postural Deformities- Knock-Knees, Flatroot, Round shoulders, Lordosis, Kyphosis, Bow Legs and Scoliosis	1. Gain knowledge in general metabolic principles, primarily fuel sources for the working muscle during exercise. 2. Knowledge of Hydration guidelines for safety and performance and know how to evaluable and monitor hydration status	Half Yearly Exam 17.09.2026 5th Subject Practice Test – 1 Ch. 1, 2, 3, 4 & 5 07.09.2026 6th Subject Practice Test – 1 Ch. 1, 2, 3, 4 & 5 08.09.2026

			Amenorrhoea and Eating Dissorders) Activity -1		3. Understand the role of nutrition in recovery from injuries.	
Oct	Test & Measurement & Physioloby.	16	1. Fitness test BMI computing Basal metabolic Rate (BMR) 2. Rikli & Jones. Senior citizen fitness test. 3. Physiological factors determining components fo physical fitness sports injuring 4. Effects of exercise on muscular, cardio respiratory system.	1. To make them understand about Motor Fitness Test 2. To make them understand about General Motor Fitness: Barrow Three-item General Motor Ability (Standing Broad Jump, Zig-Zag Run, Medicine Ball Put- For Boys: 03 kg and for Girls: 01kg) 3. To make them understand about Measurement of	1. Students will learn how to take Friends test SAI Khelo Indian Fitness test in school. 2. Students will learn how to computing Basal metabolic rate (BMR) 3. Students will learn how to take BMI. Flamingo Balance, Plate taping test.	5th Subject Practice Test – 2 Ch. 6, 7, 8, & 9 28.10.2026 6th Subject Practice Test – 2 Ch. 6, 7, 8, & 9 29.10.2026

				Cardiovascular Fitness: Harvard Step Test/Rockport Test		
Nov	Biomechanics & Sports. Psychology & Sports. & Training in Sports.	20	1. Newton's law of motion & its application in sports. Equilibrium Dynamic & static centre of gravity Fraction & sports projectile in sports. 2. Jung classification & Big five theory. Phychological Attributes in sports. Self Esteem, mental, self talk goal setting, types of Aggression in sports. 3. Concept of talent identification and talent development in sports.	1. To make them understand about Meaning and Importance of Biomechanics in Sports. 2. To make them understand about Tyes of Movements (Flesxion, Extension, Abduction and Adduction) 3. To make them understand about Newton's Laws of Motion and Their Application in Sports. 4 To make them understand about Personality, its Definition and	1 The Students will be able to describe the core principles of exercise physiology and related exercise. 2. The students will identily the principle of chemical exercise physiology, as well as describe the patho physiology of disease and their associated risk factors. 3. Students will learn how to use	Pre Board – 1 Ch. 1 to 10 12.11.2026

			Introduction of sports traning cycle- Micro meso, Macro cycle Types & Method to develop-strength, Endurance and speed. Types & Method to develop flexibility and coordinative ability.	Types- Trait and Type (Sheldon's and Jung's Classification and Big Five Theory) 5. To make them understand about Motivation, its Types and Techniques. 6. To make them understand about Exercise Adherence, Reasons to Exercise, Benefits of Exercise.	the Newton's law of motion & application in sports. 4. Students will learn how to use the Dynamic & static and centre of gravity and its application in sports. 5. Provide facility and preceptor mentorship to produce graduates who are future leader's and outstanding clinicians. 6. Contribute to the athletic traning profession though the scholarship and leadership of	

					the facility, staff and students.	
Dec.						Contd.
Jan.						Pre Board – 2 Ch. 1 to 10

SURENDRANATH CENTENARY SCHOOL
SESSION – 2026-27
ANNUAL PEDAGOGICAL PLAN
CLASS XII

Subject – Painting Theory Subject Code: (049)			Book: NCERT Painting For "An Introduction to Indian art-ll"			
Month	Chapter	No. of pd.	Topics	Learning Objective	Learning Outcome	UT/ TERM
April 26	L-1 L-2	2	● Manuscript Painting tradition ● Pala Manuscript Painting ● Rajsthani schools of Painting	To enable the learners to: • Understand the concept of manuscript painting and its importance in Indian art history. Origin and development • The sub school • Main features • Characteristices • Asthetics parameters ● Identification of Style and technique ● Mere singing of emotions and moral value. ● Competency based identification of Style and technique. Respect for life	Learners will be able to: ➢ Understand the concept of manuscript painting and its importance in Indian art history. ➢ Identify the characteristics of manuscript paintings such as small size, fine lines, bright colours, and detailed decoration. ➢ Recognize different manuscript painting traditions like Jain, Mughal, and Rajput miniature styles. ➢ Analyze the themes and subjects used in manuscript paintings such as religious stories, court scenes, and mythology. ➢ Appreciate the artistic techniques used by traditional painters in	UT-1 /22.06.26 (L-1,2&3) FM-25

