SYLLABUS - 2020- 2021

Class - XII **Sub - English**

Books Prescribed :

1. Flamingo (FL)
2. Vistas (VS)

Months	No. of Working Days	Topics
March	0	FL - My Mother at Sixty Six (Poem) The Last Lesson AWS - Notice Letter to the Editor Note - Making
April	21	FL - Lost Spring An Elementary School Classroom in a Slum (Poem) VS - The Third Level The Tiger King AWS - Article Writing Advertisements (Display & Classified)
May	12+5	FL - Deep Water VS - Journey to the end of the Earth The Enemy AWS - Letter for Placing Order & Cancellation Report Writing Job Application
June	13	FL - The Rat Trap AWS - Letter of Complaint

Months	No. of Working Days	Topics
July	25	FL - Indigo Poets & Pancakes Keeping Quiet (Poem) AWS - Letter of Enquiry - Invitation (Formal & Informal) - Poster - Speech Writing
August	20	FL - Going Places - A Thing of Beauty (Poem) A Roadside stand (Poem) VS - Should Wizard Hit Mommy AWS - Debate
Sept	25	**Revision for 1st Term** FL - The Interview Aunt Jennifer's Tiger (Poem) AWS - Letter to the School Authority
Oct	18	VS - On the Face of It (Play) - Memories of Childhood
Nov	10	FL - Revision VS - Evans Tries an O-Level
Dec	21	**Revision**

Subject - Mathematics (Code - 041)

Months	No. of Working Days	Portion
March	07	**Linear Programming** Introduction, related terminology such as constraints, objective function, optimization, different types of linear programming (L.P.) problems, mathematical formulation of L.P. problems, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints). **Matrices** Concept, Notation, Order, Equality, Types of Matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices : Addition and multiplication and multiplication with a scalar. Simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). **Activity No. 5**
April	21	**Matrices** Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries). **2. Determinants** Determinant of a square matrix (up to 3x3

Months	No. of Working Days	Portion
		matrices), properties of determinants, minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix. **Vectors** Vectors and scalars, magnitude and direction of a vector. Direction consines and direction ratios of a vector. Types of vectors. (equal, unit, zero,parallel and collinear vectors), Positon vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (Cross) product of vectors, scalar triple product of vectors. **Activity No. 13**
		Three - Dimensional Geometry Direction consines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, coplanar and skew lines, shortest distance between tow lines. Cartesian and vector equation of a plane. Angle between (i) Two

Months	No. of Working Days	Portion
		lines (ii) Two planes (iii) A line and a plane. Distance of a point from a plane.
May	12+06	**Probability :** Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean and variance of random variable. Repeated independent (Bernoulli) trials and Binomial distribution. **Activity No. 14**
June	12	**QUALIFYING EXAMINATION** **Relations** Types of relations : reflexive, symmetric, transitive and equivalence relations. **Activity No. 1**
July	25	**1. Functions** One to one and onto functions, composite functions, inverse of a function. Binary operations. **Activity No. 3 and 4** **2. Inverse Trigonometric Functions** Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions. **Activity No. 2** **3. Continuity and Differentiability** Continuity and differentiability

Months	No. of Working Days	Portion
Aug	21	**1. Differentiation :** Derivative of composite functions, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions. Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order deriatives. Rolle's and Lagrange's Mean Value Theorems (without proof) and their geometric interpretation. **Activity No. 6, 7 and 8** **2. Applications of Derivatives** Applications of derivatives : rate of change of physical quantities, increasing / decreasing functions, tangents and normals, use of derivatives in approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations). **Activity No. 9, 10, 11 and 15** **3. Integrals** Integration as inverse process of differentiation. Integration of a variety of functions by substitution, Evaluation of simple integrals of the special types and problems based on them by partial fractions.

Months	No. of Working Days	Portion
Sept.	25	**HALF YEARLY EXAM** **Integrals (Continued) :** Integration by parts, special integrals like $\sqrt{\alpha^2 - x^2}$, $\sqrt{x^2 \pm \alpha^2}$
Oct	20	**1. Integrals (Continued) :** Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals. **2. Applications of the Integrals** Applications in finding the area under simple curves, especially lines, circles / parabolas / ellipses (in standard form only), Area between any of the two above said curves (the region should be clearly identifiable). **Activity No. 12**
Nov	19	**Differential Equations :** Definition, order and degree, general and particular solutions of a differential equation. Formation of differential equation whose general solution is given. Solution of diffential equations by method of separation of variables, solutions of homogeneous differential equations. Solutions of linear differential equation of first order and first degree. **Pre Board - I**
Dec	21	**PRE - BOARD - II**

Lab Activity in Mathematics

(Ten marks is allotted for Activity in Mathematics)

1. To make a partition of a set of students of standard XII on the basis of a relation defined as R = {(α, *b*): α *and b have same birth year*.} and confirm it as an Equivalence relation.

2. To draw the graph of $\sin^{-1} x$ using the graph of sin χ and demonstrate the concept of mirror reflection about the line $y = x$.

3. To sketch the graph of α^x and $\log_\alpha x$, $\alpha > O$, $\alpha \neq 1$ and to examine that they are mirror images of each other. (Use $\alpha = 2$ *or* 3)

4. To establish a relationship between common logarithm (to the base 10) and natural logarithm (to the base *e*) of number x.

5. Formation of code through matrix multiplication.

6. To verify that for a function f to be continuous at given point x_o , $\Delta y = |f(x_o + \Delta x) - f(x_o)|$ is arbitrary small provided , Δx is sufficiently small.

7. To verify Rolle's theorem by taking a suitable case.

8. To verify Langrange's Mean Value theorem.

9. To understand the concept of decreasing and increasing functions.

10. To understand the concepts of local maxima, local minima and point of inflection.

11. To understand the concept of Absolute maxima and absolute minima of a function in a given closed interval through its graph.

12. To evaluate the definite integral $\int_{\alpha}^{b} \sqrt{1 - x^2}\,dx$ as the limit of the sum and verify it by actual integration.

13. To verify geometrically that $\vec{c} \times (\vec{\alpha} + \vec{b}) = (\vec{c} \times \vec{\alpha}) + (\vec{c} \times \vec{b})$.

14. To explain the computation of conditional probability of a given event A, when event B has already occurred through an example of throwing a pair of dice.

15. To find the time when the area of a rectangle of given dimension become maximum, of the length is decreasing and breadth is increasing at a given rate.

Description of marks

Theory	-	80 Marks
Periodic Test	-	10 Marks
Lab Activity	-	10 Marks
Total	**-**	**100 Marks**

Month	No. of Working Days	Topics to be covered
March	13	**Unit I : Electrostatics** **Ch. 1 : Electric Charges and Fields** Electric charges; Conservation of charge, Coulomb's law-force between two point charges, forces between multiple charges; superposition principle and continuous charge distribution. Electric field, electric field due to a point charge, electric field lines, electric dipole, electric field due to a dipole, torque on a dipole in uniform electric field.
April	21	Electric flux, statement of Gauss's theorem and its applications to find field due to infinitely long straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell (field inside and outside). **Ch. 2: Electrostatic Potential and Capacitance** Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two point charges and of electric dipole in an electrostatic field. Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and in parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor.

Month	No. of Working Days	Topics to be covered
		Unit II : Current Electricity **Ch. 3 : Current Electricity** Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; ohm's law, electrical resistance, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, Carbon resistors, colour code for carbon resistors' series and parallel combinations of resistors; temperature dependence of resistance.
May	12+8	Internal resistance of a cell, potential difference and emf of a cell, combination of cells in series and in parallel, Kirchhoff's laws and simple applications, Wheatstone bridge, metre bridge. Potentiometer - principle and its applications to measure potential difference and for comparing EMF of two cells; measurement of internal resistance of a cell. **Unit III : Magnetic Effects of Current and Magnetism** **Ch. 4 : Moving Charges and Magnetism** Concept of Magnetic field, Oersted's experiment. Biot - Savart law and its application to current carrying circular loop. Ampere's law and its applications to infinitely long straight wire. Straight and toroidal solenoids (only qualitative treatment), force on a moving charge in uniform magnetic and electric fields, Cyclotron. Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying

Month	No. of Working Days	Topics to be covered
		conductors-definition of ampere, torque experienced by a current loop in uniform magnetic field; moving coil galvanometer-its current sensitivity and conversion to ammeter and voltmeter.
June	12	**QUALIFYING EXAMINATION** **Ch. 5 : Magnetism and Matter** Current loop as a magnetic dipole and its magnetic dipole moment, magnetic dipole moment of a revolving electron, magnetic field intensity due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis, torque on a magnetic diple (bar magnet) in a uniform magnetic field; bar magnet as an equivalent solenoid, magnetic field lines; earth's magnetic field and magnetic elements.
July	25	Para-, dia-and ferro - magnetic substances, with examples. Electromagnets and factors affecting their strengths, permanent magnets. **Unit IV : Electromagnetic Induction and Alternating Currents** **Ch. 6 : Electomagnetic Induction** Electomagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, Eddy currents. Self and mutual induction. **Ch. 7 : Alternating Current** Alternating current, peak and RMS value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, power factor, wattless

Month	No. of Working Days	Topics to be covered
		current. AC generator and transformer. **Unit V : Electromagnetic waves** **Ch. 8 : Electomagnetic Waves** Basic idea of displacement current, Electromagnetic waves, their characteristics, their Transverse nature (qualitative ideas only). Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, gamma rays) including elementary facts about their uses.
Aug	21	**Unit VI : Optics** **Ch. 9 : Ray Optics and Optical Instruments** **Ray Optics:** Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and its applications, optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lensmaker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction of light through a prism. Scattering of light - blue colour of sky and reddish appearance of the sun at surnrise and sunset. Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers. **Ch. 10 : Wave Optics** Wave optics: Wave front and Huygen's principle, reflection and refraction of plane wave at a plane surface using wave fronts. Proof of laws of reflection and refraction using Huygen's principle. Interference, Young's double slit experiment and expression for

Month	No. of Working Days	Topics to be covered
		fringe width, coherent sources and sustained interference of light, diffraction due to a single slit, width of central maximum, resolving power of microscope and astronomical telescope, polarisation, plane polarised light, Brewster's law, uses of plane polarised light and Polaroids.
Sept	25	**HALF YEARLY EXAMINATION** **Unit VII : Dual Nature of Radiation and Matter** **Ch. 11 : Dual Nature of Radiation and Matter** Dual nature of radiation, Photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation-particle nature of light. Matter waves-wave nature of particles, de-Broglie relation, Davisson-Germer experiment (experimetnal details should be omitted; only conclusion should be explained).
Oct	20	**Unit VIII : Atoms and Nuclei** **Ch. 12 : Atoms** Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels, hydrogen spectrum. **Ch. 13 : Nuclei** Composition and size of nucleus, Radioactivity, alpha, beta and gamma particles/rays and their properties; radioactive decay law. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

Month	No. of Working Days	Topics to be covered
		Unit IX : Electronic Devices **Ch. 14 : Semiconductor Electronics : Materials, Devices and Simple Circuits** Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Semiconductor diode - I-V characteristics in forward and reverse bias, diode as a rectifier; Special purpose p-n junction diodes: LED, photodiode, solar cell and Zener diode and their characteristics, zener diode as a voltage regulator.
Nov	19	**REVISION, PRE BOARD - I**
Dec		**REVISION, PRE BOARD - II**

Lists of Experiments

SECTION - A

1. To determine resistance per cm of a given wire by plotting a graph for potential difference versus current.
2. To find resistance of a given wire using meter bridge and hence determine the resistivity (specific resistance) of its material.
3. To verify the laws of combination (series) of resistances using a meter bridge.
4. To verify the laws of combination (parallel) of resistances using a meter bridge.
5. To compare the EMF of two given primary cells using potentiometer.
6. To determine the internal resistance of given primary cell using potentiometer.
7. To determine resistance of a galvanometer by half-deflection method and to find its figure of merit.

