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ANNEXURE – A.

Syllabus and Selection Procedure for the recruitment of the posts of Lecturer, District Institute of Education and Training (DIET), Tripura.

- Syllabus for different subjects framed.
- The time duration for the examination will be 3 hours.
- Total marks with respect to each subject will be kept 100.
- The following Question pattern and the marks distribution, for each subjects will be followed:

SL. NO	Particulars	Marks Distribution
1.	30(thirty) MCQ from the entire syllabus including general knowledge	01x30=30 marks.
2.	10(ten) Short type questions	05x10=50 marks.
3.	02(two) Essay type question	10x02-20 marks.

- Examination will be conducted as per norms of TPSC.

03/08/23
Under Secretary to the
Government of Tripura
Education Department

SYLLABUS OF HISTORY

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF HISTORY) Marks 80

Unit V

A. India- Unity in Diversity, Ancient Indian civilisation- Harappan Civilisation- Characteristics of Vedic Culture and it's comperativerelation with Harappan Civilisation; Basic principles of Buddhismand Jainism; Socio-economic and cultural scenario of Ancient India.

B. Islam in India- A brief history of Sultanate period; Rise of Mughal Empire; Cultural synthesis of India- Sultanate and Mughal period; Sufi and Bhakti

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movement.

Unit –VI

A) Colonial rule in India and expansion of British Empire indifferent stages of 1765 -1856 A.D.Indian Nationalism and foundation of Indian National Congress in 19th century of European context-British Education Policy, Social reform movement, Swadeshi movement and different trends of Revolutionary Movement.

B) Background of World war 1st and 2nd.

Unit-VII

A) Main stream of National Movement in 1930-1940 A.D.; Congress and Leftist

– Mass Movement and Two Nation Theory.

B) Partition of India; Attainment of Freedom.

Unit-VIII

A) Constitution of Free India- Characteristics of Indian constitution.

B) Institutional Structure of Democratic Republic; Development of parliamentary democracy in Free India.

PART-III(Methodology)

Unit-I

Foundation of Teaching History.

- Significance, Meaning, Nature and Scope of Teaching History.
- Brief Historical background of Teaching History.
- Aims, Objectives and Values of Teaching History.
- Innovation in Teaching History- Indian Historiography.
- Concept and method of Pedagogical Analysis.

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Unit-II

Teaching-Learning Strategy in Teaching History.

- Different methods of Teaching History- Narrative, Experimental and Activity Method. Lecture Method, Interactive Method, Demonstrative Method, Heuristic Method, Project Method, Problem Solving Method,Playway Method, C.A.I-C.A.L.
- Teaching skill,Lesson-Plan;Unit Plan: Time-Line
- Micro-Teaching; Micro Lesson-Plan; Simulated Teaching, Integrated Teaching.
- Constructivist Approaches in Teaching-Learning process.

Unit-III

Learning Resources in Teaching History

- Importance of learning Resources with meaning and Concept. b)Teaching Aids and their uses for Teaching History.
- Different Learning Resources.
- Laboratory.
- Role of History Teacher; Fair and Exhibition.
- Field Trip, Historical Excursion; History Club.

Unit-IV

Assessment and Evaluation in Teaching History.

- Concept of Assessment and Evaluation; Tools and Techniques of Assessment and Evaluation.
- Evaluation-Cognitive,Effective and Psychomotor.
- Continuous and Comprehensive Evaluation in History Teaching.
- Formative and Summative Evaluation; Diagnosis and Remediation in Teaching History.
- Achievement Test Planning; Blue Print for different Test-Item.

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19.07.2022
(Ratna Roy)
chairman

SYLLABUS OF GEOGRAPHY

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
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8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

A. Chanda 20/07/2022

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PART-II (AREAS OF GEOGRAPHY) Marks 80

Unit - III:The Earth and its Landforms **Marks-10**

♣ Origin and evolution of the earth ♣ Interior of the earth Earthquakes and volcanoes: causes, types and effects ♣ Distribution of oceans and continents:♣ Geomorphic processes: weathering; mass wasting; erosion and deposition; soil-formation ♣ Landforms and their evolution- Brief erosional and depositional features.

Unit - IV: - - Climate **Marks-10**

♣ Atmosphere- composition and structure; elements of weather and climate , temperature- factors controlling temperature; distribution of temperature-horizontal and vertical ♣ Atmospheric circulation and weather systems - Pressure-pressure belts; winds-planetary, ♣ Water in the atmosphere-Precipitation evaporation; condensation-rainfall-types .

Unit –V: - Water (Oceans) **Marks-10**

♣ Basics of Oceanography ♣ Oceans - distribution of temperature and salinity ♣ Movements of ocean water-waves, tides and currents; submarine reliefs.

Unit- VI: India: **Marks-10**

Location, space relations, and India's place in the world: Physiography ♣Relief; Physiographic Divisions ♣ Drainage systems: Vegetation and Soil ♣ Weather and climate - spatial and temporal distribution of temperature, ♣ Natural vegetation-forest types and distribution; wild life; conservation.

Unit-VII: - - Tripura: **Marks-10**

Location, space relations, Physiography ♣ Relief; ♣ Drainage systems:, Climate, Vegetation and Soil ♣ Weather and climate - spatial and temporal distribution of temperature ♣ Natural vegetation-forest types and distribution; wild life; conservation.

Unit-VIII: Learning resource in Geography teaching: **Marks-10**

Importance of learning resource • Geography text books • Teaching aids in Geography• GeographyLibrary • GeographyLaboratory • GeographyTeacher and GIS.

Unit-IX: Strategies of geography teaching: **Marks-10**

Different methods of teaching • Lecture method • Interactive method • Demonstration method • Heuristic method • Project method • CAI method and Laboratory method.

Unit-X: - Evaluation in geography teaching: **Marks-10**

Evaluation programme • CCE (Continuous & Comprehensive Evaluation) • Formative and Summative evaluation • Diagnose and remediation • Achievement test- planning (With Blue-print).

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Agenda
20/7/2022

(Ratna Roy)
Chairman

SYLLABUS OF POLITICAL SCIENCE AND CIVICS

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

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PART-II (BASICS OF CIVICS AND POLITICAL SCIENCE) Marks 40

Contents of Teaching Civics/Political Science

Unit-V: (Political Theory & Thought): Meaning of Politics & Political Theory; Different Approaches to the Study of Political Science; Concept of State Sovereignty; Ancient Indian Political Thought: Kautilya, Manu & Shanti Parva; Modern Indian Political Thought: M.K. Gandhi, Ambedkar, Arobindo & Swami Vivekananda. European Political Thought: Plato, Aristotle, Machiavelli and J.S.Mill. Marxian Theory of State; Feminist views of Politics.

Unit-VI: (Indian Government and Politics): Sources and Features of Indian Constitution; Fundamental Rights and duties, Directive Principle of State Policy; Constitutional Amendments and Reviews: Nature of Indian democracy; Union Legislature & Executives; State Legislature & executives, Centre-State Relations; Judiciary; Local Self-Government.

Unit-VII: (Comparative Governments and Politics): Meaning and Nature of Comparative Politics; Study and approaches of Comparative Politics; Political Stability; Political Parties; Political Development; Political Economy; Scope, purpose and methods of comparison; Federalism in the USA and Switzerland; Unitarianism in the UK and PRC; Comparison between rights and duties of the USA, UK and PRC.

Unit-VIII: (International Relations & Politics): Meaning and Nature of International Relations; Foreign Policy: Determinants of Foreign Policy; National Power; National Interest; Cold War; Third World; Non-Alignment Movement; Foreign Policy of India; India's Relation with USA, UK, Russia, PRC and Neighboring Countries; International Organizations- UNO, SAARC.

PART-III (PEDAGOGYS OF CIVICS AND POLITICAL SCIENCE) Marks 40

Unit-IX: (Foundation of Teaching Civics/Political Science): Significance, Meaning, Nature & Scope; Brief Historical Background; Aims and Objectives of Teaching Civics/ Political Science; Innovation in Teaching Civics/ Political Science; Concepts and Methods of Pedagogical Analysis.

Unit-X (Teaching-Learning Strategies in Teaching Civics/Political Science): Different Methods of teaching Civics/Political Science- Lecture Method, Interactive Method, .Demonstration, Heuristic (Discovery Method), Project Method, Problem-Solving Method, CAI/CAL, Play Way Method; Teaching Skills; Lesson Plan; Unit Plan; Micro Teaching & Micro Lesson; Simulated teaching; Integrated Teaching.

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Unit-XII (Learning Resources in Teaching Civics/Political Science: Importance of Learning Resources with Money; Teaching Aids in Teaching Civics/Political Science and their uses; Library Resources; Role of the Teacher as a resources; Fair and Exhibition; Field Trip/ Excursion; Civics Club.

Unit-XIII (Assessment & Evaluation in Teaching Civics/Political Science): Concepts of Assessment and Evaluation and their comparison; Tools and Techniques of Assessment and Evaluation; Evaluation: Cognitive, Effective and Psycho motor domain; Continuous and Comprehensive Evaluation (CCE); Diagnosis and Remediation; Achievements tests planning; Blueprints for different test items.

Prepared by:
Dr. Kishore Roy,
Assistant Professor,
Deptt. of Political Science,

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Roy
chairman

19.07.22

SYLLABUS OF PHYSICS

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

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UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF PHYSICS)

Marks 40

Unit 1 Mechanics and General Properties of Matter , Heat and Thermodynamics

- Frame of reference , motion in a straight line ,uniform and non uniform accelerated motion, motion in a plane projectile motion, uniform and non uniform circular motion,

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19.07.2022

idea of centre of mass and its motion ,dynamics of rotational motion , Central force and Central orbit ,coriolis's force and explanation of some phenomena by it.

- Newton's law of universal gravitation, gravitational attraction of Earth, relation between acceleration due to gravity and gravitational constant, variation of acceleration due to gravity with various parameters ,gravitational potential and intensity for symmetrical bodies
- Gauss's theorem in gravitation, Kepler's laws of planetary motion, escape velocity ,geostationary and polar satellites
- Elastic constants ,elastic modulus and their interrelations ,expression for strain energy ,torsion of a cylindrical wire, bending moment ,bending of uniform beam clamped at one end ,supported at both ends.
- Surface tension and surface energy,molecular theory of surface tension ,explanation of elevation and depression of liquid in a capillary tube, Jurin's law ,shape of liquid drops, excess pressure across a curved film with special cases
- Viscosity, Newton's law of viscosity, critical velocity, Reynolds number, equation for the flow of an incompressible fluid, statement of stoke's law with terminal velocity, Bernoulli's theorem and its application
- Thermal conduction, equation of state of a real gas, critical constants, expression for Boyle's temperature, basic assumptions of kinetic theory of gases ,concept of pressure, Kinetic interpretation of temperature ,RMS speed ,average speed, degrees of freedom and law of equipartition of energy .
- Thermal equilibrium, zeroth law of thermodynamics ,heat, work and internal energy ,first law of thermodynamics, different thermodynamic relation ,indicator diagram, isothermal and adiabatic process, Carnot's engine and its application ,entropy, second law of thermodynamics ,reversible and irreversible process.

