Revised Syllabus for the session 2020-21
PHYSICS (Theory)
+2 1st Year Science

Unit-I Physical world and Measurement (6 Periods)

SI Units, accuracy and precision of measuring instruments, errors in measurement, absolute, relative error, percentage of error, Combination of errors, significant figures.

Dimensions of Physical quantities. Dimensional analysis and its applications.

Unit – II Kinematics. (18 Periods)

1. Motion in a straight line:

Rest and motion, Frame of reference, motion in a Straight line, position – time graph, speed and velocity, uniform and non-uniform motion, average speed and instantaneous velocity, uniformly accelerated motion, velocity – time and position – time graph, Relation for uniformly accelerated motion (graphical treatment)

2. Motion in a plane:

Scalars and vectors, general vectors and their notations, position and displacement vectors, equality of vectors, unit vectors, multiplication of vectors by a real number, addition and subtraction of vectors, relative velocity, resolution of a vector in a plane, rectangular components, Dot and Cross products of two vectors.

Motion in a plane, cases of uniform velocity and uniform acceleration – projectile motion; uniform circular motion.

Unit-III Laws of Motion (10 Periods)

Concept of force, inertia, momentum, impulse, impulse-momentum theorem, Newton's Laws of motion, Law of Conservation of linear momentum and its application.

Static and Kinetic friction, laws of friction, rolling friction.

Dynamics of uniform circular motion, Centripetal force, motion of a vehicle on a level circular road and vehicle on a banked road.

Unit-IV Work, Energy and Power (10 Periods)

Work done by a Constant force and variable force, kinetic energy, work- energy theorem, power.

Notion of potential energy, conservative and non-conservative forces, conservation of mechanical energy (Kinetic and Potential energies), elastic and in-elastic collisions in one dimension, coefficient of restitution.

Unit-V Motion of System of Particles and Rigid bodies: (12 Periods)
System of Particles and Rotational Motion:
Centre of mass of a two-particle system, momentum conservation and centre of mass motion, centre of mass of rigid bodies, Centre of Mass of a uniform rod.
Moment of a force, torque, angular momentum, conservation of angular momentum with its applications.
Moment of inertia, radius of gyration, moment of inertia of simple geometrical objects (no derivation).

Unit-VI Gravitation (08 Periods)
Newton's law of gravitation, Gravitational field and Potential, gravitational potential energy, acceleration due to gravity and its variation with altitude and depth, Escape velocity, orbital velocity of a satellite.

Unit-VII Properties of Bulk Matter (18 Periods)
1. Mechanical properties of Solids:
Elastic Behaviours, Stress, Strain, Hooke's Law, Stress-Strain diagram, Young's modulus, Bulk modulus, Shear modulus of rigidity, Poisson's ratio, elastic energy.
2. Mechanical properties of fluids:
Surface energy and surface tension, angle of contact, excess pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.
Viscosity, Stoke's law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its application.
3. Thermal properties of matter:
Concepts of heat and temperature, Thermal expansion of solids, liquids and gases, specific heat capacity: Cp, Cv. Calorimetry, change of state, latent heat capacity.
Heat transfer: Conduction, Convection and radiation, thermal conductivity, qualitative ideas of block body radiation, Wien's displacement law, Stefan's law. **Unit-VIII Thermodynamics (10 Periods)**
Thermal equilibrium, definition of temperature (Zeroth law of thermodynamics) heat, work and internal energy. First law of thermodynamics, isothermal and adiabatic processes, second law of thermodynamics, reversible and irreversible processes, Carnot's engine and its efficiency (no derivation).

Unit-IX Kinetic theory of gases: (04 Periods)

Equation of state of a perfect gas, work done in compressing a gas. Pressure exerted by an ideal gas (elementary idea), kinetic interpretation of temperature, mean and RMS speed of gas molecules, degrees of freedom, law of equipartition of energy (statement only) and its applications to specific heat of gases.

Unit-X Oscillation and waves (18 Periods)
1. Periodic motion: Period, Frequency, displacement as a function of time, periodic function. Simple harmonic motion and its equation, phase, oscillation of a spring, Restoring force and force constant, kinetic and potential energy in SHM, simple pendulum, derivation of expression for its time period.
2. Waves:
Wave motion, transverse and longitudinal waves, speed of wave motion, displacement relation for a progressive wave, speed of longitudinal wave in an elastic medium and speed of transverse wave in a stretched string (qualitative idea only), principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes.