SECTION - B

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

List of Activities

1. To assemble the components of a given electrical circuit.
2. To study the variation in potential drop with length of a wire for a steady current.
3. To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostate, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also draw the circuit diagram.
4. To identify a diode, a LED, a transistor, an IC, a resistor and a capacitor from a mixed collection of such items.
5. To obtain a lens combination with the specified focal length by using two lenses from the given set of lenses.

Sub - Chemistry (Code - 043)

Month	No. of Working Days	Unit / Title
March	07	**Solution** Types of solutions, expressing concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties- relative lowering of vapour pressure, Raoult's law, elevation of boiling point, depression of freezing point, osmotic pressure, determination of molecular masses using Colligative properties, Abnormal molecular mass. Van't Hoff factor.
April	21	**Electrochemistry, Chemical Kinetics, Surface Chemistry** Redox reactiions, conductance in electrolytic solutions, specific and molar Kohlrausch's Law, electrolysis and law of electrolysis (elementary idea), dry cell-electrolytic cells and Galvanic cells, lead accumulator, EMF of a cell, standard electrode potential, Nernst equation and its application to chemical cells, Relation between Gibbs energy change and EMF of a cell, fuel cells, corrosion. **Chemical Kinetics** Rates of a reaction (Average and instantaneous), factors affecting rate of reaction: concentration, temperature, catalyst; order and molecularity of a reaction, rate law and specific rate constant, integrated rate equations and half-life (only for zero and first order reactions), concept of collision theory (elementary idea, no mathematical treatment). Activation energy, Arrhenius equation.

Month	No. of Working Days	Unit / Title
		Surface Chemistry Adsorption - physisorption and chemisorption, factors affecting adsorption of gases on solids, catalysis, homogenous and heterogenous activity and selectivity; enzyme catalysis colloidal state distinction between true solutions, colloids and suspension; lyophilic, lyophobic multi-molecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation, emulsion - types of emulsions.
May	12+5	**General Principal and Isolation of Elements** Principles and methods of extraction - concentration, oxidation, reduction - electrolytic method and refining; occurrence and principles of extraction of aluminium, copper, zinc and iron.
		Qualifying Examination
June	12	**Haloalkane and Haloarenes** **Haloalkanes:** Nomenclature, nature of C-X bond, physical and chemical properties, mechanism of substitution reactions, optical rotation. **Haloarenes:** Nature of C-X bond, substitution reactions (Directive influence of halogen in monosubstituted compounds only). Uses and environmental effects of - dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT.
July	25	**Alcohols, Phenols and Ethers, Aldehydes, Ketone and Carboxylic Acids, Organic compounds containing Nitrogen** **Alcohols :** Nomenclature, methods of

Month	No. of Working Days	Unit / Title
		preparation, physical and chemical properties (of primary alcohols only), identification of primary, secondary and tertiary alcohols, mechanism of dehydration, uses with special reference to methanol and ethanol. **Phenols :** Nomenclature, methods of preparation, physical and chemical properties, acidic nature of phenol, electrophillic substitution reactions, uses of phenols. **Ethers :** Nomenclature, methods of preparation, physical and chemical properties, uses. **Aldehydes, Ketones and Carboxylic Acids:** Aldehydes and Ketones : Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties, mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes, uses. Carboxylic Acids : Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses. **Organic compounds containing Nitrogen:** Amines : Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses, identification of primary, secondary and tertiary amines. Cyanides and Isocyanides - will be mentioned at relevant places in text. Diazonium salts : Preparation, chemical reactionis and importance in synthetic organic chemistry.
Aug	21	**'d' and 'f' Block Elements, Coordination Compounds** General introduction, electronic configuration, occurrence and characteristics of transition

Month	No. of Working Days	Unit / Title
		metals, general trends in properties of the first row transition metalsmetallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interestitial compounds, alloy formation, preparation and properties of $K_2Cr_2O_7$ and KM_nO_4. Lanthanoids - Electronic configuration, oxidation states, chemical reactivity and lanthanoid contraction and its consequences. Actinoids - Electronic configuration, oxidation states and comparison with lanthanoids. **Coordination Compounds:** Coordination compounds - Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds. Bonding, Werner's theory, VBT and CFT; strcutre and stereoisomerism, importance of coordination compounds (in qualitative inclusion, extraction of metals and biological system).
		(HALF YEARLY EXAMINATION)
Sept	25	**p -Block Elements** Group 16 Elements: General introduction, electronic configuration, oxidation states, occurrence, trends in physical and chemical properties, dioxygen: Preparation, Properties and uses, classification of Oxides, Ozone, Sulphur - allotropic forms; compounds of Sulphur: Preparation Properties and uses of Sulphur-dioxide, Sulphuric Acid: industrial process of manufacture, properties and uses; Oxoacids of Sulphur (Structures only). Group 17 Elements: General introduction, electronic

Month	No. of Working Days	Unit / Title
		configuration, oxidation states, occurrence, trends in physical and chemical properties; compounds of halogens, Preparation, properties and uses of Chlorine and Hydrochloric acid, interhalogen compounds, Oxoacids of halogens (structures only). Group 18 Elements: General introduction, electronic configuration, occurrence, trends in physical and chemical properties, uses.
Oct	20	**Biomolecules, Polymers, Chemistry in Everyday life** Carbohydrates - Classification (aldoses and ketoses), monosaccahrides (glucose and fructose) D-L configuration oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen); Importance of carbohydrates. Proteins - Elementary idea of - amino acids, peptide bond, polypeptides, proteins, structure of proteins - primary, secondary, tertiary structure and quaternary structures (qualitative idea only), denaturation of proteins; enzymes. Hormones- Elementary idea excluding structure. Vitamins - Classification and functions. Nucleic Acids : DNA and RNA. **Polymers:** Copolymerization, some important polymers: natural and synthetic like polythene, nylon polyesters, bakelite, rubber. Biodegradable and non-biodegradable polymers. **Chemistry in Everyday life:** Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials,

Month	No. of Working Days	Unit / Title
		antifertility drugs, antibiotics, antacids, antihistamines. Chemicals in food - prepservative,s artificial sweetening agents, elementary idea of antioxidants. Cleansing agents - soaps and detergents, cleansing action.
Nov	19	**Pre - Board Exam** **Revision**

PRACTICALS

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

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

A. Surface Chemistry

(a) Preparation of one lyophilic and one lyophobic sol Lyophilic sol - starch, egg albumin and gum
Lyophobic sol - aluminium hydroxide, ferric hydroxide, arsenous sulphide.

(b) Dialysis of sol-prepared in (a) above

(c) Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

B. Chemical Kinetics

(a) Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.

(b) Study of reaction rates of any one of the following:

i) Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.

ii) Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite : (Na_2SO_3) using starch solution as indicator (clock reaction).

C. Thermochemistry

Any one of the following experiments

i) Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.

ii) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).

iii) Determination of enthaply change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

D. Electrochemistry

Variation of cell potential in Zn/Zn^{2+} II Cu^{2+}/Cu with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature.

E. Chromatography

i) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.

ii) Separation of constitutents present in an inorganic mixture containing two cations only (constituents having large difference in Rf values to be provided).

F. Preparation of Inorganic Compounds

i) Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.

ii) Preparation of Potassium Ferric Oxalate.

G. Preparation of Organic Compounds

Preparation of any one of the following compounds

i) Acetanilide

ii) Di-benzal Acetone

iii) p-Nitroacetanilide

iv) Aniline yellow or 2 - Naphthol Aniline dye

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

I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given food stuffs.

J. Determination of concentration / molarity of $KMnO_4$ solution by titrating it against a standard solution of :

i) Oxalic acid

ii) Ferrous Ammonium Sulphate
(Students will be required to prepare standard solutions by weighing themselves.)

K. Qualitative Analysis

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

Cation : Pb^{2+} , Cu^{2+} , Al^{3+} , Fe^{3+} , Mn^{2+} , Zn^{2+} , Cu^{2+} , CO^{2+} , Ni^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{2+} , $[NH_4]^+$

Anions : $[CO_3]^{2-}$, S^{2-} , $[SO_3]^{2-}$,$[SO_4]^{2-}$, $[NO_2]^-$, Cl^- , Br^- , $[PO_4]^{3-}$, $[C_2O_4]^{2-}$, CH_3COO^-

(Note : Insoluble salts excluded)

PROJECT

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

A few suggested Projects.

- Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- Study of quantity of casein present in different samples of milk.
- Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
- Study of digestion of starch by salivary amylase and effect of pH and temperature on it.
- Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- Extraction of essential oils present in Saunf (aniseed), Ajwain (carum), Illaichi (cardamom).
- Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chilli powder and pepper.

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

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

Time Allowed : Two Hour **Max. Marks : 30**

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

General Guidelines

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

- Questions may be generated jointly by the external/ internal examiners and used for assessment.
- The viva questions may include questions based on basic theory/principle/concept apparatus/materials/ chemicals required, procedure, precautions, sources of error etc.

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

Beaker, glass rod, tripod stand, wire gauze, Bunsen burner, Whatman filter paper, gas jar, capillary tube, Pestile and mortar, Test tubes, tongs, test tube holder, test tube stand, buretee, Pipette, conical flask, standard flask, clamp stand, Tripod stand, burner, wire gauze, funnel, filter paper

Hands-on Assessment

- Identification / familiarity with the apparatus
- Odour detection in qualitative analysis

B. List of Practicals

The experiments have been divided into two sections : Section A and Section B. The experiements mentioned in Section B are mandatory.

SECTION -A

A. Surface Chemistry

1) Preparation of one lyophilic and one lyophobic sol

Lyophilic sol - starch, egg albumin and gum

2) Preparation of one

lyophobic sol Lyophobic

sol - Ferric hydroxide

B. Chromatography

1) Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values (distance values may be provided).

C. Tests for the functional groups present in organic compounds :

1) Alcoholic and Carboxylic groups

2) Aldehydic and Ketonic

D. Characteristic tests of carbohydrates and proteins in the given food stuffs.

E. Preparation of Inorganic Compounds - Potash Alum

SECTION - B (Mandatory)

F. Quantitative analysis

1) (a) Preparation of the standard solution of Oxalic acid of a given volume

(b) Determination of molarity of $KMnO_4$ solution by titrating it against a standard solution of Oxalic acid.

2) The above exercise [F 1 (a) and (b)] to be conducted using Ferrous ammonium sulphate (Mohr's salt)

G. Qualitative analysis:

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

Cations - $[NH]4+$

Anions - $[CO_3]^{2-}$, S^{2-} $[SO_3]^{2-}$, Cl^-, CH_3COO^- (Note : Insoluble salts excluded)

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

Prescribed Books :

1. Chemistry Part-I, Class-XII, Published by NCERT.
2. Chemistry Part-II, Class-XII, Published by NCERT.
3. Chemistry Lab Manual, Class-XII, Published by NCERT.