Unit 2 Sound and Optics

- Simple harmonic motion(SHM), its differential equation and application ,damped vibration ,forced vibration ,quality factor resonance and sharpness of resonance
- Elastic waves in solids liquids and gases ,phase and group velocity ,differential equation of travelling wave, energy density of a wave, transverse vibration in a string, characteristics of plucked and struck string, decibel and phon, idea of standing waves, interference of waves ,Doppler effect
- Fermat's principle ,reflection and refraction at plane and curved surface, lens maker's formula ,equivalent lens ,chromatic and spherical aberration, angular magnification ,resolving power
- Huygen's principle ,interference of light ,Young's experiment ,interference by division of wavefront and division of amplitude ,
- Diffraction ,single slit and plane transmission grating, Rayleigh criterion of resolution ,expression for resolving power of grating, prism ,telescope and microscope .
- Polarization of light, Brewster law, law of malus ,optical activity

Unit 3 Electrostatics, Current Electricity, Magnetism

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- Electric charge and their conservation ,coulomb's law, superposition principle and continuous charge distribution
- Electric field due to point charge ,electric field lines ,electric dipole ,torque on a dipole in a uniform electric field ,gauss's theorem and its application,
- Electric potential due to point charge, a dipole and system of charges ,equipotential surface, capacitor and capacitance, drift velocity ,ohm's law, combination of cells with different emf ,kirchoff's law and simple application, wheatstone bridge, metre bridge, working principle of potentiometer, thermoelectricity ,different types of galvanometer,
- Biot -savart law, ampere's theorem ,electromagnetic induction, alternating current.

Unit 4 Modern Physics and Electronics

- Bohr's theory of hydrogen spectra, quantum numbers, pauli's exclusion principle ,production of x rays and its properties , Mosley's laws, Bragg's law, Compton's effect ,photoelectric effect ,
- De- Broglie hypothesis, Schrodinger's wave equation, eigenvalue, eigen function ,particle in a box, linear harmonic oscillator ,potential well and barrier problems, atomic spectra, vector atom model , zeeman and stark effect ,molecular spectra , Raman effect, stokes and antistokes lines,
- Nuclear physics ,nuclear charge ,radius, spin , moment, mass defect, nuclear binding energy ,condition for the stability of nucleus, nuclear disintegration, radioactivity, half Life, idea of successive disintegration ,nuclear reaction, Q- value ,Nuclear fission and fusion, cyclotron ,Betatron, LASER
- PN junction diode, Diode as a half ,full and bridge rectifier, zener diode and its application working principle of photodiode, light emitting diode (LED) and solar cell,
- Bipolar junction transistor, its types and operations, CB,CE and CC configuration transistor as an amplifier and switch
- Binary system, Conversion from binary to decimal and vice versa, boolean algebra, logic gate.
- Different types of modulation and demodulation in analogue and digital communication, ionosphere in signal transmission.

PART - C
PEDAGOGY OF PHYSICS

Marks 40

Unit 1 Foundation of the teaching of Physics

- Significance, meaning, nature, and scope
- Brief historical background
- Aims and objectives

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- Innovation in teaching physics
- Concept of pedagogical analysis

Unit 2 Teaching-learning strategies in teaching Physics

- Different methods of teaching physics-- lecture, demonstration, interactive, heuristic(discovery), project method, problem-solving, CAI, laboratory method, Play way method.
- Teaching skills; lesson plan, unit plan
- Microteaching and micro lesson
- Simulated teaching
- Integrated teaching
- The constructivist approach in teaching-learning

Unit 3 Learning resources in teaching Physics

- Meaning and importance of learning resources
- Teaching aids in teaching physics and their uses
- Physics textbook
- Physics Library as resource
- Physics laboratory
- Physics teacher as a resource
- Science fair and exhibition
- Field trip and Science excursion
- Science club/ Physics club

Unit 4 Assessment and evaluation in teaching Physics

- Concept of assessment and evaluation
- Tools and techniques of assessment and evaluation
- Evaluation and educational objectives --- cognitive, affective, and psychomotor domain
- Continuous and comprehensive evaluation (CCE)
- Formative and summative evaluation
- Diagnosis and remediation
- Construction of Achievement test

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Chairman

Sarmistha Banik
19.07.2022

SYLLABUS OF CHEMISTRY

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

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19/7/22
(Dr. Partha Sarathi Ghosh)
A/P in Chemistry

PART - II

CHEMISTRY

Marks 40

UNIT-I : GENERAL AND PHYSICAL CHEMISTRY

1) Some Basic Concepts of Chemistry

- **General Introduction**: Important and scope of chemistry
- Laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules
- Atomic and molecular masses
- Mole concept and molar mass; percentage composition and empirical and molecular formula; chemical reactions, stoichiometry and calculations based on stoichiometry.

2) Structure of Atom

- Atomic number, isotopes and isobars. Concept of shells and subshells, dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbital, quantum numbers, shapes of s,p and d orbitals, rules for filling electrons in orbitals- Aufbau principle, Pauli exclusion principles and Hund's rule, electronic configuration of atoms, stability of half filled and completely filled orbitals.

3) States of Matter: Gases and Liquids

- Three states of matter, inter molecular interactions, types of bonding, melting and boiling points, role of gas laws of elucidating the concept of the molecule, Boyle's law, Charle's law, Gay Lussac's law, Avogadro's law, ideal behavior of gases, empirical derivation of gas equation.
- Avogadro number, ideal gas equation. Kinetic energy and molecular speeds (elementary idea), deviation from ideal behavior, liquefaction of gases, critical temperature. Liquid State- Vapour pressure, viscosity and surface tension (qualitative idea only, no mathematical derivations).

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4) Thermodynamics

- **First law of thermodynamics-**internal energy and enthalpy, heat capacity and specific heat, measurement of U and H, Hess's law of constant heat summation, enthalpy of: bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution.
- Introduction of **entropy** as state function, Second law of thermodynamics, Gibbs energy change for spontaneous and non-spontaneous process, criteria for equilibrium and spontaneity
- **Third law of thermodynamics-** Brief introduction

5) Equilibrium

- Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of chemical equilibrium, equilibrium constant, factors affecting equilibrium-Le Chatelier's principle; ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of polybasic acids, acid strength, concept of PH., Hydrolysis of salts (elementary idea), buffer solutions, Henderson equation, solubility product, common ion effect (with illustrative examples)

6) Redox Reactions

- Concept of **oxidation** and oxidation and **reduction**, redox reactions oxidation number, balancing redox reactions in terms of loss and gain of electron and change in oxidation numbers

7) Solid State

Classification of **solids** based on different binding forces; molecular, ionic covalent and metallic solids, amorphous and crystalline solids (elementary idea), Laws of Crystallography. Unit cell in two dimensional and three dimensional Lattices, Different crystal system, Braggs equation, unit cell in two dimensional and three-dimensional lattices, calculation of density of unit cell, packing in solids, packing efficiency, voids, number of atoms per unit cell in a cubic unit cell, point defects, electrical and magnetic properties, Band theory of metals, conductors, semiconductors and insulators.

8) Solutions

- Types of solutions, expression of concentration of solutions of solids in liquids, solubility of gases in liquids, solid solutions, colligative properties- relative

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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.

9) Electrochemistry

- Redox reactions, conductance in electrolytic solutions, specific and molar conductivity variation of conductivity with concentration, kohlrausch's Law, electrolysis and Laws of electrolysis (elementary idea), dry cell- electrolytic cells and Galvanic cells; lead accumulator, EMF of a cell, standard electrode potential, Relation between Gibbs energy change and EMF of a cell, fuel cells; corrosion.

10) Chemical Kinetics

- Rate of a reaction (average and instantaneous), factors affecting rates 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, Arrhenious equation.

11) Surface chemistry

- **Adsorption**– Physisorption and chemisorption; factors affecting adsorption of gases on solids, catalysis homogeneous and heterogeneous, activity and selectivity: enzyme catalysis; colloidal state: distinction between true solutions, colloids and suspensions; lyophilic, lyophobic multimolecular and macromolecular colloids; properties of colloids; Tyndall effect, Brownian movement, electrophoresis, coagulation; emulsions- types of emulsions.

UNIT – II : InOrganic Chemistry

1) Classification of Elements and Periodicity in Properties

- Modern periodic law and long form of periodic table, periodic trends in properties of elements- atomic radii, ionic radii, ionization enthalpy, electron gain enthalpy, electronegativity, valence.

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2) Chemical Bonding and Molecular Structure

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

3) Hydrogen

- Occurrence, isotopes, preparation, properties and uses of hydrogen; hydrides-ionic, covalent and interstitial; physical and chemical properties of water, heavy water; hydrogen peroxide-preparation, reactions, uses and structure

4) s-Block Elements (Alkali and Alkaline earth metals)

- General introduction, electronic configuration, occurrence, anomalous properties of the first element of each group
- **Group I and group 2 elements**: diagonal relationship, trends in the variation of properties (such as ionization enthalpy, atomic and ionic radii), trends in Sodium carbonate, sodium chloride, sodium hydroxide and sodium hydrogen carbonate, biological importance of sodium
- Preparation and Properties of Some important **Compounds**: chemical reactivity with oxygen, water, hydrogen and halogens; uses. Industrial use of lime and limestone, biological importance of Mg and Ca and potassium

5) 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 the first element of the group; Boron, some important compounds: borax, boric acids, boron hydrides. Aluminium: uses, reactions with acids and alkalis
- **General 14 elements:** General introduction, electronic configuration, occurrence, variation of properties, oxidation states, trends in chemical reactivity, anomalous behavior of the first element. Carbon, allotropic forms, physical and chemical properties: uses of some important compounds: oxidesImportant compounds of silicon and a few uses: silicon tetrachloride, silicones, silicates and zeolites, their uses.

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- **Group 15 elements:** General introduction, electronic configuration, occurrence, oxidation states, trends in physical and chemical properties; preparation and properties of ammonia and nitric acid, oxides of nitrogen (structure only); Phosphorus- allotropic forms; compounds of phosphorus: preparation and properties of phosphine, halides (PCI3 , PCI5) and oxoacids (elementary idea only).
- **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, 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 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.

6) d and f Block Elements

- General introduction, electronic configuration, characteristics of transition metals, general trends in properties of the first row transition metals- metallic character, ionization enthalpy, oxidation states, ionic radii, colour, catalytic property, magnetic properties, interstitial compounds, alloy formation. Preparation and properties of K2Cr2O7 and KMnO4.
- Lanthanoids- electronic configuration, oxidation states, chemical reactivity, and lanthanoid contraction and its consequences.
- Actinoids: Electronic configuration, oxidation states and comparison with lanthanide.