					illustrating manuscripts. ➢ Develop aesthetic appreciation for traditional Indian painting styles and cultural heritage. ➢ Compare manuscript painting with other painting traditions of India..	
• May 26	L-3 L-4	2	• The Mughal schools of Miniature Painting • The Deccani schools of Painting	To enable the learners to : • Original development • Sub-schools • Main features • Characteristic . Aesthetics parameters	Learners will be able to : • Identify the origin and development of Mughal and Deccani miniature painting traditions in India. • Recognize the patronage of Mughal emperors, especially Akbar, Jahangir, and Shah Jahan in the growth of Mughal painting. • Describe the main characteristics of Mughal miniature paintings, such as realism, detailed portraiture, natural scenery, and historical themes. • Explain the features of Deccani miniature paintings, including decorative style, rich colours, imaginative compositions, and influence of Persian and local traditions.	

					• Identify important subjects depicted in Mughal and Deccani paintings like court scenes, royal life, hunting scenes, mythology, and nature. • Compare the stylistic differences between Mughal and Deccani miniature paintings. • Develop aesthetic appreciation and understanding of the cultural and historical importance of these painting traditions in Indian art history.	
June 26	L-5	2	• The Pahari schools Painting	To enable the learners to : • Original development • Sub-schools • Main features • Characteristic ➢ Aesthetics parameters	Learners will be able to: • Identify the origin and geographical area where the Pahari painting tradition developed in the Himalayan hill regions. • Recognize the main centres and styles of Pahari paintings such as Basohli, Guler, and Kangra. • Describe the important themes depicted in Pahari paintings, especially the stories	

					of Krishna and Radha, as well as scenes from mythology and nature. • Explain the main characteristics of Pahari miniature paintings such as soft colours, delicate lines, lyrical beauty, and expressive figures. • Identify important artists associated with the Pahari tradition, including Nainsukh. • Compare the Pahari style with other Indian miniature painting traditions such as the Mughal School of Miniature Painting. ➢ Develop appreciation for the cultural and artistic significance of Pahari miniature paintings in Indian art history.	
July 26	L-6	2	• Indian National Flag • The Bengal school and cultural Nationalism	To enable the learners to: • Original development • Sub-schools • Main features • Characteristic • Aesthetics parameters	Learners will be able to: • Gain knowledge about • Evolution of the Indian National Flag • The symbolic significance of its for men colours Grow skill	

				• Evolution of the Indian National Flag • The symbolic significance of its for men colours	about Nationalism feelings from Bengal schools Paintings	UT –II 17/08/26 (L- 5, 6 & 7) FM-25
August 26	L-7	2	• The Mordern Indian art	To enable the learners to : • Understand the concept of Modern Indian Art and its development during the late 19th and 20th centuries. • Identify major artists and their contributions to the development of modern art in India.	Learner will be able to : • Identify the major phases of Modern Indian Art and understand its development during the late 19th and 20th centuries.	

				• Analyze the characteristics and styles used in modern Indian paintings. • Recognize important artworks and understand their themes, techniques, and cultural significance. • Understand the influence of social, political, and cultural changes on the development of modern Indian art. • Develop the ability to appreciate and interpret modern artworks critically. • Compare different artistic styles and approaches used by modern Indian artists. . Enhance aesthetic sensitivity and visual literacy through the study of modern artworks.	• Recognize important artists such as Raja Ravi Varma, Abanindranath Tagore, Nandalal Bose, and Amrita Sher-Gil. • Describe the characteristics and styles of different modern art movements in India. • Analyze selected artworks in terms of theme, composition, technique, and cultural context. • Understand the role of art institutions and movements such as the Bengal School of Art in shaping modern Indian painting. • Develop appreciation and critical understanding of how Indian artists combined traditional elements with modern ideas. • Compare traditional Indian art with modern artistic expressions to understand artistic transformation. ➢ Express informed opinions about modern Indian artworks and their relevance to contemporary society.	