Subject - Biology

Months	No. of Working Days	Unit	Topics / Chapter
March	08	X	**Ecology** **Ch. 13. Organisms & Environment** Habitat and niche, Population and ecological adaptations; Population attributes - growth, birth and death rate, age distribution, Population interactions - mutualism, competition, predation, parasitism.
April	21	X	**Ch. 14. Ecosystem** Patterns, components; productivity and decomposition; energy flow; Pyramids of number, biomass, energy; Nutrient cycling (carbon and phosphorous); Ecological succession; Ecological services- Carbon fixation, Pollination, oxygen release. **Ch. 15. Biodiversity & Its Conservation** Concept of Biodiversity, Pattern, Loss of Biodiversity, Biodiversity Conservation; Hotspots, endangered organisms, extinction, Red Data Book, biosphere reserves, National Parks and Sancturaries. **Ch. 16. Environmental Issues** Air pollution and its control, Water pollution and its control, Agrochemical and its effects, Solid waste management, Radioactive waste management, greenhouse effect and global warming, Ozone depletion.
May	12	VI	**Reproduction** **Ch. 1. Reproduction in Organisms** Reproduction: a characteristic feature of all organisms for continuation of species. Modes of reproduction-Asexual and sexual. Modes of asexual reproduction- Binary fission, sporulation, budding, gemmule, fragmentation, vegetative propagation in plants.

Months	No. of Working Days	Unit	Topics / Chapter
			Ch. 2. Sexual Reproduction in Flowering Plants Flower structure, Development of male and female gametophyte, Pollination-types, agencies and examples, Outbreeding devices, Pollen- Pistil interaction, Double fertilization, Post fertilization Development - endosperm and embryo, Development of seed and formation of fruit, Special modes - apomixes, pathernocarpy, Polyembryony, Significance of seed and fruit formation.
June	13		**Qualifying Examination**
July	25	VI/ VII	**Ch. 3. Human Reproduction** Male and female reproductive system, Microscopic anatomy of testis and ovary, Gametogenesis, Menstrual cycle, Fertilisation, embryo development upto blastocyst formation, implantation; pregnancy and placenta formation (Elementary idea), parturition (Elementary idea), lactation (Elementary idea). **Ch. 4. Reproductive Health** Need for reproductive health and prevention of sexually transmitted diseases, birth Control-need and Methods, Contraception and Medical Termination of Pregnancy (MTP), Amniocentesis, Infertility and assisted reproductive technologies-IVF, ZIFT, GIFT (Elementary idea for general awareness). **Genetics & Evolution** **Ch. 5. Principles of inheritance** Mendelian inheritance, Deviations from Mendelism- Incomplete dominance, Co-dominance, Multiple allelism and inheritance of blood group, Pleiotrophy; Elementary idea of polygenic inheritance;

Months	No. of Working Days	Unit	Topics / Chapter
			Chromosomal theory of inheritance; Chromosomes and genes; Sex determination- In humans, birds, honey bee, linkage and crossing over; Sex linked inheritance-Haemophilia Colour blindness, Mendelian disorders in humans- Down's syndrome, Turner's syndrome and Klinefelter's syndrome. **Ch. 6. Molecular Basis of Inheritance** Search for genetic material; Structure of DNA and RNA, DNA packaging, DNA replication, Central dogma: Transcription, genetic code, translation, Gene expression and regulation-Lac Operon, Human Genome project, Rice genome project; DNA finger printing.
Aug	20	VII/ IX	**Ch. 7. Evolution** Origin of life evidences for biological evolution (Paleontological, comparative anatomy, embryology and molecular evidence), Darwin's contribution, Modern Synthetic theory of evolution-Variation (Mutation and Recombination), Natural Selection with examples, types of natural selection, Gene flow and drift, Hardy-Weinberg's principle, Adaptive Radiation, Human evolution. **Biotechnology & Its Application** **Ch. 11. Principles & processes of Biotechnology** Genetic engineering, Recombinant DNA technology. **Ch. 12. Application of Biotechnology** In health and agriculture, Human insulin, Gene therapy, Genetically Modified Organisms-Bt crops, Transgenic Animals, Bioethical issues, Biopiracy, patent.

Months	No. of Working Days	Unit	Topics / Chapter
Sept	25		**Revision & Half Yearly Examination**
Oct	18	VIII	**Biology & Human Welfare** **Ch. 8. Health & Disease** Pathogens, Parasites, causing human diseases (Malaria, Filaria, Ascariasis, Typhoid. Pneumonia, Common cold, Amoebiasis, Ringworm), Basic concepts of immunology, vaccine, Cancer, HIV, AIDS, Adolescence, drug and alcohol abuse. **Ch. 9. Strategies in Food Production** Animal husbandry, Improvement in food production, Plant breeding, tissue culture, Single Cell Protein, Biofortification, Apiculture and Diary farm Management.
Nov	10	VII	**Ch. 10. Microbes in Human Welfare** In Household food processing, industrial production, sewage treatment, energy generation, biocontrol agents and biofertilisers. **PRE BOARD - I**
Dec	21		**PRE BOARD - II**

PRACTICALS

TERM - I

1. Study of pollen germination on a slide.
2. Collect soil from at least two different sites and study them for texture, moisture content, pH and water holding capacity of it. Correlate with the kinds of plants found in them.
3. Collect water from two different water bodies around you and study them for pH, clarity and presence of living organisms.

4. Study of plant population density and plant population frequency by quadrate method.
5. Flowers adapted to pollination by different agencies (wind, insects).
6. Pollen germination on stigma through a permanent slides.
7. Identification of stages of gamete development i.e. T.S. testis and T.S. of ovary through permanent slides (from any mammal).
8. Meiosis in onion bud cell or grasshopper testis through permanent slides.
9. T.S. of blastula through permanent slides.
10. Identification of common disease causing organisms like Ascaris, Entamoeba, Plasmodium, any fungus causing Ringworm through permanent slides or specimens. Comment on symptoms of diseases that they cause.
11. Two plants and two animals found in xerophytic conditions. Comment upon their morphological adaptations.
12. Two plants and two animals found in aquatic conditions. Comment upon their morphological adaptations.

TERM - II

1. To prepare a temporary mount of onion root tip to study mitosis.
2. To study the effect of the different temperatures and three different pH on the activity of salivary amylase on starch.
3. Prepared pedigree charts of any one of the genetic traits such as rolling of tongue, blood groups, ear lobes, widow's peak and colourblindness.
4. Exercise on controlled pollination - Emasculation, tagging and bagging.

Month	No. of Working Days	Chapter Content
March	10	**Revision of Class XI :** **Lists :** Comprehension, Slicing & Built - in String Methods. **Tuples :** Tuple Slicing & Iteration through a tuple. **Dictionary :** Built-in Dictionary Functions; Updating Dictionary Elements.
April	21	**Sorting Techniques : Bubble & Insertion Sorts** **Functions :** Built-in & User Defined Functions; Modules; Function Returns Value; Arguments & Parameters in Functions; Types of Arguments ; Passing Lists / Arrays to Functions; Using main () as a Function; Flow of Execution of Program Containing Function Call.
May	12+05	**Recursion :** Terminating & Recursive Part; Iteration vs Recursion. Recursive Programs for Fibonacci Series, Factorial of a Number, BINARY Search etc.
June	12	**Program Efficiency :** In terms TIME and Number of Operations; Algorithm Analysis defined as Inversely Proportional to the Wall Clock Time.
July	24	**DATA Structures in Python :** Fundamental Concepts. **STACK :** Implementation of Stack Using List. Creating a Stack; Pushing element in Stack; Traversing elements of a Stack;

Month	No. of Working Days	Chapter Content
		Popping element from Stack; Concept of Underflow & Overflow. **QUEUE :** Implementation of Queue Using List. Creating a Queue; Inserting element in Queue; Traversing elements of a Queue; Deleting element from Queue; Concept of Empty & Full Queues.
Aug	20	**Data Visualization Using PyPlot :** Basic Concepts; LINE Chart, BAR Chart and PIE Chart. **File handling :** Basic Concepts. Binary & Text Files. open and close a file; read, write, and append to a file. Standard input, output, and error streams. Relative and absolute paths. Using Python libraries: create and import Python libraries.
Sept	10	**Computer Networks (CN) :** Structure of a network: Types of networks: local area and wide area (web and internet), new technologies such as cloud and IoT, public vs. private cloud, wired and wireless networks; concept of a client and server. **Network devices :** Such as a NIC, switch, hub, router, and access point.
Oct	18	**Network stack :** amplitude and frequency modulation, collision in wireless networks, errorchecking, and the notion of a MAC address, main idea of routing. **IP addresses :** (v4 and v6), routing table, router, DNS, and web URLs, TCP: basic idea of retransmission, and ratemodulation when there is congestion (analogy to a road network).

Month	No. of Working Days	Chapter Content
		Protocols : 2G, 3G, 4G, Wi-Fi What makes a protocol have a higher band width? **E-mail :** Working with clients, sending/ receiving email messages, formatting email, attaching documents with email and so forth.
Nov	16	**Data Management :** SQL (Structured Query Language). Find the min, max, sum, and average of the marks in a student marks table. **Find the total number of customers :** from each country in the table (customer ID, Customer name, country) using group by. Write a SQL query to order the (student ID, marks) table in descending order of the marks. **Database Development :** Creating queries and reports.
Dec	21	**Society, Law and Ethics (SLE-2) :** Intellectual property rights, plagiarism, digital rights management, and licensing (Creative Commons, GPL and Apache), open source, open data, privacy. **Privacy laws, fraud ;** cyber-crime-phishing, illegal downloads, child pornography, scams; cyber forensics, IT Act, 2000. **Cyber Laws :** Technology and society : Understanding of societal issues and cultural changes induced by technology.

January, 2021. Report File & Project Preparation :

The aim of the class project is to create something that is tangible and useful. this should be done in groups of 2 to 3 students, and should be started by students at least 6 months before the submission deadline. The aim here is to find a real world problem that is worthwhile to solve. Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filling GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school software for their disabled fellow students, and mobile applications.

Months	No. of Working Days	Chapter Content
March	10	**Revision of Class XI :** Python Fundamental Programming Concept. Modules. String. List. Dictionary. Tuple. NumPy.
April	21	**UNIT - I : [30 Marks]** **Data Handling (DH2) : NumPy :** 1 D array, 2 D array Arrays : Slices, Joins, and Subsets Arithmetic operation son 2 D arrays Covariance, Correlation and Linear Regression
May	12	**DH - 2 : Plotting with Pyplot :** Plot Bar-graphs, Histograms, Frequency-polygons, Box-plots, and Scatter-plots.
June	12	**DH- 2 : Pandas :** Introduction to Data Handling on Data-Frame, Creating and Printing Data-Frame. Advanced operations on Data Frames: Pivoting, Sorting, and Aggregation.
July	24	**DH- 2 : Advanced operations on Data Frames :** Descriptive statistics : min, max, mode, mean, count, sum, median, quartile, var, Createa Histogram, and Quantiles. Function application : pipe, apply aggregation (group by), transform, and apply map. Re-indexing, and altering lables.

Months	No. of Working Days	Chapter Content
Aug	20	**UNIT- II : [15 Marks]** **Software Engineering** Introduction to Software engineering. Software processes : waterfall model, evolutionary model, and component based model. Delivery models: incremental delivery, spiral delivery Process activities: specification, design/ implementation, validation, evolution Agile methods: pair programming, and Scrum Business use-case diagrams: Case Studies and Analysis Practical aspects : Version control system (GIT), and do case studies of software systems and build use-case diagrams.
Sept	10	**UNIT - III : [15 Marks]** **Data Management (DM-2):** Interface Python with an SQL databse (MySQLdb). Establishing Python-MySQL connectivity, Creating cursor object, Creating Databse, Closing Cursor & Connection.
Oct	18	**DM - 2: SQL Commands :** Aggregation functions, Having, Group by, Order by. Write a minimal Django based web application that parses a GET and POST request, and writes the fields to a file - flat file and CSV file.