7) Coordination Compounds

- Coordination compounds: Introduction, ligands, coordination number, colour, magnetic properties and shapes, IUPAC nomenclature of mononuclear coordination compounds, isomerism (structural and stereo) bonding, Werner's theory VBT,CFT; importance of coordination compounds (in qualitative analysis, biological systems)

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8) General Principles and Processes of 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.

UNIT III: Organic Chemistry

1) Organic Chemistry- Some Basic Principles and Techniques

- General introduction, methods of purification, qualitative and quantitative analysis, 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.
- Elementary idea of the applications of UV, IR and H-NMR spectroscopy for simple Organic molecules.
- Important Reagents: General methods of Preparation, Properties, Reactions, Structure and Synthetic used of Grignard reagents; preparation of uses of Li and Zn alkyls. Uses of Lindlars catalyst,NBS, OsO4, SeO2, H5IO6, LiAlH4. NaBH4, (CH3COO)4Pb, C6H5COOOH, Fenton`s Reagent,and Raney Nickel.
- Stereochemistry: Types of Stereoisomers - Configurational and Conformational isomerism, Enantiomers and Diastereomers, Geometrical and Pi-diastereomers and their Nomenclatures, difference in chemical and physical properties of pi-diastereomers,elements of symmetry, Optical isomers, chirality, asymmetry, dissymmetry, R/S and D/L notations of Optical isomers, Raceimic mixture and Resolution of Racemic modifications. Substituted allens. Walden inversion, Mutarotation, Asymmetric synthesis, Epimerisation; Elementary idea of sterospecific and stereosclective reactions. Conformation, Conformational nomenclature ; eclipsed , staggered , gauche and anti ; dihedral angle, energy barrier of rotation , relative stability of conformers on the basis of steric effects,

  Conformational analysis of ethane, n-butane, cyclohexane andmonosubstituted cyclohexanes; chair and boat forms of cyclohexane, stability of cycloalkanes-strains in rings, angle strain and torsional strain , Baeyer strain theory and its limitations.

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2) Hydrocarbons

- **Alkanes**: Nomenclature, isomerism, conformations (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis.
- **Alkanes**: Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation: chemical reactions: addition of hydrogen, halogen, water, hydrogen halides (Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition.
- **Alkynes**: Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of- hydrogen, halogens, hydrogen halides and water.
- **Aromatic hydrocarbons**: Introduction, IUPAC nomenclature; Benzene; resonance, aromaticity; chemical properties: mechanism of electrophilic substitution- Nitration sulphonation, halogenation, Friedel Crafts alkylation and acylation; directive influence of functional group in mono-substituted benzene; carcinogenicity and toxicity.

3) Haloalkanes 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 for monosubstituted compounds Uses and environment effects of – dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT only).

4) Alcohols, Phenols and Ethers

- **Alcohols**: Nomenclature, methods of 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, electrophilic substitution reactions, uses of phenols.
- **Ethers**: Nomenclature, methods of preparation, physical and chemical properties uses.

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5) Aldehydes, Ketones and Carboxylic Acids

- **Aldehydes and Ketones:** Nomenclature, nature of carbonyl group, methods of preparation, physical and chemical properties; and mechanism of nucleophilic addition, reactivity of alpha hydrogen in aldehydes; uses.
- **Carboxylic Acids:** Nomenclature, acidic nature, methods of preparation, physical and chemical properties; uses.

6) Organic Compounds Containing Nitrogen

- **Amines**: Nomenclature, classification, structure, methods of preparation, physical and chemical properties, uses,identification of primary secondary and tertiary amine
- **Cyanides and Isocyanides:** will be mentioned at relevant places.
- **Diazonium salts**: Preparation, chemical reactions and importance in synthetic organic chemistry.

UNIT – IV

1) Biomolecules

- **Carbohydrates:** Classification (aldoses and ketoses), monosaccharide (glucose and fructose), D.L. configuration, oligosaccharides (sucrose, lactose, maltose), polysaccharides (starch, cellulose, glycogen): importance.
- **Proteins:** Elementary idea of – amino acids, peptide bond, polypeptides, proteins, primary structure, secondary structure, tertiary structure and quaternary structure (qualitative idea only), denaturation of proteins; enzymes.
- **Hormones:** Elementary idea (excluding structure).
- **Vitamins:** Classification and function.
- **Nucleic Acids:** DNA and RNA

2) Polymers

- **Classification:** Natural and synthetic, methods of polymerization (addition and condensation), copolymerization. **Some important polymers:** natural and synthetic like polyesters, bakelite; rubber, Biodegradable and non-biodegradable polymers.

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3) Chemistry in Everyday Life

- **Chemicals in medicines:** analgesics, tranquilizers, antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines.
- **Chemicals in food:** preservatives, artificial sweetening agents, elementary idea of antioxidants.
- **Cleansing agents:** soaps and detergents, cleansing action.

4) Environmental Chemistry

Environmental pollution: Air, water and soil pollution, chemical reactions in atmosphere, smogs, major atmospheric pollutants; acid rain ozone and its reactions, effects of depletion of ozone layer, greenhouse effect and global warming- pollution due to industrial wastes; green chemistry as an alternative tool for reducing pollution, strategy for control of environmental pollution.

5) PRINCIPLES OF QUALITATIVE ANALYSIS :

Detection of water solution non-interfering acids and basic radicals (common) by dry and wet tests. Identification of functional groups by chemical tests in phenols,aromatic amines, aldehydes, ketones and carboxylic acids.

PART – III

PEDAGOGY OF CHEMISTRY

TOTAL = 40 MARKS

Unit- 1: Foundation of the teaching of Chemistry MARKS -10

- Significance, meaning, nature, and scope
- Brief historical background
- Aims and objectives
- Innovation in teaching physics
- Concept of pedagogical analysis

Unit -2: Teaching-learning strategies in teaching Chemistry MARKS -10

- Different methods of teaching Chemistry-- lecture, demonstration, interactive, heuristic(discovery), project method, problem-solving, CAI, laboratory method, Play way method.
- Teaching skills; lesson plan, unit plan

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- Microteaching and micro lesson
- Simulated teaching
- Integrated teaching
- The constructivist approach in teaching-learning

Unit-3: Learning resources in teaching Chemistry MARKS -10

- Meaning and importance of learning resources
- Teaching aids in teaching physics and their uses
- Chemistry textbook
- Chemistry Library as resource
  Cheistry laboratory
- Chemistry teacher as a resource
- Science fair and exhibition
- Field trip and Science excursion
- Science club/ Physics club

Unit- 4: Assessment and evaluation in teaching Chemistry MARKS - 10

- Concept of assessment and evaluation
- Tools and techniques of assessment and evaluation
- Evaluation and educational objectives --- cognitive, affective, and psychomotor domain
- Continuous and comprehensive evaluation (CCE)
- Formative and summative evaluation
- Diagnosis and remediation
- Construction of Achievement test

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SYLLABUS OF BIOLOGY

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF LIFE SCIENCE) Marks 40

UNIT – 1: STRUCTURAL ORGANIAZTION IN PLANTS AND ANIMALS

1.1 Biological classification – Plant kingdom and animal kingdom; Binomial nomenclature; species concept; Taxonomic key.
1.2 Cell – the unit of life; structure of Prokaryotic cells and Eukaryotic cells .
1.3 Cell cycle and cell division; significance of mitosis and meiosis.

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1.4 Plant tissues – Structure, location and functions of Meristematic and Permanent tissues.

1.5 Animal tissues – Structure, location and functions of Epithelial, Connective, Muscular and Neural tissues.

1.6 Organ and organ system of Earthworm, Cockroach and Frog.

UNIT – 2: PLANT PHYSIOLOGY

2.1 Morphology of flowering plants – modification of root, stem and leaf; parts of flower, the fruit, structure of monocotyledonous and dicotyledonous seeds; Dormancy and seed germination.

2.2 Anatomy of flowering plants – The tissue system – Epidermal, Ground and Vascular tissue system; Anatomy of monocotyledonous and dicotyledonous plants; Secondary growth – Vascular Cambium and Cork Cambium.

2.3 Transport and Mineral nutrition in plants – diffusion, active transport, osmosis, plasmolysis, imbibitions, transpiration, uptake and transport of mineral nutrients.

2.4 Mineral nutrition – role of micro and macro nutrients, nitrogen metabolism.

2.5 Photosynthesis in higher plants; Light and Dark reaction; C3 and C4 pathway ; photorespiration.

UNIT – 3 : HUMAN PHYSIOLOGY

3.1 Digestion and absorption – Human digestive system; digestive glands; absorption of digested food.

3.2. Breathing and exchange of gases – human respiratory system; Mechanism of breathing; respiratory volumes and capacities.

3.3. Excretion of water, salt and metabolites – role of Liver, Lungs and Skin; Human excretory system.

3.4 Musculo-Skeletal system – Locomotion, Bones, Appendicular skeleton; skeletal muscles; Tendons, Joints and movement of the joints.

3.5. Neural control and co-ordination – Neurone as structural and functional unit of neural system.

3.6. Endocrine glands and their functions.

3.7. Male and female reproductive system, spermatogenesis and oogenesis.

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UNIT – 4 : GENETICS, EVOLUTION AND ECOLOGY.

4.1. Principles of inheritance and variation, Monohybrid and Dihybrid cross; Mendel's laws of inheritance, sex determination; genetic disorders, chromosomal disorders.

4.2: Molecular basis of inheritance – structure, properties and function of genetic material (DNA); DNA versus RNA; transcription.

4.3. Evidences of evolution ; Theories of evolution – Lamarck's theory and Darwin's theory , Neo-Darwinism, vestigial organs, connecting links.

4.4. Ecosystem – structure and function, components of ecosystem – Biotic and Abiotic, Energy flow; nutrient cycling – Carbon, Nitrogen and Phosphorous cycle.

4.5. Biodiversity and Conservation – conservation of soil, forest and wildlife ; Tiger project, Rhinoceros project.

PART-III (METHODOLOGY OF LIFE SCIENCE) Marks 40

UNIT – 1: FOUNDATION OF TEACHING BIOLOGY

1.1 Significance, Meaning, Nature and Scope of teaching Biology.
1.2 Brief historical background of Biology teaching.
1.3 Aims and objectives of teaching Biology.
1.4 Innovation in Biology teaching.
1.5 Concepts and methods of Pedagogical Analysis.

UNIT - 2: STRATEGIES OF BIOLOGY TEACHING LEARING

2.1. Different methods of teaching Biology – Lecture method, Interactive method, Demonstration method, Heuristic (Discovery) method, Project method, Problem solving method, CAI/CAL method, Laboratory method.
2.2 Teaching skills, Lesson Plan, Unit Plan.
2.3 Microteaching and Micro lesson, Simulated teaching, Integrated teaching.
2.4. Constructivist approach in teaching learning process.

