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SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
ENGLISH
Full Marks: 200
Descriptive:100
Objective:100

GROUP A: DESCRIPTIVE:
Unit 1: POETRY
1. John Donne: Batter My Heart Three Personed God
2. William Wordsworth: Tintern Abbey
3. Robert Browning: My Last Duchess
4. D.G. Rossetti: The Blessed Damozel
5. W.B. Yeats: The Second Coming
7. Ted Hughes: The Thought-Fox
8. Robert Frost: Mending Wall

Unit II: FICTION
1. Thomas Hardy: Jude the Obscure
2. Joseph Conrad: The Heart of Darkness
3. Chinua Achebe: Arrow of God
4. Salman Rushdie: Midnight’s Children

Unit III: DRAMA
1. John Webster: The White Devil
2. Oscar Wilde: The Importance of Being Earnest
3. Henrik Ibsen: A Doll’s House
4. Harold Pinter: The Birthday Party

Unit IV: LITERARY THEORY and CRITICISM
1. T.S. Eliot: Tradition and the Individual Talent
2. Derrida: Structure, Sign and Play in the Discourse of the Human Sciences
3. Elain Showalter: Towards a Feminist Poetics
4. Ronald Barthes: The death of the Author

Unit V: HISTORICAL and LITERARY TOPICS
1. Petrarchism and the Sonnet Cycle
2. The influence of Seneca and Classical dramatic theory
3. Metaphysical Poetry
4. Restoration Drama
5. The Romantic Concept of the imagination
6. The rise of the periodical essay and the Novel
7. The Victorian Novel
8. Absurdism
9. Feminism
10. Modernism and Post-modernism

Unit VI: PHONETIC TRANSCRIPTIONS

Unit VII: COPY-EDITING
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
HISTORY OF INDIA
Full Marks: 200
Essay Type: 100
Objective Type: 100

Unit 1
a) Sources of Indian History
Archaeological sources; Literary sources; Foreign accounts.
b) Pre-history and Proto-history
Paleolithic and Mesolithic Cultures; Neolithic Cultures; Harappan Civilization.

Unit 2
a) Vedic period
Migration, settlements, evolution of social & political institutions, religious and philosophical ideas, rituals and practices.
b) Period of Mahajanapadas
Formation of States (Mahajanapadas); spread of Jainism and Buddhism.

Unit 3
Mauryan Empire
Post Mauryan Empire
Kushanas, Satavahanas, Sangam Age.

Unit 4
Imperial Guptas and Regional States of India
Guptas, Harshavardhan Pratiharas, Palas, Rashtrakutas, Pallavas.

Unit 5
Arab invasion of Sindh
Bhakti and Sufi Movements

Unit 6
The Delhi Sultanate
Political developments, Administration, Economic aspect and Socio-cultural life.

Unit 7
The Mughals
Political developments, Administration, Economic aspect and Socio-cultural life. (Akbar, Shah Jahan, Aurangzeb etc.)

Unit 8
India in the 17th – 18th Century
Advent of the Europeans, Rise of British power; Expansion and consolidation (Robert Clive to Dalhousie)

Unit 9
India under the British Crown
Administration, Economic History and Indian Society in transition

Unit 10
Indian National Movement (Origin & Growth)
- Popular Resistance to Company's Rule: Peasant and tribal movements; Moplah rebellion, Indigo riots, etc. Revolt of 1857: Causes, nature and results.
- Emergence of organized nationalism: Swadeshi Movement; Moderates – Formation of the INC, programme and plans of INC Extremist and Revolutionaries.
- Emerging communal trends: Communalism
- Constitutional development upto 1919
- Rise of Gandhi and the nature of Gandhian Movements: Kheda, Champaran, Mill workers strike, non-cooperation movement, Civil Disobedience movement
- Indian Polity(1939-45) and the Quit India Movement
- INA and Subash Chandra Bose
- Communal Politics and Partition
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SOCIOLOGY
Full Marks: 200
Descriptive Type: 100
Objective Type: 100

Unit I Nature and Origin of Sociology:
Subject-matter of Sociology, Sociological perspective, Sociology and its Relationship with other Social Sciences; the Emergence of Sociology – impact of industrial and French Revolution, Development of Sociological Thought in India.

Unit II Methods of Sociological Research:
Scientific method, Research Design, Hypothesis, Sample, Primary and Secondary data, Observation, Interview, Questionnaire and Schedule, Social Survey, Case Study.

Unit III Pioneering Contributors to Sociology:
Auguste Comte : Positivism
Herbert Spencer : Social Darwinism, Super-Organic Evolution
Emile Durkheim : Social Solidarity and Suicide
Max Weber : Authority & Protestant Ethic & the spirit of Capitalism
Karl Marx : Materialist Conception of History and Class Struggle

Unit IV Basic Concepts:
Society, Community, institution, Association, Social Group, Social System, Social Structure, Status and Role, Norms and Values, Social Action, law and Customs, Folkways and Mores.

Unit V Society and Individual:
The individual and Society, personality and Socialization, Social Control; culture: Cultural Traits, Acculturation, Diffusion and Variability.

Unit VI Marriage, family and kinship:
Marriage-Types and Forms; Family types, Structure and Function; Changing Structure of Indian Family and Marriage; Kinships-Terms and Usages, rules of Residents, Decent and Inheritance.

Unit VII Social Stratification and Mobility:
Forms and Theories of Social Stratification; Caste, Class and Jajmani System; Vertical and Horizontal Mobility

Unit VIII Social Change:
Factors and Theories of Social Change, Directed and Non-Directed Social Change, Social Policy and Social Development

Unit IX Society in India:
Unity and Diversity, Demographic profile, Rural-Urban Linkages, Scheduled Caste, Scheduled Tribes, Other Backward Classes, minorities, Women.

Unit X Social Problems in India:
Gender Inequality, Religious Disharmony, Regional Disparities, Poverty, Corruption, AIDS, Alcoholism, Prostitution, Drug Addiction.
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EDUCATION
Full Marks: 200
Descriptive Type: 100
Objective Type: 100

Unit 1:

Unit 2:

Unit 3:

Unit 4:

Unit 5:

Unit 6:

Unit 7:

Unit 8:

Unit 9:

Unit 10:

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SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
PHILOSOPHY
Full marks: 200
Descriptive Type: 100
Objective Type: 100

Unit 1: INTRODUCTION
1. Philosophy: Origin, Meaning, History and its relationship to other discipline
2. Nature and distinctive features of Indian Philosophy.

Unit 2: GREEK THOUGHT
2. Socrates: Concept of Virtue
3. Plato: Doctrine of Ideas
4. Aristotle: Matter and Form

Unit 3: METAPHYSICS
1. Substance: Descartes, Spinoza, Locke; Causation: Hume: Esse est percipi: Berkeley; Monadology: Leibnitz; Space & Time: Kant.
2. Critique of Metaphysics: Kant, Principle of Verification.

Unit 4: EPISTIMOLOGY
1. Rationalism & Empiricism, Realism & Idealism
2. Descartes ‘Clearness and Distinctness’, Kant’s synthetic a priori judgements.
3. Theories of truth, Relativism: William James
4. Sources of knowledge, Valid knowledge, Theories of error: Nyaya and Mimamsa school of Indian Philosophy.