Months	No. of Working Days	Chapter Content
Nov	16	**UNIT- IV : [10 Marks]** **Society, Law & Ethics (SLE-2) :** Intellectual property rights, plagiarism, digital rights management, and licensing (Creative Commons, GPL and Apache), open source, open data, Privacy & laws, fraud; cybercrime-phishing, illegal downloads, child pornography, scams; cyber forensics, IT Act, 2000. *Technology in society;* Societal issues and cultural changes. *E-waste management:* proper disposal of used electronic gadgets. Identity theft, unique ids, and biometgrics. Gender and disability issues while teaching and using computers. Role of *new media in society*: Online campaigns, crowdsourcing, smart mobs Issues with the internet: internet as an echo chamber, net neutrality, internet addiction, Case studies Arab Spring, WikLeaks, Bit coin.
Dec	21	**Revision**

Sub - Physical Health Education (048)

Months	No. of Working Days	Topics/Sub Topics
March	07	**Unit - I** **Planning in Sports :** ● Meaning and objectives of planning ● Various committees and its responsibilities (pre, during and post) ● Tournament-Knock out, round robin or league and combination. ● Procedure to draw Fixture-knock out (Bye and Seeding) and league (Staircase and Cyclic) ● Intramural and Extramural- Meaning objective and its significant. ● Specific sports programme (sports day, Health run, Run for fun, Run for specific cause and Run for unity) **Unit - X** **Training in Sports :** ● Strength-Definition, types and methods of improving strength-Isometric, Isotonic and Isokinetic ● Endurance-Definition, types and methods to develop Endurance-continues training interval training and fartlek training. ● Speed- Definition, types and methods to develop speed- Acceleration run and Pace run ● Flexibility- Definition, types and methods of improve flexibility Coordinative abilities- Definition and types Circuit training - Introduction and its importance

Months	No. of Working Days	Topics/Unit
April	22	**Unit - VI** **Test and Measurement in Sports :** ● **Motor fitness test -** 50m standing start, 600 m run/walk, sit and reach, partial curl up, push ups (Boys) Modified Push ups (girls), standing Broad jump, agility - 4 x 10m shuttle run. ● 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: 01 Kg) ● Measurement of Cardio Vascular Fitness: - Harvard Step Test/Rockport Test ● Computation of Fitness Index: Duration of the Exercise In Second X 100 / 5.5 X Pulse Count of 1-1.5 Min After Exercise ● Rikli and Jones - Senior Citizen Fitness Test 1. Chair Stand Test for Lower Body Strength 2. Arm Curl Test For Upper Body Flexibility 3. Chair Sit and Reach Test for Lower Body Flexibility 4. Back Scratch Test for Upper Body Flexibility 5. Eight Foot Up and Go Test for Agility 6. Six Minute Walk Test for Aerobic Endurance

Months	No. of Working Days	Topics/Unit
May	20	**Unit - V** **Children and Women in Sports :** ● Motor development and factor affecting it ● Exercise Guidelines at different stages of growth and development ● Common postural deformities- knock knee, Flat foot, Round shoulder, Lordosis, Kyphosis, Bow leg and Scoliosis and their corrective measures ● Sports participation of women in sports ● Special consideration (Menarch and Menstural disfunction) ● Female athletes triad (oestoperosis, Amenoria, Eating Disorders)
June	11	**Unit - VII** **Physiology and Injuries in Sports :** ● Physiological Factor Determining Components of Physical Fitness ● Effect of Exercise on Cardio respiratory system ● Effect of Exercise on Muscular system ● Physiological Changes Due To Ageing ● Sports injuries : classification Soft issue injuries (Abrasion, Contusion, Laceration, Incision, Sprain and Strain) Bone and Joint Injury (Dislocation, Fracture, Stress Fracture, Green stick, Communated, Transverse, oblique and impacted fracture) causes, prevention and treatment ● First aid - Aims and objectives

Months	No. of Working Days	Topics/Unit
July	24	**Unit - IX** **Psychology and Sports :** ● Personality, its definition and types-trait and type (Sheldon and Jung's classification) and Big five theory ● Motivation, its types and techniques ● Exercise adherence, reasons to exercise, benefits of exercise ● Strategies for enhancing adherence to exercise ● Meaning, concept and type of Aggression in sports
Aug	24	**Unit - II** **Sports and Nutrition:** ● Balanced Diet and Nutrition- Macro & Micro Nutrients ● Nutritive and Non Nutritive components of Diet ● Eating for Weight control- A Healthy Weight, The Pitfalls of Dieting, Food Intolerance and Food Myths **Unit - VIII** **Biomechanics and Sports:** ● Meaning and importance of biomechanics in sports ● Types of Movements (Flexion, Extension, Abduction and Adduction) ● Newton's Laws of Motion and their application in sports ● Friction and Sports

Months	No. of Working Days	Topics/Unit
Sept.	22	**Revision of First Semester Examination Portion**
Oct	15	**Unit - III** **Yoga and Life Style :** ● Asanas as Preventive measures ● Obesity: Procedure, Benefits and Contraindication for Vajrasana, Hastasana, Trikonasana, Ardhmatseyendrasana ● Diabetes : Procedure, Benefits and Contraindication for Bhujangasana, Paschimottanasana, Pawan Muktasana, Ardhmatseyendrasana ● Asthma: Procedure, Benefits and Contraindication for Sukhasana, Chakrasana, gomukhasana, Parvatasana, Bhujangasana, Paschimottanasana, Matsyasana ● Hypertension: Tadasana, Vajrasana, Pawan Muktasana, Ardh Chakrasana, Bhujangasana, Sharasana ● Back Pain : Tadasana, Ardhmatseyendrasana, Vakrasana, Shalabhasana, Bhujangasana
Nov	21	**Unit - IV** **Physical Education and Sports for CWSN (Children Eith Special Need - Divyang) :** ● Concept of disability and disorder

Months	No. of Working Days	Topics/Unit
		● Types of disability, its Causes and Nature (Congnitive Disability, Intellectual Disability, Physical Disability) ● Types of Disorder, its Cause and Nature (ADHS, SPD, ASD, ODD, OCD) ● Disability Etiquettes ● Advantage of Physical Activities for Children with Special Needs ● Strategies to make Physical Activities Accessible for Children with Special Need
Dec		**Revision for Board Exam**

Sub - Economics

Months	No. of Working Days	Topics/Unit
March/ April	**27**	**Macro Economics** **Unit : 1 - National Income Accounting** **Topic:** Basics of Macro Economics **Topic:** Circular flow of income, components of GDP **Topic:** Methods of Calculation of National Income **Topic:** Concepts of Nominal and Real GDP **Topic:** GDP and Welfare **Indian Economics** **Unit : 6 - Indian economy on the eve of independence** **Topic:** low growth rate of GDP, Agriculture, Industry, Trade, Demography, Occupational structure, Infrastucture, conclusion.
May	**12**	**2. Indian economy between 1950-1990** **Topics:** Economic systems, Goals of planning, Agriculture, Green revolution, Industry IPR-1956, Trade, import substitution policy, concusion. **3. Economic reforms since 1990** **Topic:** Background of reform, liberlasitation in industrial sector, Financial sector, Trade, Tax etc., Privatisation, Disinvestment, Globalisation, concepts of demonetization and GST
June	**12**	**Qualifying Exam**
July	**25**	**Unit : 2 - Money and Banking** **Topic:** 1. Money - its meaning and functions, Supply of Money, Functions of Commercial Bank and Credit Creation, Functions of Central Bank & Credit Control. **Unit : 3 - Determination of Income** **Topic:** Meaning of aggregate demand, aggregate supply

Months	No. of Working Days	Topics/Unit
		Topic: Consumption function and its components, derivation of saving through consumption **Topic:** Determination of equiliberium income (AD/AS and S/I approach)
August	**21**	**Unit : 3 - Conted...** **Topic:** Investment multiplier and its mechanism, Excess demand and deficient demand and controling measures **Unit : 7 - Current Challanging Facing Indian Economy** **4. Poverty :** Absolute and Relative poverty, poverty trends in India, main poverty alleviation programme A critical assesment. **5. Rural Development :** Key issues, credit and marketing, agricultural diversification, alternative farming-organic farming. **6. Human capital formation :** Concept, Role of Human capital in economic development, growth of education sector in India.
Sept	**25**	**Rivision for Half Yearly** **7. Employment :** Formal and Informal sector growth, problem and policies
Oct	**20**	**Macro Economics** **Unit : 4 -** Government Budget and the economy **Topic:** Meaning, objectives and components, classifications of receipts, deficit and there implications **Unit : 5 - Balance of Payments** **Topic:** Meaning and components; balance of payment deficit meaning **Foreign exchange rate :-** Meaning of fixed and flexible exchanged rate and manage

Months	No. of Working Days	Topics/Unit
		floating exchange rate. Determination of exchange rate in free market. **Indian Economics : Unit : 7 - Conted...** **8. Infrastructure :-** Meaning and types : case studies : Energy and Health : Problemsand Policies - critical assesment;
Nov	**19**	**9. Sustaiable Economic Development :-** Meaning and effect of Economic Development on Resources and Environment, including global warming. Sustainable development and strategies. **Unit : 8 -** Development Experience of India, China and Pakistan **Topic:** A comparison with neighbours, India and China, India and Pakistan, Issues :- growth, population, sectoral composition and other Human development indicators Developing project in economics. **Revision for Pre Board I and II Examination**
Dec	**21**	**Revision for Pre Board I and II Examination**

Reference Books :

Micro Economics :-

1. NCERT Macro Economics
2. Macro Economics (I.D. Mangla)
3. Macro Economics (V.K. Jain and Ohri)

Indian Economics :-

1. Indian Economics (NCERT)
2. Indian Economics (Sandeep Garg)
3. Indian Economics (I.D. Mangla)

Sub - Accountancy (Sub Code - 055)

Months	No. of Working Days	Topics/Unit
March	**07**	**Unit - I- Financial Statements of Not for Profit Organisations** Concept; Receipts and Payments account: Features and Preparation. Income and Expenditure Account: Features, Preparation of Income and Expenditure account and Balance Sheet from the given receipts and payments account with additional information.
April	**21**	**Unit - II- Accounting for Partnership Firms** Partnership: features, partnership deed. Provisions of the Indian Partnership Act 1932 in absence of Partnersip deed. Fixed v/s fluctuating capital accounts. Preparation of Profit and Loss Appropriation account - division of profit among partners, guarantee of profits. Past adjustments (relating to interest on capital, interest on drawings, salary and profit sharing ratio). Goodwill: nature, factors affecting and methods of valuation - average profit, super profit and capitalization. Accounting for Partnership firms - Reconstitution and Dissolution. Change in the Profit sharing Ratio among the existing partners- sacrificing ratio, gaining ratio, accounting for revaluation of assets and reassessment of liabilities and treatment of reserves and accumulated profits. Preparation of Revaluation account and Balance Sheet.