*** UNIT WISE MARK DISTRIBUTION (Physics Theory) and QUESTION WISE BREAK UP REMAINS THE SAME AS THEIR IN EARLIER SYLLABUS.*

Therory

(The no on the right is periods required excluding the deleted portion)

I. Diversity in Living World (Periods 10)

a. What is living?, Biodiversity; Need for classification; Three domains of life; Concept of species and taxonomical hierarchy; Binomial nomenclature; (02)

b. Five Kingdom classification; Salient features and classification of Monera, Protista andFungi into major groups; Lichens; Viruses and Viroids.

c. Salient features and classificatin of plants into major groups-Alagae, Bryophytes,Pteridophytes, Gymnosperms (three to five salient and distinguishingfeatures and at least two examples of each category); d. Salient features and classification of animals- non-chordates up to phyla level andchordates up to classes level (three to five salient features and at least two examples). (04)

II. Structural Organization in Animals and Plants (Periods 12)

a. Deleted

III.Cell Structure and Function

a . Cell theory and cell as the basic unit of life; Structure of prokaryotic and eukaryotic cell;Plant cell and animal cell; Cell envelope, cell membrance, cell wall; Cell organellesstructure and function; Endomembrance system- endoplasmic reticulum, Golgi bodies,lysosomes, vacuoles; mitochondria, ribosomes, plastids, microbodies; Cytoskeleton,,cilia, flagella, centrioles (ultra structure and function); necleus' neclearmembrance,chromatin, necleolus.

b. Chemical constituents of living cells: Biomolecules- structure and function of proteins,carbohydrates, lipid, nucleic acids; Enzymes-types, properties, enzyme action.Cell division: Cell cycle, mitosis, meiosis and theirsignificance.

IV. Plant Physiology (Period 16)

a. Deleted

b. Deleted

c. Photosynthesis in Higher Plants (This part is added)

Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; factors affecting photosynthesis.

d: Respiration:Exchange of gases; Cellular respiration- glycolysis,fermentation(anaerobic), TCA cycle and electron transport system (aerobic); Energyrelation - Number of ATP molecules generated; Amphibolic pathways; Respiratory quotient.

e. **Plant growth and Development:** Growth regulators-auxin, gibberellin,cytokinin,ethylene, Abscilic acid (ABA);

V. Human Physiology (Periods 30)

a. Deleted

b. **Breathing and Respiration:** Respiratory organs in animals (tracheal, brancheal,cutaneous, pulmonary); Respiratory system in humans; Mechanism of respiration(breathing) and its regulation in humans- Exchange of gases, transport of gases,Respiratory volumes; Disorders related to respiration- Asthma, Emphysema, Occupationalrespiratory disorders. (04)

c. **Body fluids Circulation:** Compositon of blood, blood groups, coagulation of blood;Composition of lymph and its function; Human circulatory system- Structure and working of human heart, blood vessels; Cardiac cycle, cardiac output, ECG; Double circulation;Regulation of cardiac activity. Disorders of circulatory system- Hypertension, Coronaryarterydiesease, Angina pectoris, Heart failure. (05)

d. **Excretory products and their elimination:** Modes of excretion- Ammonotelism,ureotelism, uriocotelism; Human excretory system-structure and function; Mechanismof Urine formation, Osmoregulation: Regulation of kidney function- Reninangiotensin,Artial Natriuretic Factor, ADH and Diabetes insipidus; Role of other organs in excretion;Disorders- Uraemia, Renal failure, Renal calculi, Nephritis; Dialysis and artificial kidney. (05)

e. **Deleted**

f. **Neural control and Coordination:** Neuron and nerves; Nervous system in humans central nervous system (brain, spinal cord), peripheral nervous system and visceralnervous system; Generation and conduction of nerve impulse; (04)

g. **Chemical coordination and Regulation:** Endocrine glands and hormones; Humanendocrine system- Hypothalamus, Pituitary, Pineal, Thyroid, Parathyroid, Adrenal, Pancreas, Gonads; Mechanism of hormone action (Elementary Idea); Role of hormones as messengers and regulator, Hypo- and hyperactivity and related disorders (Commondisorders e.g. Dwarfism, acromegaly, cretinism, goiter, exopthlmicgoiter, diabetes,Addison's disease). (04)

(NB: Ib, c; IIa; III and IV units are to be taught by Botany Faculty. Ia, d; IIb; V units are to taught by Zoology Faculty.)

Revised Syllabus For The session 2020-21

CHEMISTRY

for 1st year Science

Unit I: Some Basic Concepts of Chemistry

Atomic and molecular masses and equivalent mass of elements, acid, base, and salt,oxidants,reductants, and mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry, expression of concentration of solutions.