September 26	L-7	2	The Modern Indian Art • Painting • Graphic • Sculpture	To enable the learners to: • Identify major developments in Modern Indian Art in the fields of painting, graphic art, and sculpture during the 19th and 20th centuries. • Recognize important artists and their contributions such as Raja Ravi Varma, Nandalal Bose, Jamini Roy, Amrita Sher-Gil, Ramkinkar Baij, and Somnath Hore. • Describe the characteristics and techniques used in modern painting, graphic prints, and sculpture. • Analyze selected artworks in terms of subject matter, composition, form, texture, and artistic style. • Understand the social, cultural, and national influences that shaped modern Indian artistic expressions. • Compare different art forms (painting, graphics, sculpture) and recognize their unique visual language and techniques. Develop aesthetic appreciation and critical thinking while interpreting modern Indian artworks.	Learners will be able to : • Identify and recognize important modern Indian artists such as Raja Ravi Varma, Jamini Roy, Amrita Sher-Gil, and Maqbool Fida Husain and their contributions to modern Indian art. • Describe the subject matter and themes of the paintings "Rama Vanquishing the Pride of the Ocean," "Mother and Child," "Haldi Grinders," and "Mother Teresa." • Analyze the stylistic features such as composition, colour scheme, lines, and forms used in these paintings. • Understand the cultural and social context reflected in the artworks, including mythology, rural life, motherhood, and humanitarian values. • Compare different artistic styles of modern Indian painters and recognize how traditional Indian elements were combined with modern approaches. ➢ Develop aesthetic appreciation and critical thinking while	Half yearly -17.09.26 F.M-30 CH-1, 2,3, 4, 5, 6 & 7

					interpreting the meaning and message of these paintings.	
October 26			•		➢	Pre-Board -I CH- 1, 2, 3 & 4 FM-30
November 26						Pre Board -ll 19.12. 26 CH-5,6&7 FM-30
December 26						
January 27						

SURENDRANATH CENTENARY SCHOOL, RANCHI
ANNUAL PEDAGOGICAL PLAN (2026-2027)

CLASS: XII **SUBJECT: Data Science(844)** **BOOKS: CBSE Study Material**

MONTH	CHAPTER	No. of Periods	TOPICS	LEARNING OBJECTIVES	LEARNING OUTCOMES
April	Part-A: Communication Skills-IV Part-B: Data Governance	8	1.What is Data Governance? 2.What are the ethical guidelines for governing data? 3. What is Data Privacy?	Students know and discuss about: Data Governance, ethical guidelines for governing data and Data Privacy.	Students able to learn: Data Governance, ethical guidelines for governing data and Data Privacy such as GDPR, HIPPA, CCPA etc.
MAY	Part-A: ICT Skills-IV Part-B: Exploratory Data Analysis	4	1.What is Exploratory Data Analysis? 2. What is Univariate Analysis? 3. What is Multivariate Analysis? 4. What are the techniques to clean data?	Students know and discuss about: Exploratory Data Analysis(EDA) Univariate Analysis,Multivariate Analysis and the techniques to clean data.	Students able to learn: Exploratory Data Analysis(EDA) Univariate Analysis,Multivariate Analysis and the techniques to clean data.
JUNE	Part-A: Self-Management Skills-IV Part-B: Classification Algorithms - I	4	1.What is a Decision Tree? 2. How are Decision Trees used in Data Science? 3.How to create a Decision Tree?	Students know and discuss about: Decision Tree and uses in Data Science, Creation of a Decision Tree	Students able to learn: Decision Tree and uses in Data Science, Creation of a Decision Tree
JULY	Part-A: Green Skills-IV Part-B: Classification Algorithms - II	8	1. What is the K- Nearest Neighbors algorithm(KNN)? 2.What are the pros and cons of k-Nearest Neighbors? 3. What is cross validation and why is it useful?	Students know and discuss about: K- Nearest Neighbors algorithm(KNN) ,pros and cons of k-Nearest Neighbors and cross validation and its usefullness	Students able to learn: K- Nearest Neighbors algorithm(KNN) ,pros and cons of k-Nearest Neighbors and cross validation and its usefullness
AUGUST	Part-A: Entrepreneurial Skills-IV Part-B: Regression Algorithms - I	8	1. What is Linear Regression? 2. What is Mean Absolute Error? 3. What is Mean Square Deviation?	Students know and discuss about: Linear Regression,Mean Absolute Error and Mean Square Deviation.	Students able to learn: Linear Regression,Mean Absolute Error and Mean Square Deviation
SEPTEMBER	Revision	4	All Topics		
OCTOBER	Part-B: Regression Algorithms - II	6	1. What is Multiple Linear Regression? 2.What is Non-Linear Regression?	Students know and discuss about: Multiple Linear Regression and Non-Linear Regression	Students able to learn: Multiple Linear Regression and Non-Linear Regression
NOVEMEBR	Unsupervised Learning	6	1.What is unsupervised learning? 2. What are the real-world applications of unsupervised learning? 3. What is clustering and kmeans clustering? 4. What is k-means clustering?	Students know and discuss about: Unsupervised learning,the real-world applications of unsupervised learning, clustering and kmeans clustering and k-means clustering.	Students able to learn: Unsupervised learning,the real-world applications of unsupervised learning, clustering and kmeans clustering and k-means clustering.