Months	No. of Working Days	Topics/Unit
May	**12+06**	Admission of a partner : effect of admission of a partner on change in the profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, treatment of reserves and accumulated profits, adjustment of capital accounts and preparation of balance sheet. Retirement and Death of a partner: effect of retirement/death of a partner on change in profit sharing ratio, treatment of goodwill (as per AS 26), treatment for revaluation of assets and reassessment of liabilities, adjustmnet of accumulated profits and reserves, adjustment of capital accounts and preparation of balance sheet. Preparation of loan account of the retiring partner. Calculation of deceased partner's share of profit till the date of death. Preparation of deceased partner's capital account and his executor's account. Assignment and Project work (Comprehensive Question) during summer vacation
June	**06**	**Pre - Mid Term Examination**
June	**06**	Dissolution of Partnership Firm: Meaning of dissolution of partnership and partnership firm, types of dissolution of a firm. Settlement of accounts - preparation of realization account, and other related accounts: Capital accounts of partners and cash/bank a/c.

Months	No. of Working Days	Topics/Unit
July	**25**	**Unit - III- Accounting for Companies** Accounting for Share Capital Share and Share Capital : nature and types Accounting for share capital: Issue and allotment of equity shares, Public subscription of shares - over subscription and under subscription of shares; issue at par and at premium, calls in advance and arrears, issue of shares for consideration other than cash. Concept of Private Placement and Employee Stock Option Plan (ESOP). Accounting treatment of forfeiture and re-issue of shares. Disclosure of share capital in the Balance Sheet of a Company.
Aug	**21**	**Accounting for Debentures :** Debentures: Issue of debentures at par, at a premium and at a discount. Issue of debentures for consideration other than cash: Issue of debentures with terms of redemption: debentures as collateral security - concept, interest on debentures. Writing off discount/loss on issue of debentures. Redemption of debentures Methods: Lump sum, draw of lots. Creation of Debenture Redemption Reserve. **Assignment for Half yearly Examination**
Sept.	**25**	**Half Yearly Examinations - Revision**
Oct	**20**	**Part-B : Analysis of Financial Statements** **Unit - IV- Analysis of Financial Statements**

Months	No. of Working Days	Topics/Unit
		Financial Statements of a Company: Statement of Profit & Loss and Balance Sheet in the prescribed form with major headings and sub headings (as per Schedule III of the Companies Act 2013). Financial Statement Analysis : Objectives, Importance and Limitations. Tools for Financial Statement Analysis : Comparative Statements, Common size Statements, Cash flow analysis, Ratio analysis. Accounting Ratios : Objectivies, Classification and Computation. Liquidity Ratios : Current Ratio and Quick Ratio. Solvency Ratios : Debt to Equity Ratio, Total Assets to Debt Ratio, Proprietary Ratio and Interest Coverage Ratio. Activity Ratios : Inventory Turnover Ratio, Trade Receivables Turnover Ratio, Trade Payables Turnover Ratio, Working Capital Turnover Ratio. Profitability Ratios : Gross Profit Ratio, Operating Ratio, Operating Profit Ratio, Net Profit Ratio and Return on Investment Ratio.
Nov	**19**	**Unit - V - Cash Flow Statement :** Meaning, Objectives and Preparation (as per AS 3) (Revised) (Indirect Method only) Project Work (Specific Problem)
Nov & Dec	**21**	**Assignment for Pre - Board Examinations** **Project Work**

Subject - Business Studies (054)

Months	No. of Working Days	Topics
March	**07**	**Nature and Significance of Management** Management concept, features, objectives and importance. Management as Science, Art and Profession. Levels of Management. Management Functions- Planning, Organising, Staffing, Directing and Controlling. Co-ordination-concept and importance.
April	**21**	**Principles of Management** Concept and significance. Fayol's Principles of Management. Taylor's Scientific Management- Principles and Techniques. **Business Environment** Concept and Importance. Dimensions of Business Environment : Economic, Social, Technological, Political and Legal. Impact of Government Policy changes on business with reference to liberalization, privatization and globalization in India. Demonetization.
May	**12+6**	**Marketing Management** Selling and Marketing - Concept; Marketing Management - Concept; Marketing Functions; Marketing Management Philosophies; Marketing Mix- Concept and Elements; Product - Concept, Branding, Labelling and Packaging; Price - Concept, Factors determining price; Physical distribution - Concept and Components,

Months	No. of Working Days	Topics
		Channels of distribution : Types, Choice of Channels; Promotion - Concept and elements; Advertising - Concept, role, objections against advertising; Personal selling - concept; Sales Promotion - Concept; Public Relations - Concept.
June	**06**	**Pre - Mid Term Examination**
	06	**Planning** Concept, Importance and Limitations; Planning process; Single use and Standing Plans : Objectives, Strategy, Policy, Procedure, Method, Rule, Programme and Budget.
July	**25**	**Organising** Concept and Importance; Process; Structure of Organisation - Functional and Divisional - Concept. Formal and Informal Organisation - Concept; Delegation- concept, elements and importance. Decentralisation: concept and Importance. **Staffing** Concept and Importance of Staffing; Staffing as a part of Human Resource Management- Concept. Staffing process; Recruitment Process; Selection Process; Training and Development - Concept and Importance, Methods of Training - On the job and Off the job- Induction training, vestibule Training, Apprenticeship Training and Intership Training.
Aug	**21**	**Directing** Concept and Importance; Elements of Directing; Supervision - concept,

Months	No. of Working Days	Topics
		Motivation - concept, Maslow's hierarchy of needs, Financial and Non Financial incentives. Leadership - concept, styles - autocratic, democratic and laissez faire. Communication - concept, formal and informal communication; Barriers to effective communication, how to overcome the barriers. **Controlling** Concept and importance; Relationship between planning and controlling; Steps in the process of controlling.
Sept	**25**	**Revision for Half Yearly Examinations**
Oct	**20**	**Financial Management** Concept, role and objectives of Financial Management; Financial decisions - Investment, Financing and Dividend - Meaning and factors affecting; Financial Planning - Concept and Importance. **Pooja Vacation Project Work and Assignment** Capital Structure - concept and factors determining Capital Structure. Fixed and Working Capital - Concept and factors affecting their requirements.
Nov	**19**	**Financial Markets** Concept, Functions and Types; Money Market and its Instruments; Capital market and its types (Primary and Secondary), Methods of Floatation in the primary market; Stock Exchange - Functions and Trading Procedure; Securities and Exchange Board of India (SEBI) - Objectives and Functions.

Months	No. of Working Days	Topics
		Consumer Protection Concept and Importance of Consumer Protection; Consumer Protection Act 1986; Meaning of Consumer, Rights and Responsibilities of Consumer; Who can file a complaint against whom? Redressal Machinery; Remedies Available. Consumer Awareness - Role of Consumer organizations and Non Governmental Organisations (NGOs).
Nov & Dec	**21**	**Revision** **Pre-Board Exams**

Sub - Engineering Graphics (046)

Months	No. of Working Days	Topics
March	13	Construct an Isometric Scale Isometric Projections of Solids : Cone, Cylinder, Pyramid, Prism (Triangular, Square, Pentagonal, Hexagonal) Axis perpendiculator to H.P.
April	21	Isometric Projections of Solids : Combination of Solids Combination of Prism and Pyramid, Prism and cone, Axis Perpendicular to H.P. Prism and Hemisphere. Assemble of bushed bearing, and disassemble it's parts, Hexagonal Bolt and nut practicals Q. 1, 2
May	12	Combination of Solids. Axis perpendicular to H.P Isometric Projection of solid Axis Perpendicular to V.P. Assemble of open bearing and disassemble it's parts and

Months	No. of Working Days	Topics
		draw front view, Top view, Side views Practicals Q. 3, 4
June	12	Isometric Projections of sphere, hemisphere, cube, key : Woodruff key, rectangular taper key, Gib head key. Socket and spigot joint, Assemble and disassemble, Gib and Cotter Joint, Assemble and dissassemble. Front view, Top view and side views Practicals Q. 5.
July	25	Sleeve and Cotter, Assemble and disassemble the parts and draw, Front view, Top view, Side views. Section the parts in front view upper half or Lower half in section. "Turn Buckle", Draw Front view Upper Half and Lower half in Section, Top view, Side view. Sq. Nut, hexagonal nut, Screw thread : Square, Knuckle thread, Hook headed bolt (Axis perpendicular to H.P. and Parellel to both H.P. and V.P.), Rivets, Screws Practicals - Q. 6, 7, 8
Aug	21	Screw thread : B.S.W., Internal and External screw thread, Stud bolts (Axis perpendicular to H.P. and Parallel to H.P. and V.P.) Assemble and disassemble of "Pipe Joint", Front view left half and right half sectoin, "Cost Iron Pulley" Front view, Side views. Practicals - Q. 9, 10, 11
Sept.	25	Projected flange coupling - Assemble and disassemble, draw front view and side

Months	No. of Working Days	Topics
		views. Rivets, Screws, Isometric Projections. Practicals - Q. 12, 13
Oct	20	Un protected Flange coupling - Assemble and disassemble draw front view, and side views, section upper and Lower half section. Isomeric Projections. Practicals - Q. 14, 15
Nov	19	Isometric Projections of Solid (Combinations) - Cylinder, Prism, Pyramid. Practicals - Q. 14, 15

Sub - Fine Art Painting (Code No. 049)

Months	Theory/ Practical	Topics
March (13 days)	**Theory**	A brief introduction of Indian Miniature Painting and Schools :- **Pal, Jain & Central Indian Paintings**. Development of Indian Art.
	Practical	Method and material of Painting. Rendering painting, Still life with different draperies of different colours for background and foreground. **Subjects of Composition :** Still life in pencil shading and colour with light and shade from a fixed point of view, Decorative design, Pattern Making.
April (21 days)	**Theory**	**The Rajasthani School of Miniature Painting :-** 1) Origin and Development of the Rajasthani School. 2) Main features of the Rajasthani School. 3)Sub-Schools-Mewar,Bundi, Jodhpur, Bikaner, Kishangarh and Jaipur. 4) **Study of different Rajasthani Paintings :** a) Maru-Ragini by Sahibdin of Mewar b) Raja Aniruddha Singh by Hara Utkal Ram of Bundi c) Chaugan Players by Dana of Jodhpur d) Krishna on swing by Nuruddin of Bikaner e) Radha (Bani-Thani) by Nihal Chand of Kishangarh. f) Bharat Meets Rama at Chitrakut by Guman of Jaipur.

Months	Theory/ Practical	Topics
	Practical	Water colour painting (transparent & opaque), Pencil shading & pen ink. **Subjects of composition:-** Flower study and still life in pencil shading and colour, landscape painting, composition with human figure - study room, social event.
May/ June (12 +12 days)	**Theory**	**The Pahari School of Miniature Painting:** 1) Origin and Development 2) Main features of the Pahari School 3) Sub-Schools- Basohli, Kangra 4) **Study of different Pahari Paintings.** a) Krishna with Gopies by Manaku from Basohli. b) Nand Yashoda and Krishna with Kinsmen going to Vrindavana by Nainsukh from Kangra. **The Mughal School of Miniature Painting :** 1) Origin and Development 2) Main features of the Mughal School 3) Study the different sub school
	Practical	Portrait study with pencil shading & colour- any great personality, composition with human figure. **Subjects of composition** :- Daily life, village life, one imaginative painting, animal figure, bird & flower (use pencil, pen and colour).