UNIT 5: LOGIC
1. Definition and Principles of Logic
2. Deductive Inductive Logic: Nature and use

UNIT 6: ETHICS
1. Nature of morality, Moral judgment
2. Concept of Good, Fee will, Niskamakarma Ahimsa
3. Meaning and scope of Bio-ethics

UNIT 7: POLITICAL AND SOCIAL PHILOSOPHY
1. Equality, Liberty, Satyagraha
2. Democracy, Sarvodaya
3. Social Pathology, Gender Issues

UNIT 8: RELIGION AND CULTURE
1. Concept of religion and culture
2. Arguments of God’s existence
3. Reason and revelation, religious Pluralism
4. Tribal Culture.

Unit 9: EXISTENTIALISM
1. Existentialism and Humanism
2. Kierkegaard: Subjectivity
3. Sartre: Authenticity
4. Nietzsche: Will to Power and Superman
5. Camus: The Absurdity of human condition

Unit 10: CONTEMPORARY PHILOSOPHY
1. Logical Positivism: AJ Ayer, Carnap
2. Linguistic Philosophy: Wittgenstein, Russell, Strawson
3. Post – Modernism, Derrida’s Deconstructionism

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SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
POLITICAL SCIENCE
Full Marks: 200
Descriptive: 100
Objective: 100

Unit – I: Political Theory
- Meaning, Nature and Scope
- Liberal and Marxist view of State
- Power and Authority: Sources and forms.
- Justice, Law and Liberty: concept and relationship

Unit – II: Western Political Thoughts
- Plato: Ideal State, justice and education
- Aristotle: Origin and nature of state, Revolution Slavery
- Machiavelli: Prince, religion, morality and politics.
- Thomas Hobbes: Social Contract and Sovereignty

Unit – III: Indian Government and Politics
- The making of Indian Constitution: Basic features and ideologies
- Indian Federalism: Centre – State relations
- Union Government: Parliament, President, Council of Ministers
- State Government: Governor, Council of Ministers
- Party System, Characteristics and kinds

Unit – IV: Public Administration
- Public Administration: Meaning, nature and scope
- Public Administration, Private Administration and New Public Administration, Decision Making, Communication
- Theories of Organization and accountability
- Bureaucracy

Unit – V: Local Self Government
1. Local – Self Government of India: Historical background
2. Local- Self Government and Bureaucracy
3. Women in Panchayati Raj System
4. Village Council and Village Development Board in Nagaland: Composition and role

Unit – VI: Politics of North East India with special reference to Nagaland:
1. British colonialism and its impact on the hill areas of North East India, administrative, socio-economic, cultural and religion
2. Constitutional Provisions for the Naga Hills District
3. Sixteen Point proposal and creation of Nagaland State
4. Problem of Insurgency, Role of NGO’s

Unit – VII: Comparative Government and Politics
- Approaches to the study of Comparative Politics: Traditional, Behavioural
- Characteristics and features of Non-Western(Third World) Political System
- Comparative statement of institutional arrangements of U.K and U.S.A: Legislature, Executive
- Role of Communist Party in Chinese Political System

Unit – VIII: International Politics
- Theories of International Politics: Realist Theory, System theory
- Actors in International Politics: Primary Actors and Non-State Actors
- International Conflicts: Pacific Settlement of disputes, Settlement by force

Unit – IX: Indian Administration
- Public Services: Union Public Service Commission, State Public Service Commission
- Relation between politician and permanent executive
- Central Vigilance Commission(CVC): Structure and role
- Election Commission, Schedule caste and Schedule tribe Commission

Unit – X: International Organizations
1. The aims, objectives and functions of United Nations
2. European Union, ASEAN, SARRC: Structures and functions
3. Demands of NIEO
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PSYCHOLOGY

Full Marks: 200
Time: 3 hrs
Descriptive: 100
Objective: 100

Unit 1
- Psychology-meaning, nature and scope.
- Methods of psychology-observation, interview, case study and experimental method.

Unit 2
- Brain and behaviour
- Left and right hemisphere functions
- Sensory and motor functions
- Heredity and environment

Unit 3
- Learning-classical conditioning
- Operant conditioning(Thorndike’s laws)
- Cognitive learning
- Punishment and reinforcement

Unit 4
- Growth and –principles of development
- Stages of development characteristic of infancy, childhood, adolescent stage
- Physical, cognitive, socio-emotional development in early, middle and later stages

Unit 5
- Motivation and emotions
- Needs, drives, incentives
- Functions of emotions
- Maslow’s theory of motivation and their applications

Unit 6
- Memory – encoding, storage and retrieval of memory
- Factors influencing forgetting, short term and long term memory

Unit 7
- Intelligence and aptitude
- Definition and concept. Measurement of intelligence and aptitude
- Exceptional intelligence, mental retardation, emotional and artificial intelligence and their applications.

Unit 8
- Personality
- Nature. Trait v/s type approach.
- Biological and socio-cultural determinants of personality.
- Personality assessment technique, objective and projective.

Unit 9
- Guidance and Counselling
  - Meaning, aims, needs and types
  - Techniques of guidance-role playing, career counselling, case study, interview.
  - Areas of counselling – educational, vocational, personal, occupational guidance programme.

Unit 10
- Individual difference and its implications.
- Exceptional children-meaning, needs and education of exceptional children
- Needs of special education.
- Delinquent children-types, characteristics, causes and prevention.

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TENYIDIE

Full Marks: 200
Descriptive Type: 100
Objective: 100

La I. Keriekimia geizo (classical poetry).
(1) Nie pie nuo  (2) Merielhou  (3) Phoutheguo-o  (4) Nuolhou pese
(5) A kesuoü  (6) Thenu nie we  (7) Gareiphezou  (8) Socüzou-o
(9) Miakrüo  (10) Tso-o mu Therhuopudiü.

La II. U Teiki geizo (Modern poetry).
(1) Tenyimie vierhe : D.Kuolie
(2) Nagaland : D.Kuolie
(3) U tsiepfumia : D.Kuolie
(4) Ketho mu kevi : Kekhulhu
(5) Krüta kevi : Medo
(6) Puo lie mu ketho : Medo
(7) Kralie modi ramei pfüya mo : Medo
(8) U phiya kerieu : Guovüü
(9) U nuo rüli : Guovüü
(10) Tsiedo kelhou : Tshuneille
(11) Nagamia : Dino
(12) Khepeziyaluo : Dino
(13) Nhicu zha : Dino
(14) Vitho kedi : Meguo-o
(15) Kedzükriile khe : Meguo-o
(16) Themia kelhou : Vilakiehu
(17) Keviu u ya : Vilakiehu
(18) Kedietho mu kekhrue : Lhovio
(19) Merünuo : Khrührüü
(20) Kiya thapfü : Guovüü

La III. Rüsie (Drama)
(1) Mehouviü – Morüsa : Shürhozelie
(2) Teikado kedukhrie : Shürhozelie
(3) Thenudiü : Vilhouzalie
(4) Jakob mu puo nuonuco : Shürhozelie

La IV. Diemvü dze (Literary history )
(1) Tenyimia diemvü dze : Rev.Beiliü Shüya
(2) Tenyidia dze : Shürhozelie
(3) Diechie : Shürhozelie

La V. Noudo dze (Fiction)
(1) Thenupfü : Thinuokhrüü
(2) Rthülie kengu kerieu : Vikielie Sorhie
(3) Kedietho capiu : Kekhriveüü
(4) Puo a meho tha zo : Shürhozelie