Unit II: Structure of Atom

Atomic number, isotopes, isobars, Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals – Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half filled and fully filled orbitals.

Unit III: Classification of Elements and Periodicity in Properties

Modern periodic law and the present form of periodic table, periodic trends in properties of elements - atomic radii ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency and oxidation state. Nomenclature of elements with atomic number greater than 100.

Unit IV : Chemical Bonding and Molecular Structure

Valence electrons, ionic bond, covalent bond; bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some molecules, molecular orbital theory of homonuclear diatomic molecules (qualitative idea only), hydrogen bond.

Unit V : States of Matter : Gases and Liquids

Role of gas laws in elucidating the concept of the molecule, Boyle's law, Charles law, Gay Lussac's law, Avogadro's law, ideal behaviour, empirical derivation of gas equation, Avogadro's number, ideal gas equation. Deviation from ideal behaviour liquefaction of gases, critical temperature, kinetic energy and molecular speeds (elementary idea).

Unit VI : Chemical Thermodynamics

Concepts of System and surroundings and types of system, surroundings, work, heat, energy, extensive and intensive properties, state functions.

First law of thermodynamics - Internal energy and enthalpy. Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, neutralization, atomization, sublimation, phase transition, ionization, solution and dilution, Second law of

Thermodynamics (brief introduction). Introduction of entropy as a state function, Gibb's energy change for spontaneous and non-spontaneous processes, criteria for equilibrium. Third law of thermodynamics (Statement only).

Unit VII : Equilibrium

Equlibrium in physical and chemical processes, dynamic nature of equlibrium, law of mass action, equilibrium constant (K_c, K_p and K_x and their relationship), factors affecting equilibrium, Le- Chatelier's principle, ionic equilibrium, ionization of acids and bases, strong and weak electrolytes, degree of ionization, concept of PH, hydrolysis of salts (elementary idea), buffer solution, Henderson Equation, solubility, product, common ion effect (with illustrative examples) numerical problems.

Unit VIII : Redox Reaction

Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number.

Unit IX : Hydrogen

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

Unit X : s-Block Elements (Alkali and Alkaline Earth Metals)

Group 1 and Group 2 Elements

General introduction, electronic configuration, occurrence, anomalous, properties of the first element of each group, diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in chemical reactivity with oxygen and halogens, uses.

Unit XI : Some p- Block Elements

General Introduction to p- Block Elements

Group 13 Elements : General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous properties of first element of the group, Boron - physical and chemical properties.

Group 14 Elements : General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behaviour of first elements. Carbon-catenation, allotropic forms, physical and chemical properties; uses of some important compounds: oxides. Important compounds of Silicon, Silicones, Zeolites and their uses.

Unit XII : Organic Chemistry - Some Basic Principles and Technique

General introduction, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond, inductive effect, electromeric effect, resonance and hyperconjugation. Homolytic and heterolytic fission of a covalent bond free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.

Unit XIII : Hydrocarbons

Classification of Hydrocarbons

Aliphatic Hydrocarbons :

Alkanes - Nomenclature, isomerism, conformation (ethane only), methods of preparation from unsaturated hydrocarbons, alkyl halides, carboxylic acids (Decarboxylation and Kolbes electrolytic method), physical properties, chemical reactions: including free radical mechanism of halogenation, combustion, controlled oxidation, isomerisation, aromatisation, with steam and pyrolysis.

Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, methods of preparation from alkynes, alkyl halides, vicinal dihalides, alcohols, physical properties, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides, sulphuric acid (Markownikoff's addition and peroxide effect), ozonolysis, oxidation, polymerisation and mechanism of electrophilic addition reaction.

Alkynes - Nomenclature, structure of triple bond (ethyne), methods of preparation, from calcium carbide, vicinal dihalides, physical properties, chemical reactions : acidic character of alkynes, addition of hydrogen, halogens, hydrogen halides, water, and polymerisation.

Aromatic Hydrocarbons : Introduction, IUPAC nomenclature, benzene : resonance, aromaticity, preparation of benzene from acetylene, phenol and aromatic acids, chemical properties: mechanism of electrophilic substitution, nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, addition of hydrogen, addition of chlorine, combustion.