Months	Theory/ Practical	Topics
July (25 days)	**Theory**	**3) Study of different Mughal Paintings :** a)Krishna lifting Mount of Goverdhana by Miskin of Akbar period. b) Birth of Salim by Ramdas of Akbar Period. c) Falcon on a Bird-Rest by Ustad Mansoor of Jahangir period. e) Kabir and Raidas by Ustad Faquirullah Khan of Shahjahan period f) Marriage procession of Dara Shikoh by Haji Madni of Provincial Mughal (Avadh) period. **The Deccan School of Miniature Painting :** 1) Origin and development 2) Main features of the Deccan School
	Practical	Drawing method, Elements of Art, Design through modern concept, abstract painting, texture painting and Op art. **Subjects of colour composition :-** Affairs of family, friends and daily life: Affairs of family professionals; Bird and animal composition; Landscape painting with human figures (Colour Painting).
Aug (21 days)	**Theory**	3) **Study the different sub school, Ahmandnagar, Hyderabad Golkonda** 4) **Study of different Deccan Paintings** a) Ragini Pat-hamsika of Ahmadnagar b) Hazrat Nizamuddin Auliya and Amir Khusro of Hyderabad

Months	Theory/ Practical	Topics
		c) Chand Bibi Playing Polo (Chaugan) of Gol Konda **New Era in Indian Art.** Contribution of Indian artists in the struggle for National Freedom Movement. a) Tiller of the Soil by Nandlal Bose (Painting) **National Flag of India and Symbolic significance of its forms and the colour.**
	Practical	Project report writing. Painting in different medium, Mixed medium. Wax resistance technique. White on white technique, Monochrome painting. **Subjects of composition :-** Copy of any miniature painting with water colour or Tempera, folk art of Jharkhand; Landscape with water colour, Human figure composition- Rainy Day, Park, Cultural event.
Sept (22 days)	**Theory**	**Introduction to the Bengal School of Painting** 1) Origin and development 2) Main features of the Bengal School **Study of different paintings of the Bengal School :** a)Journey's End by Abanindranath Tagore b)Rasa-Lila by K shitindranath Majumdar c) Radhika by M.A.R. Chughtai d)Meghdoot by Ram-Gopal Vijaivargiya
	Practical	Concept of modern art, Modern Art Painting (acrylic colour or water

Months	Theory/ Practical	Topics
		colour), Canvas or Canvas board painting. **Subjects of Composition :-** Any festival, Colourful compositon, Flowers with flower pot, Imaginative composition.
Oct (20 days)	**Theory**	The Modern Trends in different Contemporary (Modern) Art development. **Study of different Contemporary (Modern) Indian Paintings :-** a) Rama Vanquishing the pride of the ocean by Raja Ravi Varma b) Magician by Gaganendranath Tagore c) Mother and child by Jamini Roy d) Haldi Grinders by Amrita Sher-Gil e) Mother Teresa by M.F. Husain f) The Vulture by Kamlesh Dutt Pandey **Study of different Contemporary (Modern) Indian Graphics :-** a) Whirlpool by N. Krishna Reddy b) Children by Somnath Hore c) Devi by Jyoti Bhatt d) Of Walls by Anupam Sud e) Man, Woman and Tree by K. Laxma Goud
	Practical	Abstract painting, Modern art, Collage art, Mixed Media, Nature study with pencil shading & colour. **Subjects of composition :-** Mother and child, Cityscape, Copy of any Modern Art (Painting).

Months	Theory/ Practical	Topics
Nov (19 days)	**Theory**	**Study of different Contemporary (Modern) Indian Sculptures :-** a) Triumph of Labour by Devi Prasad Roy Chowdhury b) Santhal Family by Ramkinker Baij c) Cries Unheard by Amarnath Sehgal d) Ganesha by P.V. Janakiram e) Chaturmukhi by Aekka Yadagiri Rao
	Practical	Colour composition in Acrylic and Water colour. Portfolio making technique. **Subjects of colour composition :-** Fantasy & dream, Any imaginative composition, Any games or Sports composition (indoor & outdoor).
Dec (21 days)	**Theory**	**Revision of Theory and Exams**
	Practical	**Portfolio making -** Portfolio presentation of painting with record of the entire year's performance from sketch to finished Art work, Pencil shading, pen & ink work, Landscape painting, Human figure composition, Still life painting, Human figure drawing & sketch, Portrait painting, Modern art painting, Abstract art, Imaginative painting, Canvas or Canvas board painting. Total selected 20 works (Class XI & XII) to be presented with proper mounting in A/2 or A/3 size portfolio. **Practical Project Report** (digital two copies) for Practical exam with Portfolio.

Months	Theory/ Practical	Topics
Jan/Feb (21+ 22)	**Theory**	**Revision work and Theory Exams**
	Practical	Practical Exams, Submission of 20 paintings complete Portfolio, 2 Practical Prooject Reports (Digital Copies)
Materials and topics required for Practical		**Materials required -** Pencil, eraser, shading pencil set, marker (thin and bold), artist oil pastel, artist water colour cakes (18 or 24 set) (Camel), artist acrylic colour, big bowl, big colour palate, rough cloth, news paper, paper clip, hard board or file board, A/3 size drawing copy, A/3 size chart paper (unrolled), artist brush pen set (camel), Little artist brush pen (AddGel), different good quality brushes / 66 Series brush set, 1 Canvas board, File boards for Portfolio of dark Colour, Portfolio with selected 20 Paintings, project report-2. **Practical Paper - I :** Pencil shading-Still life study. Nature study, Foliage study, Object study. **Practical Paper - II :** Colourful composition with human figure, daily life, village life, urban life, drawing room, rainy day, festival, market, city life, games & sports, fantasy & dream, cultural & social events, bird and animal with human figure. **Practical Paper - III :** Portfolio with selected 20 Paintings, 2 Practical Project Reports (Digital copies) and Viva / Oral on Method material, Fundamentals of art, History of Art.

Sub - Fine Art Graphics (Code No. 050)

Months	Theory/ Practical	Topics
March (13 days)	**Theory**	A brief introduction of Indian Miniature Painting and Schools :- **Pal, Jain & Central Indian Paintings**. Development of Indian Art.
	Practical	Introduction of different Graphics medium and Serigraphy / Etching :- History, Method materials quality and safety. Relation between water and oil mediums. How Graphics (Print making) is different from other mediums. Why it is called Industrial Art? How it developed with the Industrial growth? **Subjects of Composition :** Black & White imaginative composition using different textures. Use of different types of textures in composition.
April (21 days)	**Theory**	**The Rajasthani School of Miniature Painting :-** 1) Origin and Development 2) Main features of the Rajasthani School. 3) Sub-Schools- Mewar, Bundi, Jodhpur, Bikaner, Kishangarh and Jaipur. 4) **Study of different Rajasthani Paintings :** a) Maru-Ragini by Sahibdin of Mewar b) Raja Aniruddha Singh Hara by Utkal Ram of Bundi

Months	Theory/ Practical	Topics
		c) Chaugan Players by Dana of Jodhpur d) Krishna on swing by Nuruddin of Bikaner e) Radha (Bani-Thani) by Nihal Chand of Kishangarh f) Bharat Meets Rama at Chitrakut by Guman of Jaipur
	Practical	Object and Human figure Drawings. Creating layouts for Graphics using different lines, dots, circles, geometrical patterns and textures. **Serigraphy:-** The history of stencils and silk screen, Methods and materials. The use and maintenance of the squeeze. Sealing registration for colour work and preparation for printing. Use of water and oil mediums in printing technology. Oils & Solvents for cleaning, use and characteristics of printing inks. Print quality- no spot anywhere even backside of print, never retouch brush in print, print should be neat and clean. Writing Artists' Proof (A/P), medium, subject & name in print. Finishing mounting and the print. **Subjects of composition :-** Affairs of family, friends and daily life; Affairs of family professionals; Flower vase, Decorative design, Pattern Making.

Months	Theory/ Practical	Topics
May/ June (12 +12 days)	**Theory**	**The Pahari School of Miniature Painting:** 1) Origin and Development 2) Main features of the Pahari School 3) Sub-Schools- Basohli, Guler, Kangra, Chamba and Garhwal 4) **Study of different Pahari Paintings** a) Krishna with Gopies by Manaku from Basohli b) Nand Yashoda and Krishna with Kinsmen going to Vrindavana by Nainsukh from Kangra **The Mughal School of Miniature Painting :** 1) Origin and Development 2) Main features of the Mughal School
	Practical	Sketching, Shading, Colouring with oil Pastel and Water colour, Composition, Still life study in pencil shading, Craft making, Presentation of Holiday works. **Subjects of composition** :- Games & Sports Activities; Composition with Nature; Landscape with human figure; Object study.
July (25 days)	**Theory**	3) **Study of different Mughal Paintings** a) Krishna lifting Mount of Goverdhana by Miskin of Akbar period b) Birth of Salim by Ramdas of Akbar Period

Months	Theory/ Practical	Topics
		c) Falcon on a Bird-Rest by Ustad Mansoor of Jahangir period. e) Kabir and Raidas by Ustad Faquirullah Khan of Shahjahan period f) Marriage procession of Dara Shikoh by Haji Madni of Provincial Mughal (Avadh) period. **The Deccan School of Miniature Painting :** 1) Origin and development 2) Main features of the Deccan School
	Practical	Printing using any two medium like- Serigraphy, Linocut, Wood cut, Colography, MDF, Paper-cardboard and Stencil works in monochrome. Pay special attention to print quality and neatness (no extra spot or impression) even boarder side & backside of the print & surrounding areas. All prints should be neat and clean always. **Subjects of composition :** Fantasy; National religions and cultural events and celebrations; Historical and social events and celebrations; Composition with birds and insects; Composition with animals;

Months	Theory/ Practical	Topics
Aug (21 days)	**Theory**	3) **Study of different Deccan Paintings** a) Ragini Pat-hamsika of Ahmadnagar b) Hazrat Nizamuddin Auliya and Amir Khusro of Hyderabad c) Chand Bibi Playing Polo (Chaugan) of Gol Konda **New Era in Indian Art.** Contribution of Indian artists in the struggle for National Freedom Movement. a) Tiller of the Soil by Nandlal Bose **National Flag of India and Symbolic significance of its forms and the colour**
	Practical	Practical Project Report writing, Serigraphy in two Colours using colour mixing system. Make use of line, tone and texture, exploiting the medium fully to realize composition. Size 30x20 cm. **Subjects of composition :-** Historical monuments; Folk and classical dances/theatres; Jharkhand folk art painting (Khobar & Sohrai); Madhubani and other folk arts.
Sept (25 days)	**Theory**	**Introduction to the Bengal School of Painting** 1) Origin and development 2) Main features of the Bengal School **Study of different paintings of the Bengal School :** a)Journey's End by Abanindranath Tagore b)Rasa-Lila by Kshitindranath Majumdar c) Radhika by M.A.R. Chugtai d)Meghdoot by Ram Gopal Vijaivargiya

Months	Theory/ Practical	Topics
	Practical	Serigraphy / Etching printing using multicolour and Black & White. Serigraphy by cool colours using Poster/Fabric colours. **Subjects of Composition :-** Traditional /ancient sculpture and painting; Relevant social issues; Daily life; Village life; Urban life; Copy of any Graphic Artists' work.
Oct (20 days)	**Theory**	The Modern Trends in different Contemporary (Modern) Art development. **Study of different Contemporary (Modern) Indian Paintings :-** a) Rama Vanquishing the pride of the ocean by Raja Ravi Varma b) Mother and child by Jamini Roy c) Haldi Grinders by Amrita Sher-Gil d) Mother Teresa by M.F. Husain e)The Vulture by Kamlesh Dutt Pandey **Study of different Contemporary (Modern) Indian Graphics :-** a) Whirlpool by N. Krishna Reddy b) Children by Somnath Hore c) Devi by Jyoti Bhatt d) Of Walls by Anupam Sud e) Man, Woman and Tree by K. Laxma Goud
	Practical	Serigraphy by warm colours using Poster / Fabric colours. Commercial use of Graphics. Serigraphy / Etching printing on T-Shirts and other products. **Subjects of composition :-** Cartoon characters' Compositions with any two elements. Fantasy; Creative design and pattern making; Portrait.