SURENDRANATH CENTENARY SCHOOL, RANCHI
ANNUAL PEDAGOGICAL PLAN (2026-2027)

CLASS: XII **SUBJECT: Web Applications(803)** **BOOKS: CBS**

MONTH	CHAPTER	No. of Periods	TOPICS	LEARNING OBJECTIVES
April	Part-A: Communication Skills-IV Part-B: Emerging Trends Part-A: ICT Skills-IV Part-B: JAVASCRIPT PART 2	8	IoT, Growth IoT • History of IoT, Advantages of IoT • Disadvantages of IoT IIoT Artificial Intelligence, Machine Learning (ML) Functions in JavaScript • Naming, Types, Invoking, Calling, Return Objects in javaScript • Properties and Methods & Objects	Create and use functions to organize and reuse code effectively. Understand the concept of objects and their role in JavaScript. Define and create objects using object literals and constructor functions. Understand object-oriented programming principles in JavaScript.
MAY	Part-B: Emerging Trends, JAVASCRIPT PART 2	4	Strings in JavaScript • String Property: Length	Understand the string data type in JavaScript. Create and manipulate strings using\ various methods. • Explore built-in methods for manipulating strings in JavaScript.
JUNE	Part-A: Communication Skills-IV, Self-Management Skills-IV, ICT Skills-IV JAVASCRIPT PART 2	4	String Methods in --slice(), substring(), replace(), replaceAll()match(), toUpperCase(, toLowerCase( ), concat(), trim( ), charAt()	

JULY	**JAVASCRIPT PART 2**	**8**	**Arrays in JavaScript** **• Creating an Array using Array Literal** **• Accessing Elements of Array** **• Array Length**	**Understand the array data structure in JavaScript.** **• Create, initialize, and manipulate arrays.** **• Access array elements using indices.**
AUGUST	**JAVASCRIPT PART 2**	**8**	**Array Methods** **Event Handling** **Math method**	**Explore built-in methods for manipulating arrays in JavaScript** **Explore built-in mathematical methods in JavaScript** **Understand the concept of events in JavaScript.** **• Handle events using event listeners and Inline event attributes.**
SEPTEMBER	**Part-A: Green Skills-IV** **Part-B: GRAPHIC DESIGNING USING CANVA AND ADOBE EXPRESS**	**4**	**All Topics**	
OCTOBER	**GRAPHIC DESIGNING USING CANVA AND ADOBE EXPRESS**	**6**	**All Topics**	
NOVEMEBR	**CYBER SAFETY AND SECURITY**	**6**	**All Topics**	

SE Study Material

LEARNING OUTCOMES
Create and use functions to organize and reuse code effectively. Understand the concept of objects and their role in JavaScript. Define and create objects using object literals and constructor functions. Understand object-oriented programming principles in JavaScript.
Understand String Data Type in JavaScript Create Strings Using Different Methods Manipulate Strings Effectively Apply String Concatenation Techniques Access and Analyze String Properties Use Built-in String Methods Perform String Searching and Extraction Modify and Format String Data Apply String Operations in Programs Develop Efficient String Handling Skills