Revised Syllabus for session 2020-21
ENGLISH
(Arts/Science/Commerce Stream)

Yearly Period -70

+2 Ist year (Detailed Syllabus)

UNIT-I : PROSE

i. Standing Up for Yourself	Yevgeny Yevtushenko
ii. The Legend behind a Legend	Hariharan Balakrishnan
iii. In London In Minus Fours	Louis Fischer

UNIT-II : POETRY

i. Stopping by Woods on a Snowy Evening	Robert Frost
ii. Oft. in the Stilly Night	Thomas Moore
iii. The Inchcape Rock	Robert Southey
iv. To My True Friend	Elizabeth Pinard

Unit-III : NON DETAILED STUDY

i. Three Questions	Leo Tolstoy
ii. After Twenty Years	O. Henry
iii. The Open Window	Saki

UNIT-IV : WRITING SKILLS

    i.   Writing a Paragraph
    ii.   Developing Ideas into Paragraphs
    iii.   Writing Personal Letters and Notes
    iv.   Writing Applications, Official Letters and Business letters
    v.   Using Graphics

UNIT-V : GRAMMER

    i.   Modal Verbs
    ii.   Prepositions
    iii.   The Imperatives

Revised Syllabus for session 2020-21
INFORMATION TECHNOLOGY
+2 1ₛₜ Year SC/ARTS/COM

Unit-1

Introduction to computer system

A) Hardware concepts : [10 periods] .... 10 marks

    I) Computer organisation :

CPU, Memory (RAM & ROM & I /O), devices, communication bus, ports (serial parallel)

    II) Input devices :

Keyboard, Mouse,Light pen, touch screen, graphic tablets, joystick, microphone, OCR, OMR, scanner, smart card reader, BCR, MICR, BIOMETRIC sensors, web camera.

    III) Output devices :

Monitor/VDU, LED/LCD screen, television, printers (DMP, deskjet / inkjet/bubble jet printer, laser printer), plotter, speaker.

    IV) Memory unit :

Memory, types of memory, RAM(SDAM, DRAM), ROM(PROM, EPROM, EEPROM),

B) Types of software :

    I) System software : [10 periods] .... 10 marks

Operating systems, need for operating system, major functions of operating system, OS for Main frame, PC/server, mobile services, language processors (assembler, interpreter & compiler)

    II) Utility software :

Compression tools, disk defragmenter, anti virus.

    III) Application software :

General purpose applicaton (word processor, spreadshet packages, presentation software, DBMS, IDE software), specific purpose application software (Inventory Management Software, Human Resource Management System (HRMS), Payroll systems, Financial Management System, Reservation System).

    IV) Open source concepts : [7 periods] .... 05 marks

Unit - 2 :

Introduction to programming : [45 periods] .... 25 marks

    I) Getting started with programming with IDE : [20 periods] ..... 11 marks

Introduction, rapid application development with ide, basic interface components (label, text field, text area, button, checkbox, radio button) devloping general application, getting familiar with java swing user interface components (frame, dialog, option pane, panal, scroll pane, label, text field, password field, text area, button, check box, radio button, combo box, list), basic components handling methods & properties (Set text (), gettext () Is Selected (), Set Selected ())

    II) Programming fundamentals : [15 periods] .... 10 marks

Data types, concept of data types, built in data types (byte, short, int, long, float, double, char, string, boolean), variables, declaring variables, naming a variable, assigning value to variables, integer object method (parse int), double object method (parse double, parse float), control structure, decision structure (if, if.... else, switch), looping structure (while, Do-While, for)

    III)

Unit-3 : Relational database management system : [30 periods] .... 20 marks

      I) DBMS : [10 periods] .... 10 marks

      Introduction to data base concepts, Database, Relational database, Relation/ Table, Attribute/ Field, Tuple/Row, Data types, text (char, varchar), number (decimal, int/integer), date & time. Keys (candidate key, primary key, Alternate key, Foreign key),

      II) Introduction to MYSQL : [13 periods] .... 05 marks

      (ANSI SQL 99 standard commands)

      Classification of SQL commands, DML (Select, Insert, Update, Delete), DDL(Create, Drop, Alter), Creating & using a database (SQL Create command to create a database, Use command to select a database), creating a Table (Create command to create a table, DESC command to display a table structure, Insert command for inserting new rows), displaying table data (select command to select all the columns, selecting specific columns using arithmetic operators, operator precedence),

Unit -4 : IT APPLICATIONS : [7 periods] .... 5 marks

      I) E-GOVERNANCE : [4periods] .... 3 marks

      II) E-learning : [3 periods]................. 2 marks

      Defination, Benefit to students (learners), Benefit to teachers (Training Management), e-Learning websides & its social impact.