La VI. Tenyidie pede dze.
(1) U tsiepfumia rüve : Shürhozelie
(2) Tenyimia kelhou dze : Neichüriezü
(3) Tenyimia kelhou bode : Vikielie Sorhie
(4) Tenyimia kelhou : Kiezotuo Zhale

La VII. Tenyimia dzewe.
(1) Tenyimia dzeyie : Rüzhükhrie Sekhose
(2) Phousanyi : Shürhozelie
(3) U tsiepfumia mhasi bode : Rev.Dr V.K Nuh

La VIII. Tenyidie Thuyie
(1) Kekhriengunu : D.Kuolie
(2) Sikezhü dze : Shürhozelie
(3) Methuophemia : Shürhozelie
(4) Pejokewau : Shürhozelie

La IX. Tenyimia diemvü rhitho mu thete
(1) Diemvü thete zho : D.Kuolie  (2) Diemvü rhitho bodeko : D.Kuolie

La X. Linguistics

Definition of language, classification of sounds into vowels and consonants, manner and places of articulation, suprasegmentals of pitch, tone and intonation with reference to Tenyidie, TPA and its application

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INTRODUCTION TO GEOGRAPHY: UNIT I
The nature of Geography: Objective and relevance; Place of Geography in the Classification of Sciences; Geography and other discipline. Physical geography: (Geomorphology, Climatology & Oceanography)

GEOMORPHOLOGY (A): UNIT II
(i). The nature and scope of Geography; inter-relation of Geography with other branches of earth sciences, the place of Geomorphology in physical geography.
(ii). Seismological evidence for the study of the interior of the earth, Isostasy and an outline of plate tectonics.

GEOMORPHOLOGY (B): UNIT III
(i). Earth movements &orogenic and Eperogenic, Wegener’s theory of continental drift.
(ii). TheGeomorphic cycle, views of W. M. DAVIS and PENCK

CLIMATOLOGY: UNIT IV
(i). Definition and significance of climatology, Elements of weather and climatic; their causes; composition and structure of the atmosphere.
(ii). Atmospheric pressure and winds; Planetary, periodic and local winds, atmospheric disturbances-Cyclones, thunderstorms and tornadoes.
(iii). World classification of climates; Koppen and Thornwaits.

OCEANOGRAPHY: UNIT V
(i). Relevance of Oceanography in earth and atmospheric sciences.
(ii). Surface configuration of the ocean floor, continental shelf, continental slope, Abyssal plain.
(iii). Marine deposits and coral reefs, circulation of oceanic waters; waves, tides and currents, Relief and currents of the Atlantic, Pacific and Indian oceans.
(iv). Distribution of temperature and salinity of oceans and seas, oceans as storehouse of resources for the future.

HUMAN GEOGRAPHY: UNIT VI
(i). Nature and scope of Human Geography; Branches of Human geography and approaches to the study of human geography.
(ii). Concepts of Man environment relationship, Human adoption to the environment with special reference to cold region (Eskimo). Hot region (Bushman & Bedouin) mountains region (Nomads).
(iii). World distribution of population pattern-physical, economic and social factor influencing spatial distribution of world population and population migration.
(iv). Human settlement pattern-rural-urban settlement, socio-economic and geographical factors influencing world’s human settlement patterns.

ECONOMIC GEOGRAPHY: UNIT VII
(i). Definition-Nature- Scope-recent trends and importance of Economic geography.
(ii). Sectors of economy-Primary (Agriculture, fishing etc) Secondary (Industry, Education and Tertiary (transport, trade & commerce etc), the impacts of economic activities on environment.
(iii). Classification of Natural resources- Renewable and Non-renewable biotic and abiotic.
(iv). Trade- National and International: World Trade Organization (WTO), Globalization and their effect on developing countries of the world.

GEOGRAPHY OF INDIA: UNIT VIII
(i). Study of India based on Physiography, Climate and Natural vegetation.
(ii). India in the context of Southeast and South Asia; a land of diversities; unity within diversities.
(iii). Agriculture; Types, Problems and prospects, Green revolution and agricultural development planning.
(iv). Mineral and Power Resources.
(v). Major industries-Factors for location of industries and distribution.

GEOGRAPHY OF NORTH-EAST INDIA: UNIT IX
(i). Physiography, Geological Structure, Climate, Soil types and Natural vegetation.
(ii). Agriculture-Types and Problems
(iii). Resources; Forest, Mineral, Power and Human Resources.
(iv). Industries – Manufacturing and Cottage industries, their problems and prospects, transport and communication.

GEOGRAPHY OF NAGALAND: UNIT X
(i). Physical features, climate-type, different seasons and their characteristics.
(iii). Industries – Small and Cottage, Tourism their prospects and problems.
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
ECONOMICS
Full Marks: 200
Descriptive Type: 100
Objective: 100

Unit-I: Statistics
Measure of Central tendency-mean, median and mode.
Measure of Dispersion-mean deviation, quartile deviation, standard deviation. Correlation-meaning, scatter diagram, measure of correlation.
Index number and Time series analysis-meaning, types and uses.

Unit-II: Indian Economy

Unit-III: Micro Economics

Unit-IV: Macro Economics

Unit-V: Money and Banking
Commercial Banks-functions, credit creation, objectives and limitations. Central Bank-Role and Function of Reserve Bank of India. Quantity Theory of Money-cash transaction approach, cash balance approach, Keynesian approach, inventory approach and portfolio approach of the demand for money.

Unit-VI: International Economics

Unit-VII: Development and Planning

Unit-VIII: Public Finance

Unit-IX: Industrial Economics

Unit-X: Agricultural Economics
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
BOTANY
Full Marks: 200
Descriptive Type: 100
Objective: 100

Unit 1: Bacteria, viruses, microbiology and plant pathology


Unit 2: Cryptogams

Fungi: Mode of nutrition. Economic importance of fungi and lichens.
Bryophytes: Origins; Range of thallus structure; Evolution of Sporophyte; Alternation of generation.
Pteridophytes: General account; State; Heterospory; and seed habit.

Unit 3: Gymnosperms and Palaeobotany

Evolutionary trends; Reproduction in pinus; Dominant floras through the ages: Role of palaeobotany in oil and coal exploration.

Unit 4: Angiosperms

Microsporogenesis; Megasporogenesis; Development of embryo an dendosperm; Anamalous secondary growth; Taxonomic studies of Asteraceae, Mallvaceae, Poaceae.

Unit 5: Cell Biology

Structure and functions of – cell wall, Endoplasmic reticulum, Golgi apparatus, Mitochondria, Ribosomes, Plastids, Mitosis, Meiosis.

Unit 6: Plant Physiology

Photosynthesis; Respiration; Absorption and Translocation of water; Macro and micro elements; Growth regulators.

Unit 7: Biochemistry

Structure and functions of enzymes; carbohydrates, lipids and proteins; protein synthesis.

Unit 8: Plant breeding, Genetics and Bioinformatics

Techniques of plant breeding; Tissue culture; Genetic code, chromosomal aberrations; DNA; RNA; - Structure and function; Biosynthesis of amino acids; DNA finger printing; PCR; PDB; GDB.

Unit 9: Ecology and Environment

Concept of ecology; Adaptations; Population-growth and interactions; Plant Community; Succession: Ecosystem: Concept and levels of prophics: plant conservation; afforestation.