Explore Built-in Methods for Array Manipulation in JavaScript **Apply Array Operations for Data Handling** **Explore Built-in Mathematical Methods in JavaScript** **Perform Mathematical Calculations Using JavaScript Methods** **Understand the Concept of Events in JavaScript** **Differentiate Types of Events in JavaScript** **Handle Events Using Event Listeners** **Handle Events Using Inline Event Attributes** **Develop Interactive Programs Using Events**

SURENDRANATH CENTENARY SCHOOL

Sub - Yoga (Theory & Practical)

SESSION 2026-2027, ANNUAL PEDAGOGICAL PLAN, Class - X□

Month	Chapter	No. of Period	Topics	LEARNING OBJECTIVE	LEARNING OUTCOME
April 2026	1.1 1.2 1.3	3	• SHATKARMA MEANING, PURPOSE and THEIR SIGNIFICANCE IN YOGA SADHNA • INTRODUCTION OF PRANAYAM AND DHYANA AND THEIR HEALTH BENEFITS	• MEANING and PURPOSE and • SIGNIFICANCE, BENEFITS • PRECAUTIONS, TECHNIQUE	• STUDENT'S CAN GROW KNOWLEDGE and PRACTICE • ANALYZE THE MAIN TOPIC
May 2026	2.1 2.2	2	• CONCEPT OF AAHARA (DIET) ACCORDING TO YOGIC TEXT • EFFECT OF MITAHARA (YOGIC DIET) • SIGNIFICANCE OF HATH YOGA PRACTICE IN HEALTH PROMOTION	• BALANCED DIET • IMPROVES RESPIRATORY SYSTEM, DIGESTIVE • CLEAR AND SHINY SKIN • FLEXIBILITY OF THE JOINTS	• LEARNERS WILL BE ABLE TO PRACTICE • PROPER KNOWLEDGE TECHNIQUE
June 2026	2.3	1	• CONCEPT OF MENTAL HEALTH • WELL BEING ACCORDING TO PATANJALI YOGA	• IMPORTANCE OF CONTROLLING MIND	• YOGA SUTRAS HIGHLIGHT • THE CAPABILITY OF YOGA TO MENTAL HEALTH
July 2026	2.4 2.5	2	• YOGIC PRACTICE PATANJALI YOGA • CONCEPT HEALTHY LIVING IN GITA	• YAMAS, NIYA MAS, ASANAS PRANAYAM, PRATYAHRA, DHARANA DHYANA, SAMADHI	• YOGA MEANS EQUANIMITY • YOGA I SKILL IN ACTION • DEDICATING THE DIVINE QUALITIES

Month	Chapter	No. of Period	Topics	LEARNING OBJECTIVE	LEARNING OUTCOME
				• BHAKTI YOG, KARMA YOG JNANA YOG	
August 2026	2.6	1	• IMPORTANCE OF SUBJECTIVE EXPERIENCE IN DAILY YOGA PRACTICE	• LIFE PRACTICE • PHYSICAL HEALTH, MENTAL • HEALTH, SOCIAL HEALTH • SPIRITUAL HEALTH	• PROPER PRACTICE HEALTH
September 2026	3.1	1	INTRODUCTION TO FIRST AIP AND CPR	THE PRIMARY AIM OF FIRST AID IS TO MINIMIZE PAIN	MINIMIZE THE PAIN AND SAVE LIVES
October 2026	3.2	1	YOGIC MANAGEMENT OF STRESS AND ITS CONSEQUENCES	CONCEPT OF STRESS	WHEN A PERSON FACES PROBLEMS IN HIS EVERY DAY LIFE
Nov 2026	3.3	1	YOGA IN PREVENTION OF COMMON DISEASE	CAUSES, GENETICS MEDICAL AND PSYCHIATRIC ILLNESS	FITNESS AND FRESHNESS
Dec 2026	3.4	1	YOGA AND PERSONALITY DEVELOPMENT	PERSONALITY DEVELOPMENT THROUGH YOGA	YOGA IS CONSIDERED ASAN EFFECTIVE TOOL FOR DEVELOPMENT OF PERSONALITY OF CHILDREN
Jan 2027			PRACTICAL DEMONSTRATION AND PRACTICAL SKILLS	PRACTICE	PERFORMANCE
Feb 2027			REVISION	REVISION	FINAL TERM