PRACTICAL :

      I) Problem solving using Java .... 10 marks

      II) SQL Queries .... 05 marks

      III) Pratical Records .... 10 marks

      [Productivity Tools, Simple problem using Java SQL Queries, IT Application]

      IV) Viva Voce .... 05 marks

Evaluation of practical Examination :

a) Problem / Solving using Java :

Student is required to solve programming problems based or all concept covered in the experiment to maintain a record of these in the practical file.

b) SQL Queries :

Students will be asked to write 5 SQL queries in MY SQL based on one or two table during the final examination.

c) Pratical Record File :

A practical record file should include the following :

i) At least 10 solution of simple problems using IDE based java.

ii) At least 3 IT application .... problem - solving frame work.

iii) At least 15 SQL queries on any database.

d) Viva Voce :

Swing Control Methods & Properties :

Class :	Jbutton
Swing control :	JButton
Methods :	get Text (), set Text ()
Propeties :	Background, Enabled, Font, Foreground, Text, Label
Calss :	Jlabel,jLabal
Swing control :	JLabel

MATHEMATICS
(+2 First Year)

UNIT - I : Sets and Functions

1. Sets

Sets and their representations. Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers especially intervals (with notations), Power set, Universal set, Venn diagrams, Union and Intersection of sets, Difference of sets, complement of a set, Properties of Complement of Sets, Practical Problems based on sets.

2. Relations & Functions

Ordered pairs, Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the sets of real (up to $R \times R$). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special kind of relation from one set to another. Pictorial representation of a function, domain co-domain and range of a function. Real valued functions, domain and range of these functions: Constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer function, with their graphs.

3. Trigonometric Functions

Positive and negative angles. Measuring angles in radians and in degrees and conversion of one into other. Definition of trigonometric functions with the help of unit circle. Truth of $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing $\sin(x \pm y)$ and $\cos(x \pm y)$ in terms of $\sin x$, $\sin y$, $\cos x$ & $\cos y$ and their simple application. Deducing identities like the following :

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

$$\sin x + \sin y = 2 \sin \frac{x+y}{2} \cos \frac{x-y}{2}, \cos x + \cos y = 2 \cos \frac{x+y}{2} \cos \frac{x-y}{2},$$

$$\sin x - \sin y = 2 \cos \frac{x+y}{2} \sin \frac{x-y}{2}, \cos x - \cos y = -2 \sin \frac{x+y}{2} \sin \frac{x-y}{2},$$

Identities related to sin 2x, cos 2x, tan 2x, sin 3x, cos 3x and tan 3x. Trigonometric equations Principal solution.

UNIT-II : Algebra

1. **Principle of Mathematical Induction**

   Process of the proof by induction, motivation the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications.

2. **Complex Numbers and Quadratic Equations**

   Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations; Algebraic properties of complex numbers. Argand plane. Statement of Fundamental Theorem of Algebra, solution of quadratic equations in the complex system. cube roots of unity and its properties.

3. **Linear Inequalities**

   Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Graphical solution of system of linear inequalities in two variables.

4. **Permutations and Combinations**

   Fundamental principle of counting, factorial n. (n!), Permutations and combinations, simple applications.

5. **Binomial Theorem**

   History, statement No problems on Binomial Theorem

6. **Sequence and Series**

   Sequence and Series, Arithmetic Progression (A.P.). Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P, sum of n terms of a G.P., Arithmetic and Geometric series, infinite G.P. and its sum, geometric mean (G.M.), Harmonic (mean) relation between A.M., GM. and H.M.,

UNIT - III : Co-ordinate Geometry

1. **Straight Lines**

   Brief recall of two dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line : parallel to axis, point-slope form, slope-intercept form, two-point form, intercept form and normal form. General equation of a line. Equation of family of lines passing through the point of intersection of two lines. Distance of a point from a line,.

2. **Conic Sections**

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

3. **Introduction to Three-dimensional Geometry**

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

UNIT-IV: Calculus

1. **Limits and Derivatives**

   Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions,

trigonometric, exponential and logarithmic functions. Definition of derivative, relate it to slope of tangent of a curve, derivative of sum, difference, product and quotient of functions. The derivative of polynomial and trigonometric functions.

UNIT-V : Mathematical Reasoning

1. Mathematical Reasoning

Mathematically acceptable statements. Connecting words/phrases-consolidating the understanding of "if and only if (necessary and sufficient) condition," "implies", "and/ or", "implied by", "and", "or", "there exists" and their use through variety of examples related to real life and Mathematics.

UNIT-VI : Statistics and Probability

1. Statistics

Measures of dispersion; Range, mean deviation, variance and standard deviation of ungrouped/ grouped data.

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

Books Recommended:

Bureau's Higher Secondary (+2) Elements of Mathematics, Part-I, Published by Odisha State Bureau of Text Book Preparation and Production, Bhubaneswar.