Unit 10: Economic and Applied Botany

Study of cultivated plants-origin, as sources of food, fibre, spices, beaverages, timber; medicinal plants; ornamental plants; pesticides and insecticides plants; cold storage; Green house. Cash crops and other cultivated plants of Nagaland

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A. Inorganic Chemistry

Unit-1
Atomic structure:-
Idea of Broglic matter waves, Heisenberg Uncertainty principle, atomic orbitals, Schrodinger wave equation, significance of $\Psi$ and $\Psi^2$, Quantum numbers, radial and angular wave functions and probability distribution curves, shapes of s, p, d orbitals. Aufbau and Pauli exclusion principles, Hund’s multiplicity rule. Electronic configurations of the elements, effective nuclear charge.

Nucleus and Radioactivity:-
Fundamental particles(electron, proton, neutron, positron, neutrino and mesons); nuclear binding energy, mass defect and packing fraction; half-life period; group displacement law; balancing of nuclear reactions; artificial radioactivity; elementary ideas of fission, fusion and atomic energy; first order decay kinetics rate equation; principles of nuclear reactors.

Ionic Solids:-
Ionic structure, radius ratio effect and coordination number, limitation of radius ratio rule, lattice defects, semiconductors, Born-Haber cycle, Fajan’s rule, Metallic bonding, Hydrogen bonding and Van der-waals forces.

Unit-2
Periodic properties:-
Atomic and ionic radii, ionization energy, electron affinity and electro negativity, trends in periodic table and applications in predicting and explaining the chemical behaviour.

Chemical Bonding:-

Hard and Soft Acids and Bases(HSAB):-
Classification of acids and bases as hard and soft. Pearson’s HSAB concept, acid-base strength and hardness and softness. Symbiosis.

Coordination Compounds:-
Werner's coordination theory, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes.

Unit-3
s and p-Block elements:-
Group discussion of the s-block elements( atomic and ionic radii, ionization potential, electron affinity, electronegativity, oxidation states, oxides, hydrides and halides). Comparative studies of groups 13-17 element, study of hydrides, oxides and halides of p-block elements. Chemical properties of the Nobel Gases, Chemistry of Xenon, structure and bonding in Xenon compounds.

Chemistry of d-block elements(First Transition Series):-
Properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and geometry.

Chemistry of Lanthanide and Actinide Elements:-
Electronic structure, oxidation states and ionic radii and lanthanide contraction. General features and chemistry of Actinides, comparison between actinides and lanthanides.

B. Organic Chemistry

Unit-1
Bonding in organic molecules:- Hybridization of orbitals, shapes of simple molecules-CH₄, H₂O, C₂H₄, C₂H₂, NH₃;implications of hybridization on the concept of bond length, bond energy.

Electron displacement in a covalent bond: - Conjugation, inductive effect, resonance, hyperconjugtion (propene and toluene), hemolytic and heterolytic bond cleavage.

Stereochemistry: - Isomerism-Structural, geometrical, optical and conformation.
Coal, petroleum and petrochemical:- Carbonization of coal, cracking, knocking, flash point, LPG, synthetic petrol.

Unit-2
Alkanes: - Physical and chemical properties(oxidation, cracking aromatization) Wurtz reaction, Kolbe reaction, Corey-House reaction.
Cycloalkanes: - General method of preparation of Cycloalkanes(upto cyclohexant) and their reactions with halogens, Baeyer strain theory and its limitation.
Alkenes & alkynes: - Mechanism of hydrogenation, rumination, hydroboration, Markonikoff’s rule, peroxide effect, Friedel crafts reaction, polymerization, comparative acidity of ethane, ethene and ethyne.

Contd…

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Aromatic hydrocarbons and aromaticity: - Structure of benzene, resonance, energy aromaticity, Hückel’s (4n +2) rule and its applications to simple molecules.

Unit-3

Ethers: - Method of formation, chemical reactivity-cleavage and autooxidation.

Aldehydes and ketones: - Methods of preparation of Aldehydes and ketones (both aliphatic and aromatic) chemical reactivity of carbonyl groups, Canizarro’s reaction.

Carboxylic acid: - Methods of preparation, chemical reactivity, acidity of carboxylic acids, effect of substituents on acid strength. Hell-Volhard-Zelinsky reaction.

Unit-4
Alkyl & Aryl halides: - Method of formation, chemical reactions, SN1 and SN2 reaction of alkyl halides. DDT and BHC.

Amines: - Methods of preparation of amines, chemical reactivity-Alkylation, acylation, action of nitrous acid, carbylamine reaction, condensation with carbonyl groups.

Carbohydrates: - Classification, reaction of glucose and fructose with HCN, Tollens, reagent, Fehlings solution.

Amino acids: - Classification, synthesis of L— amino acids, Gabriel synthesis of glycine, alanine, isoelectric points and Zwitterions.

Dyes: - Chromophore, auxochrome, synthesis of methyl orange, Bismark brown malachite green.

C. PHYSICAL CHEMISTRY
Unit-1
Quantum Mechanics: - Black-body radiation, Planck’s radiation law, photoelectric effect, heat capacity of solids, Bohr’s model of hydrogen atom (no derivation) and its defects, Compton effect, De Broglie hypothesis, the Heisenberg’s uncertainty principles, Schrödinger wave equation and its importance, physical interpretation of the wave function.

Thermodynamics: - Thermodynamics terms, First law of Thermodynamics, internal energy and enthalpy. Heat capacity, Joule-Thompson coefficient and inversion temperature.

Second law of thermodynamics, Carnot cycle and efficiency, thermodynamic scale of temperature, entropy changes for an ideal gas and for a spontaneous process.

Third law thermodynamics.

Unit-2: -
Thermochemistry: - Standard state, standard enthalpy of formation- Hess’s law of heat summation and its applications, heat of reaction at constant pressure and at constant volume, enthalpy of neutralization, Bond dissociation energy, temperature dependence of enthalpy, Kirchhoff’s equation.

Electro Chemistry: - Specific conductance and equivalent conductance, variation of equivalent and specific conductance with dilution. Kohlrausch law, Arrhenius theory, its limitation, weak and strong electrolyte, Oswald’s dilution law, and limitation Debye-Hückel-Onsanger’s equation for strong electrolytes (elementary treatment only). Transport number-determination by Hittorf method and moving boundary method. Nernst equation.

Photochemistry: - Laws of photochemistry: Gtothus-Drapper law, Stark-Einstein law, Jablonski diagram, Quantum yield, photosensitized reaction.

Unit-3
Solution and Colligative properties: - Ideal and non-ideal solutions, Colligative properties, Raoult’s law, relative lowering vapour pressure, Osmosis, law of osmotic pressure and its measurement, elevation of boiling point and depression of freezing point, Abnormal molar mass.

Chemical Kinetics: - Rate of reaction, orders of reaction, half life period. Determination of first order of reaction, Radioactive decay as a first order phenomenon.

Phase Equilibria: - Statement and meaning of the terms – Phase, component and degree of freedom, derivation of Gibbs phase rule, phase Equilibria of one component system – water, CO₂ and S systems.

Chemical Equilibrium: - Equilibrium constant and free energy, Thermodynamic derivation of law mass action, Le Chatelier’s principle. Reaction isotherm and reaction isochore- Clapeyron equation, Clausius-Clapeyron equation, applications.
1. Mechanics & Properties of Matter: -

Laws of motion, motion in uniform field, velocity and acceleration indifferent coordinate systems, uniformity rotating frame, centripetal acceleration.
Kepler’s laws, gravitational law, gravitational field and potential, potential due to spherical body.
Centre of mass, equations of motion, conservation of linear and angular momentum, conservation of energy.
Rotational motion, moment of inertia with examples, Euler’s equation.
Elasticity, Hooke’s law, Elastic constant and their relationships, Bernoulli’s theorem, stokes law, surface tension and surface energy.