Months	Theory/ Practical	Topics
Nov (19 days)	**Theory**	**Study of different Contemporary (Modern) Indian Sculptures :-** a) Triumph of Labour by Devi Prasad Roy Chowdhury b) Santhal Family by Ramkinker Baij c) Cries Unheard by Amarnath Sehgal d) Ganesha by P.V. Janakiram e) Chaturmukhi by Aekka Yadagiri Rao
	Practical	Human figure (Colour and Black & White) compositions. Serigraphy using Primary and Secondary colours. Print your composition in one or two colours. Presentation of Graphics (Print Making). Technique of writing Artist's Proof (A/P), no. of prints (1/6), Medium, Subject, Name Class Sec. in prints.
Dec (21 days)	**Theory**	**Revision of Theory and Exams**
	Practical	**Portfolio making** with 10 best selected Graphics work- Finishing, mounting and file preparation, with record of the entire year's performance from sketch to finished Art work. Selected prints (either from Linocuts/ Woodcuts/ Paper-card-board/ MDF/ Colography/ Serigraphy prints) for Portfolio. **Practical Project Report** Preparation on method, material, art works of entire year. (digital two copies).

Months	Theory/ Practical	Topics
Jan/Feb (21 + 22	**Theory**	**Revision work and Theory Exams**
	Practical	Practical Exams, Submission of Portfolio with selected 10 best prints, 2 Practical Project Reports (Digital Copies)
Materials Required for Practical		Silk screens of 12x15 or 15x20 inches (Approx), MDF Board (8x10 inches), Small poster colour set of 6 colours, Few Brushes, Pencil, Small steel bowl-2, Small plastic bottle-2, Cello tape-1 inch, Big Paper knife cutter, Scissor, {Tarpine, Reducer / Nytero-½L (keep at home)}, Waste Cloths, Old News papers, Apron, in a big Carry bag, Chart papers (A/2 size or ½ Chart paper unrolled), File boards for Portfolio of dark Colour etc.
Practical Exam		**Practical Paper - I :** Layout making with black and white poster colour on given subject (original composition). Transforming layout on silk screen. **Practical Paper - II :** Print Making process. Prints should be identical. All prints should be of good quality, neat and clean. In Practical Exam submit two identical prints along with layout on given topic. For extra prints use own papers. **Practical Paper - III :** Portfolio with selected 10 Prints, 2 Practical Project Reports (Digital copies) and Viva / Oral on Method material, Fundamentals of art, History of Art.

Months	No. of Working Days	Name of the Chapter
March	07	**1. Introducing Indian Society (Non evaluative** ● Colonialism ● Nationalism ●Class and Community **2. Demographic Structure and Indian Society** ● Theories and concepts in demography ● Rural - Urban Linkages and divisions
April	21	**3. Social institutions : Continuity and change** ● Family and kinship ● The Caste System ● Tribal Society **4. Market as a Social Institution** ● Sociological perspective on markets and the economy ● Globalisation Interlinking of local, Regional National and International Markets.
May	12	**5. Pattern of Social Inequality and Exclusion** ● Caste, Prejudice, Scheduled castes and other Backward Classes ● Marginalisation of Tribal Communities ● The struggle for women's equality ● The struggle of the Differently Abled **6. Challenges of Cultural Diversity** ● Cultural Communities and the Nation State ● Problems of communalism, Regionalism and casteism

Months	No. of Working Days	Name of the Chapter
		● The Nation State, religion related issues, and identities ● Communalism, Secularism and the Nation State. ● State and Civil Society
June	13	**7. Suggestions for Project Work (Non Evaluative)**
July	25	**Changes and Development in Indian Society** **8. Structural Change** ● Colonialism ● Industrialisation ● Urbanisation **9. Cultural Change** ● Modernisation ● Westernisation ● Sanskritisation ● Secularisation ● Social Reform Movements and Laws
Aug	20	**10. The Story of Democracy** ● The Constitution as an instrument of social change. ● Poltical Parties, Pressure groups and Democratic poltics ● Panchayati Raj and the Challenges of Social Transformations **11. Changes and Development in Rural Indian Society** ● Land Reforms, Green Revolution and Emerging Agrarian Society ● Agrarian Structure : Caste and Class in Rural India

Months	No. of Working Days	Name of the Chapter
		● Land Reforms ● Green Revolution and its social consequences ● Transformation in Rural Society. ● Globalisation, Liberalisation and Rural Society
Sept	**25**	**12. Changes and Development in Industrial Society** ● From planned Industrialisation to Liberalisation. ● Getting a job ● Work Processes
Oct	**18**	**13. Globalisation and Social Change** ● Dimensions of Globalisation **14. Mass Media and Communication** ● Types of Mass Media : Radio, Television and Print Media ● Changing Nature of Mass Media
Nov	**10**	**15. Social Movements** ● Theories and Classification of Social Movements ● Class based movements ; workers and peasants. ● Caste based movements : Dalit movements Backward caste movement ● Castes,Trends in Upper Caste Reformers ● Women's Movement in Independent India ● Tribal Movements ● Environmental Movements
		Revision

Months	No. of Working Days	Unit / Chapter / Topics
April	**21**	**PART - I** **1. The Story of the First Cities : Harappan Archaeology** **Broad overview :** Early Urban Centres **Story of discovery:** Harappan Civilization **Excerpt:** Archaelogical report on a major site **Discussion:** How it has been utilized by archaeologists/historians **2. Political and Economic History : How inscription tell a story** **Broad overview :** Political and economic history from the Mauryan to the Gupta period **Story of discovery:** Inscriptions and the decipherment of the script. Shifts in the understanding of political and economic history **Excerpt:** Asokan inscription and Gupta period land grant. **Discussion:** Interpretation of inscriptions by historians
May	**12**	**3. Social Histories :Using the Mahabharata** **Broad overview :** Issues in Social history, including caste, class, kinship and gender **Story of discovery:** Transmission and publications of the Mahabharata

Months	No. of Working Days	Unit / Chapter / Topics
		Excerpt : From the Mahabharata, Illustrating how it has been used by historians **Discussion:** Other sources for reconstructing social history **4. A history of Buddhism : Sanchi Stupa** (a) A brief review of religious histories of social institutions ● Introduce the ways in which new data can lead to a revision of existing notions of history ● Illustrate steps of making archaeological reports. ● Introduce inscriptional analysis and the ways in which these have shaped the understanding of political and economic processes. ● Familiarize the learner with issues in social history ● Introduce strategies of textual analysis and their use in reconstructing social history. Vedic Religion, Jainism, Vaishnavism, Shaivism (Puranic Hinduism). (b) Focus on Buddhism **Story of discovery :** Sanchi Stupa **Excerpts :** Reproduction of sculptures from Sanchi **Discussion :** Ways in which sculpture has been interpreted by historians, other sources for reconstructing the history of Buddhism.

Months	No. of Working Days	Unit / Chapter / Topics
		PART - II **5. Medieval Society through Traveller's Accounts** **Broad overview :** Outline of social and cultural life as they appear in travellers' accounts. **Story of writings :** A discussion of where they travelled, why they travelled, what they wrote, and for whom they wrote **Excerpts :** From AlBiruni, Ibn Battuta, Francois Bernier. **Discussion :** What these travel accounts can tell us and how they have been interpreted by historians
June	**13**	**6. Religious Histories: The Bhakti-Sufi Tradition** (a) Outline of religious developments during this period. (b) Ideas and practise of the Bhakti-Sufi saints **Story of Transmission :** How Bhakti-Sufi compositions have been preserved **Excerpts :** Extracts from selected Bhakti-sufi works developments in early India. ● Introduce strategies of visual analysis and their use in reconstructing histories of religion

Months	No. of Working Days	Unit / Chapter / Topics
		Discussion : Ways in which these have been interpreted by hisotrians
July	**25**	**7. New Architecture: Hampi** **Broad overview** (a)Outline of new buildings during Vijayanagar period-temples, forts, irrigation facilities (b)Relationship between architecture and the politial system **Story of discovery :** Account of how Hampi was found. **Excerpt :**Visuals of buildings at Hampi **Discussion :** Ways in which historians have analyzed and interpreted these structures **8. Agrarian Relations : the Ain-i-Akbari** **Broad overview :** Structure of agrarian relations in the 16th and 17th Centuries. Patterns of change over the period **Story of discovery :** Account of the compilation and translation of Ain-i-Akbari **Excerpts :** From the Ain-i-Akbari **Discussion :** Ways in which historians have used the text to reconstruct history **9. The Mughal Court : Reconstructing Histories through Chronicies** **Broad overview :**

Months	No. of Working Days	Unit / Chapter / Topics
		(a)Outline of political history 15th - 17th Centuries (b) Discussion of the Mughal Court and Politics **Story of discovery :** Account of the production of court chronicles, and their subsequent translation and transmission. **Discussion :** Ways in which historians have used the texts to reconstruct political histories. **PART - III**
Aug	**20**	**10. Colonialism and Rural Society : Evidence from official Reports** **Broad overview :** (a)Life of zamindars, peasants and artisans in the late 18th Century (b)East India Company, Revenue settlements and surveys (c) Changes over the nineteenth Century **Story of official records :** An account of why official investigations into rural societies were undertaken and the types of records and reports produced. **Excerpts :** From Fifth Report, Accounts of Frances Buchanan-Hamilton and Deccan Riots Report. **Discussion :** What the official records tell and do not tell, and how they have been used by historians.

Months	No. of Working Days	Unit / Chapter / Topics
		11. Representations of 1857 **Broad overview :** (a) The events of 1857-58 (b) Vision of unity (c) How these events were recorded and narrated **Focus :** Lucknow **Excerpts :** Pictures of 1857. Extracts from contempoary accounts **Discussion :** How the pictures of 1857 shaped British opinion of what had happened.
Sept.	**25**	**12. Colonialism and Indian Towns : Town Plans and Municipal Reports** **Broad overview :** History of towns in India, colonization and cities, hill stations, town planning of Madras, Calcutta and Bombay. **Excerpts :** Photographs and paintings. Plans of cities. Extract from town plan reports. Focus on Kolkata town planning. **Discussion :** How the above sources can be used to reconstruct the history of towns. What these sources do not reveal. **13. Mahatma Gandhi through Contemporary Eyes** **Broad overview :**

Months	No. of Working Days	Unit / Chapter / Topics
		(a) The Nationalist Movement 1918-48 (b) The nature of Gandhian politics and leadership **Focus :** Mahatma Gandhi and the three movements and his last days as "finest hours" **Excerpts :** Reports from English and Indian Language newspapers and other contemporary writings. **Discussion :** How newspapers can be a source of history
Oct	**18**	**14. Partition through Oral sources** **Broad overview :** (a) The history of the 1940s (b) Nationalism, Communalism and Partition **Focus :** Punjab and Bengal ● Familiarize the learner with the history of modern urban centres. ● Discuss how urban histories can be written by drawing on different types of sources ● Familiarize the learner with significant elements of the Nationalist Movement and the nature of Gandhian leadership ● Discuss how Gandhi was perceived by different groups. ● Discuss how historians need to read