UNIT – 3 : LEARNING RESOURCES AND ACTIVITIES IN TEACHING BIOLOGY

3.1 Meaning and Importance of learning resource.
3.2 Teaching aids in Biology and their uses.
3.3. Library resource in Biology teaching learning

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3.4 Biology Laboratory.
3.5 Biology teacher.
3.6 Science Fair and Exhibition.
3.7 Field Trip / Excursion.
3.8 Science Club.

UNIT – 4 : ASSESSMENT AND EVALUATION IN TEACHING BIOLOGY

4.1. Concept of Assessment and Evaluation and their Comparison.
4.2 Tools and techniques of assessment.
4.3 Evaluation – Cognitive, Affective and Psychomotor domains.
4.4 CCE (Continuous and comprehensive Evaluation).
4.5 Formative and Summative evaluation.
4.6. Diagnose and Remediation.
4.7. Blue print for criterion referenced test items.
4.8 Achievement Test Planning.

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SYLLABUS OF ENGLISH

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

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PART-II (AREAS OF LANGUAGE ENGLISH) Marks 40

UNIT 1 : History Of English Literature (Old English Period to Postmodern Period)

UNIT 2 : History Of English Language (Influences of the various foreign languages on English language)

UNIT 3 : PHONETICS AND GRAMMAR

PHONETICS :

- Consonant sounds
- Vowel sounds
- Accent, Stress, Rhythm
- Speech organs and their functions

GRAMMAR :

- Sentences
- Parts of Speech
- Tenses
- Determiners
- Gerunds and Participles
- Modals
- Question Tags
- Transformation of sentences
- Subject – verb agreement

UNIT 4 : LSRW : Concept, Skills, Types, Strategies, Techniques of Listening, Speaking, Reading, Writing

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PART-II (AREAS OF LANGUAGE METHODOLOGY) Marks 40

UNIT 1 : FOUNDATION OF TEACHING ENGLISH

- Significance, meaning, nature and scope of teaching and learning English language and literature
- Brief historical background of teaching – learning of English in India
- Aims and objectives of teaching and learning of English language and literature
- Innovations in teaching English literature and language
- Concepts and methods of pedagogical analysis

UNIT 2 : TEACHING LEARNING STRATEGIES OF ENGLISH

- Different methods of teaching English (Lecture, Demonstration, Interaction, discussion, Heuristic, Project, Problem solving, CAI)
- Teaching skills, lesson plans, unit plans
- Microteaching and Microlesson, simulated teaching, integrated teaching
- Constructivist approach in teaching English

UNIT 3 : LEARNING RESOURCES IN TEACHING ENGLISH

- Importance of learning resource with meaning
- Teaching aids in English language and literature and their uses
- Library resources
- Laboratory
- Teacher
- Fair and exhibitions, Field trips/ excursions
- Debates, speech
- Subject club

UNIT 4 : ASSESSMENT AND EVALUATION IN TEACHING ENGLISH

- Concept of assessment and evaluation

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- Tools and techniques of assessment and evaluation
- Evaluation : Cognitive, Affective and psychomotor domain
- CCE
- Formative and summative evaluation
- Diagnosis and Remedy
- Achievement test planning
- Blue print for different test items

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SYLLABUS OF MATHEMATICS

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
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8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF MATHEMATICS) Marks 40

UNIT V:

ALGEBRA

- Sets: Basic concepts of sets, empty set, finite & infinite sets, equal sets, subsets, power set and universal set, Venn diagrams, operation on set, union and intersection, difference of sets, complement of a set, properties of complement sets,

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problems on union and intersection, some elementary properties of sets including Demorgan's Law.

- Relations & Functions: Ordered pairs, Cartesian product of sets, number of elements in the Cartesian product of sets, definition of relation, types of relation, domain, co-domain and range of a relation, number of onto and into relations, equivalence relation, function as a special kind of relation from one set to another, pictorial representation of a function, domain, co-domain & range of a function, real valued function of the real variable, constant, identity, polynomial, rational, modulus, monotone, bounded, signum and greatest integer functions with their graphs, inverse function, composite function, sum, difference, product and quotients of functions, definition of mapping, different types of mappings with examples, composition of mappings and their properties.
- Complex Number and Theory of Equation: Need for complex numbers, brief description of algebratic properties of complex numbers, argand plane and polar representation of complex numbers, modulus and amplitude of complex numbers, geometrical representation of complex numbers and their consequences, square-root of a complex number, cube roots of unity and their properties, de-moivre's theorem and its application including the solution of higher degree equation, exponential, sine, cosine and logarithm of complex numbers, definition of a^z ($a \neq 0$), statement of fundamental theorem of algebra, solution of quadratic equations in the complex number system, Descartes rule of sign and its application, relation between roots and coefficients, transformation of equations.
- Permutations & Combinations: Fundamental principle of counting, factorial n (n!), permutations and combinations, derivation of formulae and their connections, applications, cyclic permutation.
- Binomial Theorem: statement of the binomial theorem, general term, middle term, greatest term and greatest coefficient in binomial expansion, applications of binomial theorem including the relation among the binomial coefficients.
- Sequence and Series: Sequence and series, arithmetic progression (a,p,), arithmetic mean (a,m), geometric progression (g,p), geometric mean (g,m), harmonic progression (h,p), harmonic mean (h,m), general term of a,p, and g,p,, sum of *n* terms of a,p and g,p,, relation between a,m, and g,m, arithmetic, geometric and arithmetricogeometric series, infinite g,p, and its sum, sum to *n*

  terms of the special series $\sum n$, $\sum n^2$ and $\sum n^3$, concept of convergence and divergence of infinite series, test of convergence of infinite series of non-negative terms using comparison test, root test, ratio test and Rabes test.
- Matrices and Determinants: Concept, notation, order, equality, types of matrices, column matrix, row matrix, square matrix, diagonal matrix, scalar matrix, identity matrix, zero matrix, transpose of a matrix, orthogonal matrix, symmetric and skew symmetric matrices, addition, multiplication and scalar multiplication of matrices, 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, concept of elementary row and column operations, invertible of real matrices, determinant of a square matrix, properties of determinants, minors, cofactors and application of determinants in finding the area of

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a triangle, symmetric and skew symmetric determinants and their properties, adjoin and inverse of a square matrix, rank of a matrix, consistency and inconsistency of system of linear equations, solution of system of linear equations using matrix method and Cramer's rule, characteristic equation, Eigen value and Eigen vector, Caley Hamilton's theorem and its application.

UNIT VI:

TRIGONOMETRY

- Positive and negative angles, measuring angles in radians and in degrees and conversion from one measure to another, definition of trigonometric functions with the help of unit circle, signsof trigonometriciate functions and sketch of their graphs.
- Associate angle, compound angle, transformations of sums into products and products into sums.
- Multiple angle and sub multiple angle.
- General solution of trigonometric equations.
- Inverse Trigonometric Functions: Definition, range, domain, principal value, graphs of inverse trigonometric functions, elementary properties of inverse trigonometric functions.
- Application of sine and cosine formulae.

LINEAR PROGRAMMING

- Introduction of linear programming problems, definition of related terminology such as constraints, objective function, optimization, different types of linear programming (l, p :) problems, mathematical formulation of l, p, problems, (diet problem, manufacturing problem, transportation problem, investment problem etc).
- Graphical method of solution for problems in two variables, feasible and infeasible regions,feasible and infeasible solutions, optimal feasible solutions.
- Concepts of convex set, convex combination, extreme point, interior point, boundary point andrelated problems, theorems related to convex set and their applications.

STATISTICS

- Measures of central tendency, mean, median and mode, their properties and applications.
- Measure of dispersion, mean deviation, variance and standard deviation of ungrouped/groupeddata. Analysis of frequency distributions with equal means but different variances.
- Introduction of correlation and regression and their applications.

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UNIT VII:

COORDINATEGEOMETRY: TWO DIMENSIONS

- Basic concepts of two dimensional geometry, distance formula, section formula, area of triangle.
- Straight Lines: Shifting of origin, slope of a line and angle between two lines, condition of parallelity and perpendicularity of two lines, various forms of equations of a line, parallel to axes, point-slope form, slope-intercept form, two-point form, intercept form and normal form, general equation of a line, concurrence of three straight lines, equation of family of lines passing through the point of intersection of two lines, distance of a point from a line.
- Transformation of Rectangular Axes: Translation, rotation and their combinations, theory of invariants.
- General equation of second degree in two variables, reduction to canonical form.
- Pair of Straight Lines: Condition that the general equation of second degree in two variables may represent two straight lines, point of intersection of intersecting straight lines, angle between two straight lines represented by the equation $ax^2+2hxy+by^2=0$, angle of bisectors oftwo straight lines represented by the equation $ax^2+2hxy+by^2=0$.
- Circle, parabola, ellipse and hyperbola: their standard equations and properties.

COORDINATE GEOMETRY: THREE DIMENSIONS

- Introduction to three-dimensional geometry, coordinate axes and coordinate planes in three dimensions, coordinates of a point, distance between two points and section formula.
- Direction cosines/ratios of a line joining two points, orthogonal projection of a line segment on a straight line, Cartesian equation of a line, coplanar and skew lines, shortest distance between two lines, equation of line of shortest distance, Cartesian equation of a plane, angle between (i) two lines, (ii) two planes, (iii) a line and a plane, distance of a line and plane from a point, condition of co planarity of two straight lines, condition for a straight line to lie on a plane and simple applications.
- Sphere, general equation, circle, sphere through the intersection of two spheres, properties of sphere.

VECTOR ALGEBRA AND ANALYSIS

- Vectors and scalars, magnitude and direction of a vector, direction cosines/ratios of vectors, type of vectors (equal, unit, zero, parallel and collinear, co planner, dependent and independent vectors), conditions of co linearity of three points and co planarity of four points, position - vectors 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 agiven ratio, triangle and parallelogram law of vectors and their applications.

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- Scalar (dot) product of vectors, projection of a vector on a line, vector (cross) product of vectors, scalar triple product, geometrical representation of product of vectors, product of four vectors, applications of dot, cross and scalar triplet product including direct applications of vector algebra in (i) geometrical, trigonometrical problems, (ii) work done by coplanar forces, moment of a force about a point.
- Vectorial equations of straight lines and planes, volume of tetrahedron.
- Vector differentiation with reference to a sector variable, vector functions of one scalar variable, derivative of a vector, second derivative of a vector, derivatives of sums and products, velocity and acceleration as derivative, curl, divergence and gradient of vector.