2. Heat & Thermodynamics: -

Kinetic theory of gases, pressure exerted by ideal gas, kinetic energy, interpretation of absolute temperature, root mean square (RMS) velocity.
Van Der Waals gas, equation of state, Joule expansion of ideal & Van der Waals gas, Joule coefficient, Clausius clapeyron heat equation.
Thermal conductivity, thermal diffusivity, Entropy. First law of thermodynamics, isothermal & adiabatic changes, second law of thermodynamics, reversible & irreversible changes, Carnot cycle& Carnot heat engine.
Black body radiation, Stefan- Boltzmann law, Wein’s displacement law, Rayleigh-Jean’s law and Planck’s law.

3. Optics-geometrical, physical & laser:

Fermat’s principle, cardinal points, eyepieces, spherical & chromatic aberrations, achromatic combination of lenses.
Interference of light, principle of superposition, Fresnel’s biprism, Newton’s rings, Michelson’s interferometer, determination of wavelength of light.
Diffraction of light, Fresnel and Fraunhofer diffraction, diffraction at single slit and at straight edge, half period zone.
Polarization of light, Brewster’s law, Malus law, propagation of plane wave in uniaxial crystal, ordinary & extraordinary ray of light, half wave plate, quarter wave plate, Nicol prism.
Principle of LASER, He-Ne laser, population inversion.

4. Oscillations, Waves, Acoustics: -

Simple Harmonic Motion (SHM), differential equation of SHM and its solution for free vibrations, forced and damped vibrations, condition for maximum amplitude, sharpness of resonance.
Speed of transverse waves in uniform string, speed of longitudinal waves in a fluid, group, velocity, phase velocity, standing waves, beats.
Acoustic impedance of a medium, acoustics of halls, reverberation period, Live and Dead room, Sabine’s formula.

5. Electrostatics and Magnetostics:

Coulomb’s law, electric field and potential, torque on a dipole in a uniform electric field, Gauss’s theorem and its application, parallel plate capacitor with air and dielectric media, energy of a charged capacitor.
Force on a moving charge, Lorentz force equation and definition of magnetic field induction(B), force on a straight conductor carrying current placed in uniform magnetic field, torque on a current loop.
Biot-Savart law, magnetic field at the axis and at the centre of a circular loop, Ampere’s law and its application, Electromagnetic induction, Faraday’s laws of EM induction, Lenz law, self and mutual induction, Maxwell's displacement current, Maxwell’s equations.

Contd…
6. Quantum Mechanics:

Photoelectric effect, Einstein’s equation for photoelectric equation, Compton effect, Determination of Planck’s constant by Millikan’s experiment, wave particle duality, uncertainty principle, De Broglie hypothesis for matter waves, Experimental demonstration for particle wave, uncertainty relation for p and x, its extension to energy and time, position of electron in Bohr orbit.

Schrodinger’s time dependent and time independent equations, postulatory basis of quantum mechanics, operators, solution of Schrodinger equation for one dimensional rectangular harmonic oscillator.

7. Solid State Physics:

Lattices and bases, unit cell, Wigner-Seitz cell, allowed rotations, lattice types, lattice plans, reciprocal lattice, Miller indices, common crystal structures.

Lattice vibrations, concept of phonons, optical and acoustic modes, Brillouin zones, Finkstein and Debye model, lattice specific heat, and low temperature limit.

Free electron theory, valence band, conduction band, forbidden energy gap, Fermi energy, and classification of solids on the basis of band theory.

Super conductivity, type I and type II superconductors.

8. Nuclear and Molecular Physics:

General properties of atom, determination of electronic charge by Millikan’s experiment, e/m of electron by Thomson’s method, Aston’s mass spectrograph, and atom models.

Pauli’s exclusion principle, quantum numbers, spectra of hydrogen like atoms, double fine structure.

Continuous and characteristic x-ray spectra, Duane and Hunt’s law, Moseley’s law, x-ray absorption spectra.

Quantisation of vibrational and rotational energies, pure rotational spectra, vibration – rotation spectra of molecule, electronic spectra of molecules, transition rules for pure spectra.

Stoke’s and antistoke’s lines, complimentary character of Raman and infrared spectra.

9. Nuclear and Particle Physics:

Composition of nucleus, Rutherford’s alpha scattering experiment, properties of nucleus – charge, mass, size, magnetic moment, electric quadrupole moment, density, binding energy, variation of binding energy per nucleon with mass number (A).

Radioactivity - α, β and √ decay, Gamow’s explanation of -decay, Geiger –Nuttal law.

Nuclear reactions, Q-value of a nuclear reaction, threshold energy, cross section for a nuclear reaction, discovery of neutron, properties of neutron, secondary neutrons, nuclear fission, chain reaction, nuclear fusion.

Primary and secondary cosmic rays, cosmic ray showers, discovery of positron, muon, pion, lepton, baryon and mesons, concept of anti particles, quark hypothesis.

10. Electronics and Relatively:

P and N types of semiconductors, PN junction diode, depletion layer, PN junction diode as half and full wave rectifier, transistors, transistor as an amplifier, transistor characteristics in CB, CE and CC modes, Zener diode, RC coupled amplifier, Transistor coupled amplifier.

Reference system, inertial frames, Galilean transformations, Newtonian relativity, Michelson-Morley experiment, Lorentz transformation, time dilation, length contraction, variation of mass with velocity, particle with zero mass.
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
ANTHROPOLOGY
Full marks: 200
Objective Type: 100
Descriptive Type: 100

Unit: 1
1. Meaning and scope of Anthropology, history of Anthropology, branches of Anthropology.
   (a) Basic concept of Biological Anthropology: Human evolution, Human variation, Human Genetics, Human growth and development
   (b) Basic concept of Social-cultural Anthropology: Culture, Society, Community, Group, Institutions etc.
   (c) Fundamentals of Archaeological Anthropology: Origin of tool making, tool typology & technology, Cultural evolution: broad outlines of prehistoric culture, chronology: definition, basic concept, methods of dating.
2. Anthropology relationship with other Life sciences, Earth sciences, Medical sciences, Social sciences, Humanities, Environmental sciences.

Unit: 2
(1) Theories of organic evolution: Lamarckism, Darwinism, Synthetic theory of Evolution, fossil evidences of organic evolution.
(2) Position of Man in the Animal kingdom, comparative anatomy of Man and apes. Fossils Evidences of human evolution.

Unit: 3
(1) Concept of race, Genetic basis of race, UNESCO statement on race-Ethnic Group. Major races of the world, racial classification of human population.
(2) Basic concept of Human Genetics: Aims and scope of human genetics in Anthropology. Mendelian Principle, basic concept of DNA and RNA

Unit: 4
(1) Concept of Culture and society, aspects of Culture, Enculturation, Culture and Personality, Status and Role.
(2) Social Institution. Types of family and marriage, Nuclear, Extended, Joint, Monogamy and Polygamy, Endogamy and Exogamy, Patriarchy and Matriarchy, Definition and nature of Kinship: terminology, kin-groups — lineage, clan, phratry and Moiety.