Months	No. of Working Days	Unit / Chapter / Topics
		and interpret newspapers, diaries and letters as historical source. ● Discuss the last decade of the national movement, the growth of communalism and the story of partition. ● Understand the events through the experience of those who lived through these years of communal violence ● Show the possibilities and limits of **Excerpts :** Oral testimonies of those who experienced partition. **Discussion :** Ways in which these have been analyzed to reconstruct the history of the event. **15. The making of the constitution** **Broad overview :** (a) Independence and the new nation state (b) The making of the Constitution **Focus :** The constitutional Assembly debates **Excerpts :** From the debates **Discussion :** What such debates reveal and how they can be analyzed
Nov	**10**	**List of Maps** **Book 1** **1 Page 2** Mature Harappan sites : ● Harappa, Banawali, Kalibangan, Balakot, Rakhigarhi, Dholavira,

Months	No. of Working Days	Unit / Chapter / Topics
		Nageshwar, Lothal, Mohenjodaro, Chanhudaro, Kotdiji **2 Page 30** Mahajanapada and cities : ● Vajji, Magadha, Kosala, Kuru, Panchala, Gandhara, Avanti, Rajgir, Ujjain, Taxila, Varanasi. **3 Page 33** Distribution of Ashokan inscriptions: ● Kushanas, Shakas, Satavahanas, Vakatakas, Guptas ● Cities / towns : Mathura, Kannauj, Braghukachchha ● Pillar inscriptions - Sanchi, Topra, Meerut Pillar and Kaushambi. ● Kingdom of Cholas, Cheras and Pandyas. **4 Page 43** Important kingdoms and towns: ● Kushanas, Shakas, Satavahanas, Vakatakas, Guptas ● Cities/towns : Mathura, Kanauj, Puhar, Rajgir, Vaishali, Varanasi, Vidisha **5 Page 95** Major Buddhist Sites: Nagarjunakonda, Sanchi, Amaravati, Lumbini, Nasik, Bharhut, BodhGaya, Ajanta. **Book 2** **1 Page 174** Bidar, Golconda, Bijapur, Vijayanagar, Chandragiri, Kanchipuram, Mysore, Thanjavur, Kotar

Months	No. of Working Days	Unit / Chapter / Topics
		2 Page 214 Territories under Babur, Akbar and Aurangzeb. ● Delhi, Agra, Panipat, Amber, Ajmer, Lahore, Goa **Book 3** **1 Page 297** Territories / cities under British Control in 1857 : ● Pujab, Sindh, Bombay, Madras Fort St. David, Masulipatam, Berar, Bengal, Bihar, Orissa, Avadh, Surat, Calcutta, Daccan, Chitagong, Patna, Benaras, Allahabad and Lucknow. **2 Page 305** Main centres of the Revolt of 1857 : ● Delhi, Meerut, Jhansi, Lucknow, Kanpur, Azamgarh, Calcutta, Benaras, Gwalior, Jabalpur, Agra, Avadh. Important centres of the National Movement : ● Champaran, Kheda, Ahmedabad, Benaras, Amritsar, ChauriChaura, Lahore, Bardoli, Dandi, Bombay (Quit India Resolution), Karachi.

Subject - Political Science (028)

A. Theory

Units		Marks
PART - A : Contemporary World Politics		
1	Cold War Era	6
2	The End of Bipolarity	6
3	US Hegemony in World Politics	4
4	Alternative centres of power	4
5	Contemporary South Asia	4
6	International Organisation	4
7	Security in Contemporary World	4
8	Environment and Natural Resource	4
9	Globalisation	4
	Total	**40**
PART - B : Politics in India since Independence		
10	Challenge of Nation Building	6
11	Era of One Party Domination	6
12	Politics of Planned Development	4
13	India's External Relations	4
14	Challenges to Congress System	4
15	Crisis of the Democratic Order	4
16	Rise of Popular Movements	4
17	Regional aspirations	4
18	Recent Developments in Indian Politics	4
	Total	**40**

B. Project Work

Month	Working Days	Topics
Mar / April	5+21	**Cold War Era** Emergence of two power blocs after the second world war. Arenas of the cold war. Challenges to Bipolarity : Non Aligned Movement, quest for new international economic order. India and the cold war. **Challenges of Nation - Building** Nehru's approach to nation-building; Legacy of partition : challenge of 'refugee' resettlement, the Kashmir problem. **Era of One-Party Dominance** First three general elections, nature of Congress dominance at the national level, uneven dominance at the state level, coalitional nature of Congress. Major opposition parties.
May	12+6	**Politics of Planned Development** Five year plans, expansion of state sector and the rise of new economic interests. Famine and suspension of five year plans. Green Revolution and its political fallouts. **The End of Bipolarity** New entities in world politics: Russia, Balkan states and Central Asian states. Introduction of democratic politics and capitalism in post-communist regimes. India's relations with Russia and other post-communist countries.
June	13	**India's External Relations** Nehru's foreign policy. Sino-Indian war of 1962, Indo-Pak war of 1965 and 1971. India's nuclear programs. Shifting alliance in world politics.

Month	Working Days	Topics
		US Hegemony in World Politics Growth of unilateralism : Afghanistan, first Gulf War, response to 9/11 and attack on Iraq. Dominance and challenge to the US in economy and ideology. India's renegotiation of its relationship with USA.
July	25	**Challenges to & Restoration of Congress System** Political succession after Nehru. Non-Congressismand electoral upset of 1967, Congress split and reconstitution, Congress' victory in 1971 elections, politics of 'garibihatao'. **Alternative Centres of Power** Rise of China as an economic power in post-Mao era, creation and expansion of European Union, ASEAN. India's changing relations with China.
Aug	20	**Contemporary South Asia in the Post-Cold War Era** Democratization in Pakistan and Nepal. Ethnicconflict in Sri Lanka, Impact of economic globalization on the region. Conflicts and efforts for peace in South Asia. India's relation with its neighbors. **Crisis of the Democratic Order** Search for 'committed' bureaucracy and judiciary. Navnirman movement in Gujarat and the Bihar movement. Emergency: context, constitutional and extra-constitutional dimensions, resistance to emergency. 1977 elections and the formation of Janata Party. Rise of civil liberties organizations.

Month	Working Days	Topics
Sept	25	**Rise of Popular Movements in India** Farmers' movements, Women's movement, Environment and Development-affected people's movements. Implementation of Mandal Commission report and its aftermath. **International Organizations** Restructuring and the future of the UN. India's position in the restructured UN. Rise of new international actors: new international economic organizations, NGOs. How democratic and accountable are the new institutions of global governance ?
Oct	18	**Security in Contemporary World** Traditional concerns of security and politics of disarmament. Non-traditional or human security: global poverty, health and education. Issues of human rights and migration. **Regional Aspirations** Rise of regional parties. Punjab crisis and the anti-Sikh riots of 1984. The Kashmir situation. Challenges and responses in the North East. **Globalization** Economic, cultural and political manifestations. Debates on the nature of consequences of globalization. Anti-globalization movements. India as an arena of globalization and struggle against it.

Month	Working Days	Topics
Nov	10	**Recent Developments in Indian Politics** Participatory upsurge in 1990s. rise of the JD and the BJP. Increasing role of regional parties and coalition politics. Coalition Governments : NDA (1998-2004) UPA (2004-2014) NDS (2014 onwards) **Environment and Natural Resources** Environment movement and evolution of global environmental norms. Conflicts over traditional and common property resources. Rgiths of indigenous people. India's stand in global environmental debates.
Nov-Dec		**Pre Boards**

2) Project Work : 20 Marks

Sub - Odissi Dance (Code No. 059)

Months	Period	Topics
March (2 Days)	**Practical**	Learning and practice of one Pallavi.
	Theory	Definition of the term Pallavi and Demonstration of the item
April (4 Days)	**Practical**	Learning and practice of one Pallavi. Recitation of the ukutas of the item with hands.
	Theory	Elementary knowledge about the three styles of chhau : Mayurbhanj, Seraikella and Purulla.
May (3Days)	**Practical**	Identification of the Raga, Taal and Choreographer of the Pallavi. Identification of the Hastas and the Bhangis used in the Pallavi.
	Theory	Brief notes on the lives and contribution of the three Gurus : Guru Pankaj Charan Das, Guru Kelucharan Mohapatra and Guru Deba Prasad Das.
June (2 Days)	**Practical**	Ability to show different paad bhedas and bramaris.
	Theory	Elementary introduction to the texts: Natya Shastra, Abhinaya Darpana and Abhinaya Chandrika -a) Identification of the author (approximate date) (b) Basic overview of the broad areas covered in the context of each text. (c) Myths regarding the origin of dance according to each text.
July (4 Days)	**Practical**	Oriya song : (a) Demonstration of the item (b) Name of the poet (c) Naming of the Raga and Taal of the item (d) Meaning of the verses used (e) Identification of the hastas used.

Months	Period	Topics
	Theory	(a) Basic understanding of the term ABHINAYA and definition of its four aspects : Angika, Vachika, Aharya and Sattvik (b) Rasa ; Definition and short explanation of the nine rasas.
Aug (4 Days)	**Practical**	Practice of patak hasta mudra viniyog acc to Abhinaya Darpan.
	Theory	Short notes on : (a) The Aharya of Odissi (b) The music accompaniment of Odissi (c) Past and present exponents of Odissi their short biography and contribution. And brief explanation of the following terms : (a) Nritta, Nritya, and Natya (b) Matra, Laya, Taal, Avartan, Vibhaga (c) Tandav and Lasya (d) Natyadharmi and Lokadharmi.
Sept (2 Days)	**Practical**	Ability to demonstare the following Bhangis : Samabhanga, Abhanga, Tribhaanga, Alasaa, Darpani, Abhimama, Mardala, Parshva Mardala, and Biraja, Akuchana, Kumbhaka, Architkar or Nibedana, Daalmalika.
	Theory	Ability to write the notation of the learnt items of Sthayi and Moksha.
Oct (3 Days)	**Practical**	Revision of the Pallavi.
	Theory	Revision of Patak Hasta Mudra Viniyog
Nov (2 Days)	**Practical**	Revision of Oriya song.
	Theory	Revision of Bhangis.
Dec		Pre - Board

Sub - Hindustani Music Vocal (Code No. 034)

Months	No. of Periods	Practical Topic	Theory Topics
March	2	Raag Bhairav (Dhrut Khyal)	Brief study of the following ● Alankar, Varna, Kan, Meend
April	4	-Taan of Raag Bhairav -Vilambit Khyal in Raag Bhairav	● Brief study of the following Khatka, Murki, Gamak, Sadra, Dadra, Gram ● Recitation of the Thekas of Jhaptala with dugun and Chaugun, Keeping tala with hand beats. ● Tilwada taal with dugun and chaugun.
May	2	-Folk Song - Sargam of Raag Bageshwari	● Simple elaborations of Raag Bageshwari ● Brief study of the following Murchhana, Alap, Tana
June	2	Raag Bageshwari with alap and taan	Life sketch & contribution of ● Abdul Karim Khan ● Faiyaaz Khan
July	4	Raag Malkauns -Vilambit Khyal - Dhrut Khyal with taan	Study of the following ● Sangeet Ratnakar ● Sangeet Parijat Study of Rupak Taal
Aug	4	Raag Malkauns Tarana	Classification of Ragas - ● Ancient ● Medieval ● Modern Time theory of Raags

Months	No. of Periods	Practical Topic	Theory Topics
Sept	2	Raag Suddha Sarang Dhrut Khyal	Simple elaboration of Raag Suddha Sarang Life sketch & contribution ● Krishna Rao Shankar Pandit ● Bade Ghulam Ali
Oct	-	Raag Suddha Sarang Dhrut Khyal with Taan	Study of various parts & tunning of Tanpura Dhamar Taal with Dugun & Chaugun
Nov	-	**Revision**	**Revision**
Dec	-	**Revision**	**Revision**