UNIT VIII: DIFFERENTIAL CALCULUS

- Limits and Derivatives: Intuitive idea of limit, algebra of limits, some standard limit, hospital's rule and its application, derivative introduce as rate of change both as that of distance function and geometrically, definition of derivative, derivative of different kind of functions, geometrical significance of derivative, derivative of different kind of composite functions,second order derivative of different kind of functions.
- Continuity and Differentiability: Continuity of a function at a point and on an interval, continuity of composite functions, piecewise continuous functions, uniform continuity, discontinuities of different kinds, properties of continuous functions on a closed interval, concept of differentiability and differential, chain rule, sign of derivatives, successive derivative, leibnitz theorem and its applications.
- Rolle's Theorem and Lagrange's mean value theorems, their geometric interpretation and applications,
- Applications of Derivatives : Rate of change, increasing/decreasing functions, tangents and normals, approximation, maxima and minima, points of local extremum of a function in an interval, sufficient condition for the existence of a local maximum/minimum of a function at a point, applications in geometrical and physical problems.

INTEGRAL CALCULUS

- Integration as inverse process of differentiation.
- Integration of different kind of functions by substitution, by partial fractions and by parts.
- Definite integrals as a limit of a sum.
- Fundamental theorem of integral calculus.
- Basic properties of definite integrals and evaluation of definite integrals.
- Application of the integrals, applications in finding the area bounded under simple curves, especially lines, areas of circles/ parabolas/ellipses, area under the curve y = sin x, y = cos x, area between the two above said curves.
- Ideas of improper integrals, concept of beta & gamma functions and their properties.

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DIFFERENTIAL EQUATIONS

- Significance of ordinary differential equations, definitions, order and degree, general and particular solutions of a differential equation, formation of different equation whose general solution is given, meaning of the solution of ordinary differential equation, concepts of linear and non-linear differential equations.
- Equations of first order and first degree, separable, homogeneous and exact differential equations, condition of exactness, integrating factor.
- Solutions of linear differential equations.
- Equation of first order but not of first degree, Clairaut's equation, singular solution.
- Higher order linear equations with constant coefficients: complementary function, particular integrals.

PART – III MARKS 40
PEDAGOGY OF MATHEMATICS

TOTAL = 40 MARKS

Unit- 1: Foundation of the teaching of Mathematics MARKS -10

- Significance, meaning, nature, and scope
- Brief historical background
- Aims and objectives
- Innovation in teaching ~~physics~~ Mathematics
- Concept of pedagogical analysis

Unit -2: Teaching-learning strategies in teaching Mathematics MARKS -10

- Different methods of teaching Mathematics—Inductive and Deductive Method, Analytic and Synthetic Method, Heuristic(discovery), Project method, Problem-Solving, CAI, Laboratory method, Play way method.
- Teaching skills; lesson plan, unit plan
- Microteaching and micro lesson
- Simulated teaching
- Integrated teaching
- The constructivist approach in teaching-learning

Unit-3: Learning resources in teaching Mathematics MARKS -10

- Meaning and importance of learning resources
- Teaching aids in teaching ~~physics~~ Mathematics and their uses
- Mathematics textbook
- Mathematics Library
- Mathematics teacher as a resource
- Mathematics fair and exhibition
- Field trip and excursion
- Mathematics Club

Unit- 4: Assessment and evaluation in teaching Mathematics MARKS -10

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- Concept of assessment and evaluation
- Tools and techniques of assessment and evaluation
- Evaluation and educational objectives --- cognitive, affective, and psychomotor domain
- Continuous and comprehensive evaluation (CCE)
- Formative and summative evaluation
- Diagnosis and remediation
- Construction of Achievement test

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60

SYLLABUS OF EDUCATION

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF EDUCATIONAL PRACTICES) Marks 80

UNIT – V

1. Philosophy and Education – meaning; nature; relationship between Philosophy and Education; contribution of Philosophy to different fields of education.
2. Meaning, characteristics, advantages, disadvantages of types of Education and their differences – Formal Education, Informal Education and Non-Formal Education.

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3. Contribution of some great Educators towards Education – Rabindranath Tagore, Mahatma Gandhi, Swami Vivekananda, Rousseau and John Dewey.

UNIT – VI

4. Some Schools of Philosophy and their contribution towards Education – Idealism, Naturalism, Realism and Pragmatism.

5. Aims of Education – meaning; need; types of aims – individual and social; aims of education as recommended by Kothari Commission (1964 – 1966), National Policy on Education (1986) and National Education Policy (2020).

UNIT – VII

6. Educational Psychology – meaning; nature; aims; scope or subject matter; importance of the knowledge of Educational Psychology to the teacher.

7. Human Development – meaning and characteristics of Growth and Development; differences between growth and development; aspects of development – Physical, mental, emotional and social development; human development and the role of the teacher.

UNIT – VIII

8. Learning – meaning; nature; types; learning and teaching; factors influencing learning; learning and motivation; learning and maturation; managing perfect learning and the role of the teacher.

9. Intelligence – definition; nature; measurement of intelligence; intelligence and creativity; constancy of IQ; significance of intelligence in human life.

UNIT – IX

10. Individual Differences – meaning; classification; nature; factors responsible for such differences; educational significance.

11. Classroom Dynamics – meaning; nature of individual and group behaviour; group dynamics in the classroom; managing classroom based group dynamics by the teacher.

UNIT – X

12. Evaluation – meaning; comparison between measurement, evaluation and examination; Formative and Summative Evaluation; Achievement Test preparation; Concept of Continuous and Comprehensive Evaluation.

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13. Instructional Strategies – meaning; various phases of lesson planning; Teaching-learning Materials – meaning, importance, types and applications; Use of technological aids in teaching-learning process.

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SYLLABUS OF PSYCHOLOGY

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF PSYCHOLOGY) Marks 80

UNIT: V **Basics of Psychology & Biological Bases of Behaviour**

1. Definition, Development of Psychology (Old Concept to Modern Concept), Characteristics of Psychology as a Basic Science. Schools of Psychology: Structural, Functional, Psychodynamic, Behaviouristic, Gestalt and Humanistic Approach. Branches of Psychology. Fields and Scope.
2. Methods of Psychology; Observation, Introspection, Experimental, Questionnaire, Survey, Case Study, Cross-Sectional and Longitudinal.
3. Neuron-Structure, Types and Function, Synapses and Synaptic Transmission. Nervous System- CNS (With Special Reference to Brain and Spinal Cord), ANS and PNS-Their Types and Functions. Neural Impulse-Action and Resting Potential, Neural Impulse Cycle, Neurotransmitters-Their Role on Behaviour.

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4. Endocrine System- Structure, Functions and Abnormalities of Major Glands- Pituitary, Thymus, Adrenals, Pancreas, Pineal and Gonads.

UNIT: VI Sensation, Perception, Attention, Memory

1. Sensory Processes, Attribute and Types (Special, Muscular and Organic), Attention-Nature, Characteristics and Types; Factors Influencing Attention-Subjective, Objective and Physiological.
2. Perceptual Processes: Determinants; Perception of Form, Space and Movement; Perceptual Organisation-Concept and Principles; Perceptual Disorganisation-Types and Causes.
3. Memory – Concept, Encoding, Storage, Retrieval Processes, Information Processing Model, Types of Memory, Economic Methods of Memorisation.
4. Forgetting-Nature and Causes, Curve of Forgetting.

UNIT: VII Thinking, Emotion, Motivation and Personality

1. Thinking Process-Concept Formation, Cognitive Map, Problem Solving and Reasoning, Creativity- Nature, Characteristics, Theories and Measurement.
2. Emotion: Nature and Expressions, Theories of Emotion-James-Lange, Canron-Bard, McDougall and Activation Theory.
3. Motivation: Concept, Biogenic and Sociogenic Motives, Theories of Motivation-Maslow, Weiner, McClelland.
4. Personality: Concept and Characteristics, Trait and Type Approaches, Assessment of Personality.

UNIT: VIII Intelligence, Learning and Development

1. Intelligence: Nature Types and Determinants. Theories-Spearman, Guilford, Thorndike, Thurstone, Gardner and Sternberg. Measurement of Intelligence-Verbal and Non Verbal Test of Intelligence. Concept of EQ, SQ and IQ. Educational Implication of Intelligence. Aptitude-Relation between Intelligence and Aptitude. Assessment of Aptitude.
2. Learning Processes: Concepts and Factors - Affecting, Theories of Learning-Trial and Error, Classical and Operant Conditioning, Insightful Learning, Transfer of Learning Scope and Method, Principles.
3. Development, Determinants-Psychogenic, Biogenic and Sociogenic; Concept of Growth and Maturation. Stages of Development- Prenatal and Postnatal (Up-to Adolescence). Adolescence-Needs and Problems, Identity Development, Identity Crisis.
4. Domains of Development: Cognitive, Language, Personality, Social and Moral Development. Theories of Development-Freud, Piaget, Erikson, Bandura and Kohlberg.

UNIT – IX

1. Individual Differences – meaning; classification; nature; factors responsible for such differences; educational significance.

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2. Classroom Dynamics – meaning; nature of individual and group behaviour; group dynamics in the classroom; managing classroom based group dynamics by the teacher.

UNIT – X

3. Evaluation – meaning; comparison between measurement, evaluation and examination; Formative and Summative Evaluation; Achievement Test preparation; Concept of Continuous and Comprehensive Evaluation.

4. Instructional Strategies – meaning; various phases of lesson planning; Teaching-learning Materials – meaning, importance, types and applications; Use of technological aids in teaching-learning process.

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SYLLABUS OF SOCIOLOGY

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

5. Curriculum – Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

7. School Time-table and Discipline – meaning; principles of constructing school time-table; school and discipline; nature or factors of indiscipline in the school; ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF SOCIOLOGY) Marks 80

Content (40 Marks)

1. Introduction and Basic Concepts

a. Emergence of Sociology
b. Sociological Thought – Auguste Comte, Karl Marx, Max Weber, Emile Durkheim.
c. Society, Community, Association, Institution, Status and Role.
d. Heredity and Environment, Social Groups, Social Process, Social Control.

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2. Sociology and Education

a. Concept of Sociology of Education, Sociological Perspective on Education
b. Socialization, Social Change, Social Stratification, Social Mobility and their relation with Education
c. Inequality and Diversity; Gender and Education; Equity and Equality in Education; Inclusive Education
d. Education in Social and Human Development; Education and Empowerment of the Marginalized; Education, Culture and Multiculturalism

3. Social Problems

a. Poverty, Unemployment, Population, Illiteracy, Drug Abuse, HIV/AIDS
b. Terrorism, Regionalism, Communalism, National Integration
c. Violence against Women, Children, and Elderly persons; Gender Issues.
d. Corruption, Juvenile Delinquency, Cyber Crime, Environmental Pollution.

4. Indian Society

a. Varna and Jati; Caste; Jajmani System; Dominant Caste; Sanskritization; Westernization
b. Family, Marriage, Kinship, Religion
c. Issues of ST, SC, OBC; Problems pertaining to Gender Issues.
d. Village; Rural Development Programmes; Urbanization and Urban Society; Urban Social Problems.