Unit: 5
(1) Cultural and social change: Diffusion, Innovation, Acculturation, Cultural Lag, Planned change.
(2) Indian social system: Varnaashram, Purushasthas, Caste, Tribe, Definition, origin, characteristics difference between caste and tribe. Constitutional provisions for SC and ST, difference between SC and ST.

Unit: 6
Tribal population in India: Biogenic variabilities, linguistics and social-economic characteristics, geographical distribution of tribal population in India.

Unit: 7
Process of social change: Endogenous process - Sanskritization, Parochiatization, Universalization, Great and Little tradition.
Exogenous process - Westernization, Industrialization and Urbanization, Globalization.

Unit: 8
(1) Science and Anthropology: Science and controlled experiments, concepts, theory and hypotheses: Types of hypothesis, testing hypothesis.
(2) Field work tradition in Anthropology: preparation, learning, language and rapport establishment.

Unit: 9
(1) Major tools of research: Observation, interview, key informants, case studies, schedules and questionnaires, genealogy.
(2) Use of Library, Review of literature and other records and reports.

Unit: 10
(1) Probability, sampling and scaling techniques.
(2) Statistical method: Man, median, mode, standard deviation, standard error and tests of significance.
(3) Data collection, analysis and report writing.
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES

ZOOLOGY

Full Marks: 200
Descriptive:100
Objective:100

Unit 1. Non-Chordate Zoology:
- Principles of Classification, classification of Non-chordates up to classes with salient features, Study of Amoeba with reference to nutrition, locomotion and reproduction; Trypanosome with reference to parasitic mode of life;
- Leucocolenia with reference to canal system; structure and life cycle of earthworm, Coral reef formation; Taenia with reference to life cycle and parasitic adaptation. Ascaris with parasitic mode of life; life cycle of anopheles; life cycle of Pila; larval forms and affinities of Echinoderm.

Unit 2 Chordate Zoology:
- General characteristics and classification of chordates and hemichordates up to sub classes with examples and salient features; Nutrition types-extra cellular and inn-cellular digestion, respiration-types and mechanism of respiration, Circulation and excretion-composition and function of blood, ABO blood group, structure and functions of Haemoglobin, structure and function of kidney and nitrogenous waste s movement; skeletal system(vertebrae, girdles and limbs) in amphibians, reptiles, ayes and mammals; integument and its derivatives: scales, feathers, skin, hairs, hoofs; Aortic arches; Lymphatic system, Portal system.

Unit 3 Cell biology and Immunology:
- Physical properties and chemical composition of Prokaryotic and Eukaryotic cell, structure and functions of mitochondria, chloroplast, endoplasmic reticulum, ribosomes, golgi apparatus, lysosomes and centrosome; concept of cell cycle, process and phases of mitosis and meiosis; Special types of chromosomes (Polythene and Lampbrush) and their significance; Immunology types: innate and acquired immunity, antigen, Anigen presenting cells(APC), antibody structure and functions.

Unit 4 Genetics:
- Concept of genotype, phenotype, recessiveness, dominance, Mendel’s experiment, method and laws, incomplete dominance, co-dominance, pleiotropism, allelism; linkage and crossing over, significance of crossing over, sex determination; General idea of Genetic disorders in man-Down’s syndrome, lclinfelter’s syndrome, Turner’s syndrome, Phenylketoneuria; gene mutation, mutation detected in Drosophila.

Unit 5 Evolution & Applied Zoology:
- Origin of life, Paleontology, Geological time Scale, theories of evolution-Lamarckism, Neo-Lamarckism, Darwinism, Neo-Darwinistn, Synthetic theory of organic evolution, Natural selection, isolating mechanisms and speciation, adaptations-convergence and divergence; Applied zoology-basic concept and operational aspect of Sericulture, Apiculture, Lac-culture, Pisciculture and composite fish culture, elements of insect pest and pest control.

Unit 6 Biochemistry:
- Classification and biological significance of carbohydrates, fats and proteins; glycolysis, giuconeogenesis, TCA cycle, I-IMP Pathway; Hydrolysis of proteins, transamination and deamination of proteins, ornithine and uric acid formation; types of enzymes and mechanism of enzyme action; classification and importance of lipids, 13-oxidation of fatty acid, vitamins, amino acids.

Unit 7 Toxicology, Animal Behaviour & Biotechnique :
- Introduction to toxicology, classification of toxicants, xenobiotics, toxic agents and their mode of action, pesticides, metals, carcinogens, radiation, genobiotics, food additives; Animal communications, dance language of honey bee, definition and forms of learning behaviour, Social organization (bees & ants), territoriality, social hierarchy, altruism; Principles of Autoradiography, electrophoresis and chromatography, colorimetry, computer and computer aided techniques fur data presentation.

Unit 8 Developmental biology:
- Introduction to developmental biology; structure of gametes, Gametogenesis, fertilization and parthenogenesis, types of eggs, types and patterns of cleavage, biastulation and gastrulation in chick, fate map construction in frog and chick, metamorphosis in frog, organogenesis with special reference to brain, eye and heart.

Unit 9 Ecology and Environmental biology:
- Introduction to ecology and its sub-divisions (autcology & synecology), structure and functions of ecosystem, lotic and lentic ecosystem, energy flow in ecosystem, ecological niche, food chain, food web, ecological succession; Community structure, biotic communities; Population and its impact on eco-degradation; Environmental pollution, green house effect ozone layer depletion and its impact, acid rain, gaseous and mineral cycles-Nitrogen cycle. Sulphur cycle, Carbon cycle; Management and importance of wild life.

Unit 10 Endocrinology:
- General characters of Hormones, Hypothalamic hormones and pituitary integration; Structure and functions of mammalian Pituitary, Thyroid, Parathyroid, Endocrine Pancreas, Adrenal, Testis, Ovary and Thymus gland; Insect endocrine glands. Physiology of reproduction, Pheromones and reproduction, Hormones in reproduction Pregnancy, Parturition and lactation.
UNIT – 1
General Geology

Origin of the earth; Age of the earth; Internal constitution of the earth; Continental drift and Plate tectonics; Earthquake; Volcanoes: Rock weathering and erosion; Geological action of wind, rivers and glaciers; Study of Geology – its importance and interest.

UNIT – 2
Crystallography and Mineralogy

External characteristics of crystal; Crystallographic notations; Crystal systems (Normal class). Physical and optical properties of minerals; Silicate structures; Systematic classification, physical, chemical and optical properties of the following groups of minerals-
(a) Amphibole - tremolite and hornblende
(b) Feldspar - orthoclase, microline and plagioclase feldspars
(c) Pyroxene - hypersthene and augite.

UNIT – 3
Palaeontology

Process of fossilization and mode of preservation of fossil; Taxonomy and systematic nomenclature; Mechanism of evolution; Origin of life and its classification; Application of palaeontology in palaeoecology, evolution, stratigraphy and palaeogeographic reconstruction; Morphological, environment and geological distribution of Mollusca, Brachiopoda, Arthropoda and Corals.

UNIT – 4
Stratigraphy

Principals of Stratigraphy and correlation; Geological time scale; Lithostratigraphic, chronostratigraphic and biotratigraphic units; Methods of collecting stratigraphic data and identification of stratigraphic contacts and unconformities: Facies concept in stratigraphy; Palaeobiographic provinces. Indian stratigraphic column; Connotations of the terms Dravidian and Purana, Precambrian and Phanerozoic succession of India: Dharwar, Cuddapah, Vindhyan, Gondwana, Siwalik and Tertiary of the North-East.

UNIT – 5
Structural Geology and Tectonics

Definition and types of fold, fault, joint, cleavage, foliation, lineation and unconformities; Determination of top and bottom of layered rocks; Tectonic features of India with special reference to the North-East: Plate tectonics and recent advances; Tectonics of Pre-Cambrian organic belts of India; Structure and origin of the Alpine-Himalayan belt.

UNIT – 6
Igneous, Metamorphic and Sedimentary Petrology

Magma – definition, composition, origin and crystallization of uni-and bi-component magmas; Bowen’s reaction series; Magmatic differentiation and assimilation; Phase Rule; Basic principles of equilibrium thermodynamics; Forms and mode of occurrence of igneous rocks; Textures and structures of igneous rocks and their classification; Phase equilibria in two and three component system; Albite - Anorthite, Forsterite - Silica and Diopside – Anorthite – Albite.

Metamorphism – types and agents; Textures and structures of metamorphic rocks; Equilibrium reactions in metamorphic processes; Progressive and regressive metamorphic; Interpretation of paragenetic diagrams – ACF, AKF and AFM; Metamorphic facies with reference to mineral assemblages and P – T conditions.

Contd…
Origin of sediments; Sedimentary processes – weathering, transportation, deposition and diagenesis of terrigenous and chemical sediments; Genetic classification of sedimentary rocks; Texture and structure of sedimentary rocks; Sedimentary environments (marine, non-marine and mixed environments); Sedimentary facies: Classification of sandstones and limestones.

UNIT – 7
Economic Geology & Mineral Exploration

Definition of ore, gangue and tenor; Ore forming minerals – metallic and non-metallic; Processes of formation of ores – magmatic concentration, hydrothermal solution, skarns, sedimentation, metamorphism, evaporation, oxidation and supergene enrichment, metallogenic provinces and epochs.

Occurrence, origin, uses and distribution of the following economic mineral deposits in India – iron, gold, copper, manganese, chromium, aluminium, sillimanite and kyanite.

Geochemical methods of prospecting: Geophysical methods of prospecting; Surface and sub-surface methods of exploration of minerals; mining hazards.

UNIT – 8
Engineering Geology & Hydrogeology

Role of geology in engineering and sub-surface; Engineering properties of rocks; Geological considerations for evaluation of dams and reservoir sites; Influence of geological conditions on foundation and design of building.

Groundwater – importance, origin, occurrence, reservoirs and movement; Hydrologic properties of rocks; Salt water intrusion in coastal aquifers and remedial measures; Geological structures favoring groundwater occurrence; Methods of identification of groundwater reservoir properties.

UNIT -9
Remote Sensing

Principles of remote sensing; Types of sensors; Aerial photographs and satellite imageries; Interpretation of lithology (different rock types); Topographic and tectonic features of glacial, fluvial, coastal and Aeolian; Application of remote sensing technique in mapping, soil cover and surface water reserves; Principles and application of Geographic Information System (GIS), components, data presentation, vector and raster methods.

UNIT – 10
Environmental Geology

Concept and definition of Environmental Geology; Soil degradation and mitigation; Concepts of natural ecosystems on the earth and their mutual interrelations and interaction (atmosphere, hydrosphere, lithosphere and biosphere); Environmental problems – global warming caused by CO2 increase in present atmosphere; Pollution due to mining industries, energy resources, urbanization; Environmental management and controls; Water-logging problems due to the indiscrete construction of canals, reservoirs and dams.
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
COMMERCe
Full Marks: 200
Objective Type: 100
Descriptive Type: 100

Unit 1:
Generally Accepted Accounting Principles:
Accounting Concepts and Conventions; Accounting Standards.

Unit 2:
Financial Statement and Analysis:
Technique with special reference to Accounting Ratios; Cash Flow statement (AS-3)

Unit 3:
Issue, forfeiture and re-issue of forfeited shares:
Issue of Debenture; Redemption of preference shares. Preparation of Profit and Loss Accounts of General Insurance Companies and Life Insurance Companies (under schedule method).

Unit 4:
Sale of Goods Act, 1930: Formation of contracts sale:
unpaid seller and his rights: Definition of negotiable instruments – Dishonour and discharge of negotiable instrument; The consumer Protection Act 1986 – Salient Features, grievances redressed machinery.

Unit 5:
Entrepreneurial Development Programme:
their role, relevance and achievements, Role of Government in organizing EDPs, critical evaluation. Role of Entrepreneur in economic growth, social stability and balanced regional development of industries, export promotion and import substitution.

Unit 6:
Audit Process: Audit Programme and Audit Note Book:
Vouching; Verification of Assets; Special Audit – Audit of Educational Institutions, Hostels and Charitable Organizations. Management Audit.

Unit 7:
Capital Budgeting: Nature of investment, decisions, investment evaluation criteria:
Management of working capital – Nature and significance of working capital, operating cycle and factors determining the working capital requirement.

Unit 8:
Indian Business Environment:
Concept, components and importance; Role of Government – Monetary and fiscal policy, Industrial policy, EXIM Policy, privatization and regulation of foreign investment.

Unit 9:
Forms of business units:
Objectives and distinctive features of different forms of business organization – sole proprietorship, partnership, company, co-operatives and public enterprises.

Unit 10:
Nature of Management:
Meaning evolution and approaches, levels, principles of management.
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES

COMPUTER SCIENCE
Full Marks:200
Descriptive Type: 100
Objective: 100

Unit-I
Introduction to programming in C++
C++ character set, C++ tokens (identifier, keyboards, constants, operators). Structure of C++ programme (include files, declaration of an object, main function); header files, iostream.h, omanip, cout, cin. Use of I/O operators (<< and >>, use of setw() and endl, cascading of I/O operators, error message; use of editor, basic commands of editor, compilation, linking and executive.

Data Types, variables and constant:
Concept of data types; built-in data types; void, char, int, float and double; constant; integer constants, character constant(backslash character constant; \n, \a, \r, \t), floating point constants, string constants; variables of built-in data types, access modifier; const; type modifiers, signed, unsigned, short long;

Operators and expression:
Operators: arithmetic operators(+,-,*,/,%), unary operator(-), increment and decrement operators( --,++), relational operators(>,>=,<,<=,==,!=), logical operators (&&,║,!) conditional operator ?: (Condition? If statements: else statement), precedence of operators; expressions: automatic type of conversion in expressions, C++ shorthand’s (+=, -=, *=, /=, %=);
assignment statement; variable initializations; type compatibility, type casting.

Flow control:
Conditional statements: if-else statement, if-else-if ladder, nested if, switch case, nested switch, default statement, break statement: simple control statement, comma operator, exit() function; loops while statement, for statement, nested control statement.

Unit-II
Structured data type: array
Use of arrays as and two dimensional arrays- declaration, initialization, reading, display, manipulation such as linear search, finding maximum/minimum value, matrix arithmetic;
String: string manipulations such as reversing each word of a string, counting vowels, consonants, special characters from string.

Built-in functions
Header files: string.h, ctype.h, math.h, stdlib.h, stdio.h
Standard functions: character and string related functions: isalnum(),isalpha(), isdigit(), insuper(), tolower(), toupper(), strcpy(), strcat(), strlen(), stremp(), strempi(), atpi(), atol(), Itoa().
Mathematical functions:
abs(), sqrt(), exp(), log10(), frexp(), sin(), cos()
Input Output functions: getc(), putc(), gets() and puts() functions.