GROUP - C

Pedagogy (40 Marks)

Unit 1 Foundation of Teaching Sociology

a. Significance, Meaning, Nature and Scope
b. Brief historical background
c. Aims and Objectives
d. Innovations in teaching Sociology
e. Concepts and methods of pedagogical analysis

Unit 2 Teaching, learning strategies in teaching Sociology

a. Different methods of teaching – Constructivist Approach to teaching Sociology Lecture method, Project method, Problem Solving method, Field Trip, CAI/CAL.
b. Teaching skills; Lesson Plan, Unit Plan
c. Micro teaching and Micro lesson; Simulated teaching, Integrated teaching

Unit 3 Learning Resources in teaching Sociology

a. Importance of learning resource with meaning
b. Teaching Aids in Sociology and their uses
c. Library resources
d. Laboratory
e. Teacher as a resource
f. Fair and exhibition

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Unit 4 Assessment and Evaluation in teaching Sociology

a. Concept of assessment and evaluation and their comparison
b. Tools and techniques of assessment and evaluation
c. Evaluation: Cognitive, Affective and Psycho-motor domain
d. Purpose of Evaluation, Continuous and Comprehensive Evaluation (CCE)
e. Different Types of tests used for evaluation in Sociology
f. Construction of objective based test items in Sociology on a particular topic
g. Blue Print for different test items
h. Achievement Test Planning

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SYLLABUS OF FINE ARTS

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles – as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT III:

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6. Co-curricular Activities – meaning, their types; place of co-curricular activities in student learning; NEP 2020 on school curriculum reforms.

UNIT IV:

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8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

PART-II (AREAS OF VISUAL ARTS) Marks 80

HISTORY OF ART

Unit - III :- Ancient Indian Art

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Pre-historic Art, Indus Valley Civilization, Mauryan Art, Sunga Art, Kushana period and Gandhara period. monuments relief and rock Sculptures of Tripura: Unakoti, Devtamura. Pilak etc.

Unit - IV :- Medieval and ModernIndian Art

Medieval Indian Art:- Gupta Period, Ajanta Mural, Bagh, Post Gupta Period- Elephanta, Mamallapuram, Ellora, Konarak, Khajuraho, Pallava Period, Chola Period, Chalukya, Rastrakuta, Chandella Period. Early manuscript painting (Pal, Jain), Mughal miniature painting,Rajasthani painting, pahari school painting.

Modern Indian Art:- Company School, kalighat School. Art & Nationalism, Raja Ravi Varma and his time, Abanindranath& Bengal School, Modernism. Amrita Sher-gil,Gaganendranath Tagore, Rabindranath Tagore, Nandalal Bose.Jamini Roy., BenodeBehariMukharjee and RamkinkarBaiz, Art during the time of famine.ZainulAbedin,SomnathHore, ChittaprasadBhattacharya Modern trends in Sculpture- Devi Prasad Roy Choudhury, Meera Mukherjee, PradoshDasgupta,N.SBendre,SankhoChoudhury,DhanrajBhagat, Contemporary Indian Artists- Gopal Ghosh, Haren Das, K.G. Subramanyam, BikashBhattacharjee, Ganesh Pyne, JogenChoudhuri, BhupenKhakkar, Arpita Singh, ChintamoniKar, Jeram Patel, VedNayar. Royal Court painting practice & major artists of Tripura,

Unit –V:- Western Art

Ancient Western Art:- Prehistoric Art and Egyptian Art. Greek, Roman and Byzantine Art.

Gothic Art(Northern Europe Gothic painting and sculpture), Renaissance Art-proto,Early and High (Leonardo da Vinci, Michelangelo, Botticelli etc) Baroque (Rembrandt,Vermeer,Rubens)

Medieval Western Art:- Neo-classicism (David,Ingres) and Romanticism-(Goya,Delacroix,Constable,Turner). Realism-(Courbet,Millet,Corot).

Modern Western Art:- Impressionism- (Manet,Monet,Renoir,Degas).Post Impressionism- (Van Gogh, Gauguin and Cezanne).Cubism- (Picasso, Braque& Pop Art). Evolution of Modern Sculpture- Brancusi, Moore, Gabo.

Unit- VI :- History of Advertising Design

History of Advertising art, early printing period from 15th century, Industrial revolution development in the 20th century. The legal aspects of Advertising.Conditions of advertising media during the early 17th century to early 18th century and present conditions.Early Indian Printing Publication and newspaper. Conditions of advertising in India after First World War and before Second World War.

METHOD & MATERIALS

Unit-VII :- Painting

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Traditional Media for Drawing, Traditional Media for Painting, their use, different styles and techniques, pigments, classification, characters, behaviors, resources, Murals, different media, styles and techniques.

Composition: definition, elements, application (with examples from various ages and artists)

Perspective: Defintion, history, usage in painting, importance.

Unit-VIII :- Sculpture

Basic materials used in Sculpture: - Terracotta, Relief, Sculpture in round. Plaster of Paris, Wood Carving, Bronze casting and Junk sculptures.

The importance of antique study in academic Sculpture and basic Sculpture problems involved in a composition such as lines, rhythm, volume concave and convex, interplay of light and shade.

Unit-IX :- Communication and Advertisement

Introduction of Advertising & Communication, classification of Advertising, Principles and elements of design. Theory of Colours.Importance of Colours in Advertising. Functional appeal of colours.

Potential Print Media, Electronic Media of Television, Radio and Social media in the Light of Mass Communication, Future of Advertising, Internet and E-mail Advertising as career.

Unit-X :- Advertising Design

Importance and Purpose of Following Subjects related with different media of :- Communication and Advertising- Trade Marks, Logo, Sign, Monogram, Symbol, Sticker, Book cover design. Cinema Poster.

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(44) (14)

MUSIC

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

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8. Professional Leadership and Professional Ethics in Education – nature; guidelines; ways to enhance leadership among schools.

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Contents of Performing Arts

40 marks

A- History and Theory of Indian Music

i. Brief history and development of Indian music with special reference to the contributions of eminent musicologists during ancient, medieval and modern periods -----

Ancient: a). Information available in Vedic and Pauranic age

b). Information available in Post-Pauranic age and together with the contribution of Narad, Bharat and Matanga

Medieval: Contribution of Sharangadev, Ramamatya, Somnath, Ahobal and Venkaatamakhi

Modern: Contribution of Kshetramohan Goswami, Sourindra Mohan Tagore, Krishnadhan Banerje, Jyotirindranath Tagore, Pandit Vishnu Narayan Bhatkhande and Pandit Vishnu Digumbar Paluskar

ii. **Terminologies:**
Nada, Swara , Swarasthan, Saptak, Gram, Thaat, Mela, Raga, Pakad, Arohan, Avarohan, Varna, Alankar, Vadi-Samavadi-Anuvadi-Vivadi-Varjit Swaras, Meend, Shruti, Gamak, Murchhana, Tan, Marga / Gaandharva and Deshi Music, Prabandha, Bandish, Gat, Alaap, Aaas, Suntt, Ghasit, Jod, Jhala, Tihai, Taal, Theka, Matra, Vibhag, Laya, Laykari, Sam, Taali, Khaali, Samapadi-Vishamapadi Taals, Avartan, Nritya, Nritta, Natya.

iii. Detailed study of Raga; Ten essential features (Dash Lakshanas) of Raga; Classification of Raga

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B- Analysis of musical forms

i. Classical, Semi-classical, Folk and old musical forms of Bengal with special features of music, prevalent in Tripura

ii. Classical dance forms of India along with their places of origin and development; Folk dances of Tripura; Study of Indian Dance on the basis of Natyashastra and Abhinay Darpan

C- Swar (musical notes), Taal and Notation System

i. Preliminary knowledge about the musical notes, used in Hindustani music, Carnatic music and Western music; Hindustani notation system

ii. Hindustani and Carnatic Taal systems; Ten essential features (Dash-Pran) of Taal; Knowledge of conventional Taals, used in various Classical and Regional / Folk forms of music

D- Life sketches and contributions & Miscellaneous

i. Raja Maan Singh Tomar, Amir Khusro, Miyan Tansen, Sadarang, Audarang, Shori Miyan, Tyagraj, Nawab Wazid Ali Shah, Jadu Bhatta, Rabindranath Tagore, Kazi Nazrul Islam, , Dashorathi Roy, Ramprasad Sen, Norottam Das, Lalan, Yamini Krishnamurthy, Late Keluchₐran Mahapatra, Late Ustad Ahmedjan Thirakwa, Late Pandit Bhimsen Joshi, Late Ustad Bismillah Khan, Late Pandit Ravi Shankar, Late Viddushi M.S. Subbullakshmi, Late Pandit Birju Maharaj etc.

ii. Gharana, its characteristics, origin, development and relevance in modern perspectives; Guru-Shishya Parampara versus Institutional training in music; Conception of Conference, Seminars and Workshops in music

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20.07.2022.

Method Paper

40 marks

Unit – I

- **Foundation of teaching Performing Arts**

a) Performing Arts; Terminologies and Theoretical Studies (significance, meaning, nature and scope)

b) Conference, Seminar, Workshop, Festivals of music and dance, Appreciation in music (aim and objective)

c) Musicological treatises; Evolution of Indian music; Gharana; Theories related to Raga and Taal; Prevalent classical music and dance forms in India (concepts and methods of pedagogical analysis)

Unit – II

- **Teaching learning strategies in teaching Performing Arts**

Basic theories and Performances; Analysis of Raga and Taal; Conventional forms of Indian music and dance etc. (Lecture cum demonstration method, Interactive method, ICT enabled teaching-learning and Constructivist approaches in teaching-learning process)

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Unit – III

- **Learning resources in teaching Performing Arts**

Understanding of Performances of music and dance as well as theories; Contributions of exponents from known Gharanas; Knowledge of conventional Ragas in connection with the following:

a) Traditional learning resources
b) Books, Journals, Articles (Library resources)
c) Conference, Workshop, Seminar, Symposium etc.
d) Festivals regarding music and dance
e) Field trip / Excursion (Academic)
f) Group activities / Group discussion
g) ICT resources

Unit – IV

- **Assessment and evaluation in teaching Performing Arts**

a) Comparative study between the musical notes in Hindustani music and Carnatic music
b) Comparative study between the Taal systems in Hindustani music and Carnatic music
c) Writing skill of expressing music through Hindustani and Akarmatrik notation systems
d) Writing skill of expressing Taal through Theka (musical expression of Taal)
e) Conception regarding the distinct features of Prime classical dance forms of India
f) Musicologists, Performers, Composers, Exponents, Contributors in the field of music and dance

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Chairman

Snigdhatanu Banerjee
20.07.2022.

Proposed syllabus for Lecturership, DIET, Tripura made by Snigdhatanu Banerjee
18.03.2022.

Dr. Snigdhatanu Banerjee
Assistant Professor,
B.B.M.C., Agartala,
Government of Tripura.

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SYLLABUS OF PHYSICAL EDUCATION

Time: 3 hours **Full Marks: 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT I:

1. Education – Definition, meaning, nature and scope; Differences between education, training, information and knowledge.
2. Factors of Education and their interrelationship – student, teacher, curriculum and school.

UNIT II:

3. Agencies of Education and their educational role – family, school, community, society, state, cultural organisation and NGOs.
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PHYSICAL EDUCATION

CONTENTS **40 Marks**

Unit – I 10 Marks

- **Foundation of Physical Education and Sports** – Definition, aim, scope and objectives of Physical Education, physical exercise, sports, physical activity, physical training, female in physical education and sports, Play and Play theories.
- Adapted Physical Education – aim, scope, objectives, importance in relation with physical education and sports.
- Philosophies of Education as applied to Physical Education – Idealism, Naturalism, Realism, Pragmatism, Existentialism and Humanism.
- Growth and development and well – being, general principles of growth and development, stages of growth and development process in terms ofsex and age characteristics of infant, childhood, adolescent, adulthood in relation to physical education and sports, types of body, aging, body composition, heredity and environment. Various types of age (chronological, anatomical, physiological, mental).
- Social Institutions, socialization process, physical education and sports as cultural heritage of mankind, customs, traditions, competition and cooperation, leadership – development of leadership qualities in relation to physical education and sports.Social values. Broad and narrow sense of physical education and sports.
- Recreation – its principles, characteristics and importance, modern trends in recreation, indoor and outdoor recreational programmes, recreational programmes for various categories of people.
- Wellness – meaning, its importance, benefits and challenges, development and maintenance of wellness.
- **Historical aspects of Physical Education and Sports –** Olympic movement – Historical development of Ancient and Modern Olympics Games, Women in Sparta and Athens.
- Growth and development of Physical Education and Sports in India, development of Physical Education and Sports in World.
- World Games, Asian Games, Commonwealth Games, South Asian Games.
- Contribution of Leaders in Physical Education in India and Abroad.
- Structure and functions of international and national bodies controlling various games and sports, Sports Bodies/Institutions in India, Associations/Federations their composition and functions,Various sports schemes in India.
- Prominent honours and awards in games and sports, National Sports Awards,India and Sports performance.
- Structural pattern of the organisation in Tripura – Sub-divisional Level, District Level and State Level; Role of Sports Council and Sports Association in developing the concept of physical education; Organisation of Physical Education at different level.

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Unit – II **10 Marks**

- **Anatomical and Physiological aspects of Physical Education and Sports** – Introduction, meaning, definition – Cell, Tissues, Organs, System (Skeletal System, Muscular System, Respiratory System, Digestive System, Circulatory System, Blood, Nervous System, Excretory System, Endocrine System).
- Exercise physiology – Introduction, meaning, definition – its scope and importance in the field of physical education and sports, effect of exercise in body systems,Vital Capacity, Second Wind, Oxygen Debt, Athlete's Heart, Blood Pressure, Pulse Rate.
- Physiology of muscular activity, Muscle – its types, characteristics and functions. Microscopic structure of muscle fibre. Sliding filament theory of muscular contraction. Types of muscle fibres and sports performance. Muscular adaptation to exercise.
- Bio-chemical aspects of exercise – Bioenergetics and recovery process, Metabolism of food products. Aerobic and anaerobic systems during rest and exercise. Direct and indirect methods of measuring energy cost of exercise.
- Neurotransmission and Movement mechanism – Neuro-muscular junction and transmission of nerve impulse, kinaesthetic sense, organs and neural control of motor skills.
- Cardio respiratory adaptations to long and short term physical activities.
- Recovery process – Physiological aspects of fatigue. Restoration of energy stores. Recovery oxygen. Nutritional aspects of performance,environmental aspects on human physiology under exercise and sports performance.
- Women in sports- trainability. Physiological gender differences and special problems of women athletes.
- Athletic injuries – their management and rehabilitation, Physiotherapy, Therapeutic modalities, Massage manipulations and their physiological responses, disability and rehabilitation,Ergogenic aids, Drugs and Doping.

Unit – III **10 Marks**

- **Psychological aspects of Physical Education and Sports** – Psychology, Sports Psychology – Introduction, meaning, definition, aims, objectives and importance,Relationship between Psychology and Sports Psychology.
- Learning process-theories and laws of learning, Cognitive process – memory and thinking. Principles of Motor skill learning.
- Motivation – Motivation theories, motivation in physical education and sports.
- Anxiety, tension, aggression, emotions, stress, self confidence, concentration, mental practice and goal setting – its effect in physical education and sports,Personality – its dimensions, theories, personality and performance in physical education and sports,Individual differences and their impact on skill learning and performance,Group dynamics, team cohesion.
- Sociometrics, economics and politics in sports.
- Transfer of training and its types with its implication in sports.
- Psychological skill training for activation and relaxation,Long and short term psychological preparation for performance/ competition.
- Spectators and sports performance,Media and sports.

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- **Health related aspects of Physical Education and Sports –** Introduction, meaning, definition, objectives importance in Physical Education and Sports, spectrum of health.
- Health Education – Introduction, meaning, definition, objectives and importance in Physical Education and Sports.
- Guiding principles of Health & Health Education.
- Genetics and environment in achieving health. Health-related physical fitness.
- Nutrition and dietary manipulation, Balanced diet and its components,nutritional supplements, specific nutrition supplementations to Games and Sports, Nutritional Deficiencies, Understanding of malnutrition, obesity and its management.
- Communicable and Non-Communicable Diseases.
- Physical Education Teacher in relation to school health services & healthful school environment, School health program and personal hygiene.
- Community health programme- Health appraisal & health instructions. International and national health promoting government & private agencies.
- Environment and occupational hazards, First-aid- objectives and principles. First-aid for Shock, poisoning, burns, drowning, bleeding, electric shock and common sports injuries.
- Psychosomatic disorders, hypokinetic disease: causes, symptoms and prevention.
- Pollution- Air, water, sound and radiation. Effects of pollution on health. Preventive and safety measures from pollution.
- Effects of smoking, alcohol, & drugs on health; prevention and rehabilitation.

Unit – IV **10 Marks**

- **Kinesiology and Biomechanics in relation to Physical Education and Sports –** Meaning and importance of kinesiology and Biomechanics in the field of Physical Education and Sports, Modern trends in biomechanics.
- Lever, types of Lever, Mechanical advantage and applications of Levers in sports.
- Motion, types of Motion, laws of Motion, equilibrium and forces, friction, spin, impact and elasticity and its implication, Projectile and principles of projections.
- Kinetics, Kinematics – linear and angular.
- Joints and their movements. (Planes and Axes).
- Muscle attachments – Origin, insertion, action and leverage of the principal muscles used in sports.
- Posture, Postural deformities and their correction.
- Mechanical analysis of fundamental movement – (running, jumping, throwing, pulling and pushing).
- Muscular analysis of Motor movement.
- Mechanical analysis of various sports activities.
- **Management in relation to Physical Education and Sports –** Concept and principles of sports management, theories, Scope of management in physical education and sports.

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- Principles of organization and Administration, Guiding principles for organizing physical education & sports programmes in institutions.
- Role of sports manager- interpersonal, informational and decision making. Managerial skills – technical, human and conceptual. Qualities and qualification of sports manager.
- Supervision- Concept, objectives, principles and importance of supervision, Techniques of supervision, duties and responsibilities of a supervisor.
- Personnel management- objectives and principles. Self-appraisal, communication skills and time management. Essential skills of administration.
- Facility management- planning, procuring and maintenance of facilities- indoor and outdoor facilities. Planning and management of sports infrastructure, management of equipment, management of record.
- Event management- its principles, planning, check list, rehearsal, itinerary, execution, reporting and follow-up procedures of an event, Intramural and Extramurals and Tournaments, Camps and Athletic Meet.
- Financial management- objectives, purposes, principles and scope.
- Budget – Classification, types and its importance in Physical Education and Sports, Planning and preparation of budget, Mechanics of purchase and auditing.
- Public relation- principles of public relations in physical education and sports. Mass Media- communication and publicity, qualifications of Public relation officer.

PHYSICAL EDUCATION

METHODOLOGY **40 Marks**

UNIT-I 10 Marks

- **Teaching Methodology in Physical Education and Sports –** Development of teacher education for physical education in India, Comparative study of professional preparation in physical education of India with those of USA, Russia, Germany, Australia and UK, China, Japan, South Korea.
- Professional and other courses of physical education in India, Role of Government agencies monitoring professional courses in physical education.
- Physical Education Personnel – Qualities, qualifications and responsibilities of physical education personnel at primary, secondary and higher education levels, Scope of physical education personnel in the promotion of health, fitness and wellness, Professional Ethics.
- Recent Government policies for promoting physical education and sports in India.
- Role of public & private sectors in the promotion of physical education and sports in the country.
- Curriculum development – Concepts and principles of curriculum planning, Subject matter for different levels of education – primary, secondary and higher education.
- Curriculum design and content – importance, characteristics of pupils and selection of activities and classification of subject matter with reference to

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age, sex and differently abled pupils. Integrated programme for boys and girls, Course content of academic and professional courses.

- Curriculum evaluation: Concepts and purpose; procedure and appraisal.
- Teaching aids – Credit system for various subject courses – theory and practical, Impact of technology in physical education and sports.
- Time Table – Construction of theory and practical Physical Education time table,Preparation & Principles of PlanningPhysical Education lessons,Pupil teacher interaction and Relationship.
- Teaching Aptitude – nature, objectives, characteristics of teaching, learner characteristics.
- Methods and techniques of teaching.
- Evaluation – meaning; comparison between measurement, evaluation and examination; Formative and Summative Evaluation; Achievement Test preparation; Concept of Continuous and Comprehensive Evaluation.

UNIT-II 10 Marks

- **Test, Measurement and Evaluation in relation to Physical Education and Sports –** Test, measurement and evaluation - their types and importance in physical education and sports. Principles and processes of evaluation in physical education, Modern Developments in Physical Education Measurements.
- Criteria of selecting an appropriate test and administration of testing programme.
- Types of tests and construction of standard knowledge and skill tests.
- Tests for fitness-Motor fitness, physical fitness, Health related fitness tests.
- Test for fitness components- strength, endurance, speed, flexibility and coordinative abilities.
- Sports skill tests- Badminton, Basketball, Football, Hockey, Lawn Tennis, and Volleyball.
- Anthropometric Measurements- measurement of various body segments, height, sitting-height, weight, diameters, circumferences, skinfolds, body mass index, ponderal index.
- Somatotype and Posture evaluating techniques.
- Testing of physiological variables- Blood pressure, breathing frequency vital capacity, heart rate, pulse rate, body temperature and body composition.
- Test for psychological variables- Anxiety, aggression, team cohesion, achievement motivation, mental-toughness, and self-efficacy.

UNIT-III 10 Marks

- **Training Methodology in Physical Education and Sports –** Sports training-meaning, aims and its characteristics and principles. Training load, its features, principles and adaptation process. Means and methods of executing training load. Overload, its Causes, symptoms and remedial measures, Factors influencing performance in sports, Physical training and detraining, warm up and cool down.

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- Coach – Introduction, coaching philosophy, coaching, definition of a coach, qualification of a coach, characteristics of a coach, responsibilities of a good coach.
- Coache's Eye – Criteria for selection of players at different levels, Sports talent identification-processand procedures.
- Planning- its importance and principles, types of planning.
- Training plans-training conception, yearly plan, meso-cycle and micro-cycle plan.
- Periodization- its importance, objectives and types of periodization, Concept of different periods – Preparatory, competition and transitional, Types of Competition.
- Training methods and specific training programme for development of various motor qualities.
- Strength- its characteristics, types of strength, factors determining strength and strength development.
- Endurance- its characteristics, types of endurance, factors determining endurance and endurance development.
- Speed- its characteristics, types of Speed, factors determining Speed and speed development.
- Flexibility- its characteristics, types of flexibility, factors determining flexibility and flexibility development.
- Coordinative abilities- its characteristics, types of coordinative abilities, factors determining coordinative abilities and development of coordinative abilities.
- Technical and Tactical preparation of sports, Strategies.
- **Rules and Regulations of Games and Sports.**
- **Duties of officials pertaining to various games and sports, athletics (track and field events).**
- **Yoga, Asanas, Pranayama – Meaning, Definition, Origin & Types, its importance & their effects, its contribution to the India and abroad.**

UNIT-IV **10 Marks**

- **Research Methodology in Physical Education and Sports** –meaning, definition, nature, scope, type of research and its need and importance in physical education and sports, Ethical issues in research.
- Methods of research, research designs.
- Identification and formulation of research problem. Types of research hypotheses and their formulation. Hypotheses testing.
- Tools of research- Questionnaires, opinionnaires, interviews and observations.
- Sources and steps of literature search- library, research data bases, internet-search engines, online journals. Note taking and critical reading.
- Sampling – Sampling Techniques,Data – its types and collecting measures.
- Statistical processes, their importance and uses in research,Normal probability curve and grading scales.
- Application of parametric and non parametric statistical techniques in research,Computer applications for data analyses.

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- Preparation of research proposal, report, abstract, paper for publication and paper for presentation.

20/7/22

(Ratna Roy)
chairman

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BENGALI

Time : 3 hours **Full Marks : 100**

PART-I (BASICS OF EDUCATION) Marks 20

UNIT-I :

1. Education - Definition, meaning, nature and scope, Differences between education, training, information and knowledge.
2. Factors of Education and their inter-relationship-student, teacher, curriculum and school.

UNIT-II :

3. Agencies of Education and their educational role - family, school, community, society, state, cultural organisation and NGOs.
4. Teacher's various roles - as a teacher, as a performer, as an administrator, as a manager and as a leader.

UNIT-III :

5. Curriculum - Definition, meaning, difference between curriculum and syllabus, characteristics of modern primary school curriculum especially in Tripura.
6. Co-curricular Activities - meaning, their types, place of co-curricular activities in student learning, NEP2020 on school curriculum reforms.

UNIT-IV :

7. School Time-table and Discipline-meaning, principles of constructing school time-table, school and discipline, nature or factors of indiscipline in the school, ways to establish school discipline.
8. Professional Leadership and Professional Ethics in Education - nature, guidelines, ways to enhance leadership among schools.

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12/03/25

12/03/25

22.06.2025

PART-II (Contents and Methods of Teaching Bengali Syllabus

Marks :40

বাংলা ভাষা ও সাহিত্য

একক-১

ক। শ্রেণি ষষ্ঠ ও সপ্তমের পাঠ্যসূচির বাংলা গদ্য ও পদ্যের সম্পূর্ণ ধারণা — (উৎস গ্রন্থ, রচনাকাল, রচনার তাৎপর্যগতদিক, সমাজ বাস্তবতায় কালের হিসেবে তার গ্রহণ যোগ্যতা)।

একক-২

খ। অষ্টম, নবম ও দশম শ্রেণির পাঠ্যসূচি থেকে দুটি কবিতা ও দুটি গদ্যের সম্পূর্ণ দিক। (এই শ্রেণির ছাত্রছাত্রীদের মানসিক অবস্থানকে প্রাধান্য দিয়ে রচিত সাহিত্য শাখার প্রতি সম্পূর্ণ অবলোকন।
যেমন- লালু—শরৎচন্দ্র চট্টোপাধ্যায় । (এই গল্পের কাল ও সমাজবোধ)

একক-৩

গ। নির্বাচিত বিষয়গুলোর পাঠ্যসূচিতে অন্তর্ভুক্তির যথার্থবিচার, বর্তমানকালে তার স্থান অধিগ্রহণ। নির্বাচিত বিষয়গুলোর শিক্ষাদান পদ্ধতি।
(ক) গদ্য, পদ্য, ব্যাকরণ।
(খ) প্রতিবেদন, রচনা, পত্র)
শিক্ষা সহায়ক উপকরণের ব্যবহার এই তিনের বিন্যাসে।

একক-৪

ঘ। ভাষা শিক্ষায় সহিত্যের ইতিহাসের ভূমিকা, উদ্ভব থেকে রবীন্দ্রকাল। বাংলা ভাষার উৎপত্তি ও বিকাশ। (আধুনিক চলিত ধারা পঠন)

একক-৫

অ। গঠন ও অর্থানুসারে বাক্যের গঠন প্রণালী।
আ। বাগ্‌ধারা ও বাক্য সংকোচন।
ই। সম্মোচ্চারিত ভিন্নার্থক শব্দ।
ঈ। বাংলা শব্দভাণ্ডার-এর তিনটি বিভাগের (মৌলিক, আগন্তুক এবং সংকর বা মিশ্র শব্দ) অন্তর্গত শব্দগুলোর উৎসগত শ্রেণিবিভাগ (তৎসম, অর্ধতৎসম, তদ্ভব, দেশি, বিদেশি ইত্যাদি) সংজ্ঞা ও উদাহরণ।
উ। ধ্বনি পরিবর্তনের কারণ ও বিভিন্ন ধারা।
ঊ। শব্দার্থ তত্ত্ব।

12/03/2025

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12/03/2025

PART-III (Pedagogy of Bengali)

Marks : 40

একক-১

অ। বাংলা ভাষা শিক্ষার উদ্দেশ্য ও প্রয়োজনীয়তা, শিক্ষার মাধ্যমরূপে এই ভাষার ভূমিকা।

আ। ঐতিহাসিক প্রেক্ষাপট।

ই। বাংলা ভাষা শিক্ষায় বিভিন্ন কৌশল।

একক-২

বিভিন্ন পদ্ধতি—

অ) বক্তৃতা পদ্ধতি, আরোহী, অবরোহী পদ্ধতি, প্রজেক্ট পদ্ধতি, শব্দানুক্রমিক পদ্ধতি, গল্পবলা পদ্ধতি, অভিনয় পদ্ধতি, সি. এ. আই, প্রতিপালন পদ্ধতি, তত্ত্বাবধানপদ্ধতি।

আ) শিক্ষণ দক্ষতা— পাঠটীকা ও পাঠপরিকল্পনা (সামগ্রিক আলোকপাত) একক বিভাগ, পূর্বজ্ঞান, আচরণগত উদ্দেশ্য।

ই) মাইক্রোটিচিং, মাইক্রোলেশন প্ল্যান, সিমুলেটেড ও ইন্টিগ্রেটেড টিচিং।

একক-৩

অ) শিখন সম্পদ ও তার প্রয়োজনীয়তা।

আ) লাইব্রেরী বা গ্রন্থাগার, ভাষা গবেষণাগার, মেলা, সাহিত্য সভা, দেওয়াল পত্রিকা, ম্যাগাজিন।

ই) শিখন সম্পদ হিসেবে শিক্ষকের আদর্শায়িত কর্মপ্রবাহ।

ঈ) ভাষা সংগঠন হিসেবে ভাষা ক্লাবের ভূমিকা।

উ) অ্যালবাম ও কম্পিউটারে পি.পি.টি (বিভিন্ন বিষয় ভিত্তিক) নির্মাণ।

ঊ) গণমাধ্যমে ভাষা ব্যবহার।

একক-৪

মূল্যায়ন : মূল্যনির্ধারণ ও মূল্যায়ন (সামগ্রিক ধারণা)

(অ) অভ্যন্তরীণ ও বহি:মূল্যায়ন

(আ) বিভিন্ন অভীক্ষা

(ই) ব্লু-প্রিন্ট (খসড়াপত্র)

(ঈ) দক্ষতাভিত্তিক প্রশ্নপত্র নির্মাণ ও একক ভিত্তিক প্রশ্নপত্র সৃজন।

(উ) নিরবচ্ছিন্ন ও সামগ্রিক মূল্যায়ন।

(ঊ) আধুনিক বানান বিধি।

(এ) শ্রবণ, কথন, লিখন ও পঠন দক্ষতার উৎকর্ষসাধন।

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12/03/25

(70)

Syllabus for Recruitment of Lecturer in Kokborok, DIET

Total marks: 100

Time: 3 hours

1. **General Knowledge** — 10
   General knowledge related to history of Tripura
2. **Language pedagogy** — 10
   The theories and techniques of teaching language
3. **Kokborok kok tei kokrwbaini Laibuma** — 10
   (History of Kokborok language and literature)
4. **Kokma (Grammar)** — 20+10=30
   i. Phonology, Morphology, Syntax, Semantics
   ii. Composition and writing skill
5. **Koklop (Poetry)** — 15
   i. Tii-tun by Ramkumar Debbarma
   ii. Kamini lama by Nanda Kumar Debbarma
   iii. Hani kothomarok by Budurai Debbarma
   iv. Bumul kholnani by Sefali Debbarma
   v. Tai mwnak kokthaini khumtang by Sudhanya Debbarma
   vi. Ani nok semung by Sachwlang Tripura
   vii. Rwng by Gopiballab Kalai
   viii. Khum barsani banta by Kamalia Debbarma
   ix. Tuisumu kosom salo by Rabindra Kishore Debbarma
   x. Janga bisingni toksa by Narendra Debbarma
6. **Kokbom (Prose)** — 15
   i. Kamichang burao by Mangaleshwari Debbarma
   ii. Senarai by Sunil Debbarma
   iii. Wansukma by Haripada Debbarma
   iv. Biyal by Snehmoy Roy Choudhury
   v. Sukhinini emang by Rabindra Kishore Debbarma
   vi. Mairungtwi bai sipingtwi by Jashuda Reang
   vii. Para kaklaima by Sudhanwa Debbarma
   viii. Janashikkha Samitini sal by Dasarath Dev
   ix. Huk by Shyamlal Debbarma
   x. Koklopni simi kaptwi jora by Chandra Kanta Murasing
7. **Thungnuk (Drama)** — 10
   i. Kochokjak jorani khorang by Nanda Kumar Debbarma
   ii. Aitorma by Narendra Debbarma

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04/07/24

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Government of Tripura.