Functions:
Defining a functions, function prototype, invoking a function, passing arguments to function ,specifying argument data types, default arguments, constant arguments, call by value, call by reference; returning values from a function, calling function with arrays; scope rules of function and variables.

Unit – III
Structures:
Defining a structure, creating a structure Variable , referencing structure Elements, array of structure, passing structure to functions, functions returning structure, user-defined data types: use of typedef enumerated data types: definition, declaration, changing default ordinal values, symbolic constant, nested structure.

Unit – IV
Classes and objects:
Class declaration: data members, member functions, private and public members, default labels, data hiding and encapsulation, arrays within a class, class function definition: member function definition inside the class declaration and outside the class declaration, scope resolution operator(::), private and public member function, nesting of member functions, creating objects, accessing class data members, accessing member functions, arrays of objects, objects as function arguments: pass by value and reference.

Unit-V
Digital Logic, Circuits, Digital Components and number system
Combinational Circuits (Half-Adder, Full-Adder, Binary Parallel Adder, BCD Adder, Universal Property of NAND and NOR gates, Combinational Circuits Using NAND and NOR gates); Flip flops (SR, D JK, T, Master Slave, Edge-Triggered, Excitation Tables);Integrated Circuits (Digital Logic Families and Integrated Circuits); Decoders (NAND Gate Decoder, Decoder Expansion, Encoders); Multiplexes (4 to1 Line Multiplexer); Demultiplexers; Registers (Register with Parallel Load); Shift Registers (Bidirectional Shift Registers with Parallel Load, Serial Register); Binary Counters (Binary Counter with Parallel Load, Ripple Counter).
Number system: binary, octal, decimal, hexadecimal number systems, number system conversions, Binary representation of integers: sign and magnitude representation one’s complement representation and two’s complement representation; binary representation of real numbers.

Contd…
Unit VI:
Register Transfers, Microoperations, Basic Computer Organization & Design
Register Transfer; Control Functions; Bus and Memory Transfers (Three-State Bus Buffers, Memory Transfer); Arithmetic Microoperations (Binary Adder-Subtractor, Arithmetic Circuit); Logic Microoperations (List of Logic Microoperations, Hardware Implementation, Some Applications (viz. Selective-Set, Selective-Complement, Selective-Clear, Mask, Insert, Clear Operations); Shift Microoperations 9Hardware Implementation); Arithmetic Logic Shift Unit (Function Table for Arithmetic Logic Shift Unit)

Instruction Codes (Stored Program Organization, Indirect Address); Computer Register; Common Bus System; Computer Instructions (Instruction Set Complements); Timing and Control (Clock Pulses, Hardwired Control, Microprogrammed Control, Control Unit, Timing Signals); Instruction Cycle (Fetch and Decode, Determine the Type of Instruction, Register-Reference Instructions); Memory-Reference Instructions (AND to AC, ADD to AC, LDA; Load to AC, STA: Store AC, BUN: Branch Unconditionally, BSA: Branch and Save Return Address, ISZ: Increment and Skip If Zero, Control Flowchart); Input-Output and Interrupt(Input-Output Configuration, Input-Output Instructions, Program Interrupt, Interrupt Cycle); Computer Description (Flowchart for Basic Computer); Design of Basic Computer (Control of Logic Gates, Control of Registers and Memory, Control of Single Flip-Flops, Control of Common Bus); Design of Accumulator Logic (Control of AC Register and Logic Circuit)

Unit VII
Introduction to database system concepts and architecture
Introduction to database, characteristics of the database approach, advantages of using a DBMS, implications of the database approach.
Data models, schemas. Instances, DBMS architecture, Data Independence, Database languages and interfaces, database system environment, classification management system.

Data modeling using the entity-relational model
High level conceptual model for database design, entity types, entity sets, attributes and keys, relationships, relationship types, roles and structural constraints, weak entity types, ER diagrams, naming conventions and design issues.

Unit VIII
Relational model concepts, relational constraints and relational database schemas, update operations and dealing with constraint violations, basic relational algebra operations additional relation operations, examples of queries in relational algebra.
Data definition, constraints and schema changes in SQL2, basic queries in SQL, More complex SQL queries, insert, delete and update statements in SQL, views in SQL, specifying general constraint as assertion, addition features of SQL.

Unit IX
Overview, Environment and Programming
Overview: Visual Basic Application Types, Visual Basic, Application Components Projects, Forms, Controls, Code modules, Class modules, User controls, Property pages)
VB Environment: Menu Bar, Toolbar, Toolbox, Form, Project explorer, Property window, Immediate window, Form layout window. Creating a project, Forms. Naming a project, Saving a project.
Controls: Label control, TextBox control, Command Button, Frames, Option Buttons, Check Boxes, Picture control, Image Control, Shape control, Line control, Timer control, H scrollBar control, V scrollBar control, FileListBox control, DirListBox, DriveListBox control.
List and Menus: List Box control, Combo Box control. Menu System(Menu standards, menu editor, common menu properties).
Events: Code window, Breakdown of an event procedure, form events, label events, textblob events, command button events, frame events, option button events, checkbox events, picture control events, image control events, listbox events, combobox events, menu events.
Variables: Data types, Declaring variables, scope and lifetime of a variable, Examples of variables, Variant data types.
Arrays Types and Constants: Arrays(Fixed size, Dynamic, Preserving array contents), Setting array boundaries, Array() functions, is Array() functions, Bounds checking, Clearing an array. Multidimensional arrays, User-defined types, Constants (Local constants, Public Constants, Module-level, Built-in), Mathematical and Relational operators, Control Arrays.

Unit X
More on Programming and Error Handling
Conditional Logic and Looping: If...Then...Case, Do...While, While...Wend, Loop...While, Do...Until, Loop...Unit, For...Next, Nested constructs, Exit For/Exit Do, Exit Sub/Exit Functions.
Procedures and Functions: Procedures, Functions, Parameters and Arguments, Call by Value and Call by Reference, Optional Arguments. Named Arguments.
Built-in Functions: String Functions, Date Functions, Conversion Functions, Functions to test Data Types, Methods.
DialogBoxes: MsgBox, InputBox, Common Dialog Control.
Multiple Document Interface: What is MDI, Creating and MD Form, Child menus in MDI applications, Arrangement child forms, Tracking Child Windows, Unloading an MDI application.
Error Handling: Error handling techniques, On Error GoTo, Err object (Err. Number, Err. Description), On error Resume Next, Errors in Call Stack, Turning Error handling Off, Creating a Global error handler.

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SYLLABUS FOR COMBINED EDUCATIONAL SERVICES

MATHEMATICS

Full Marks: 200
Descriptive Type: 100
Objective: 100


5. Integral Calculus and differential equations: Anti differentiation, Techniques of integration. Areas as the limit of a sum, the mean value of theorem for integrals, Average values, area between two curves, volume, polar forms and Area, are length and surface area. Physical application like work, centroids. Application to business, economics and life sciences, Improper integrals. Differential Equations: Order and degree. Formation of differential equation. Solutions for variable separable, homogeneous, linear of first order. Exact differential equation. Solutions of equations of first order higher degree (solvable for p, x, y) singular solutions. Solutions of equations of the form \( f(D)y=g(x) \), Finding complimentary function and particular integral, \( \frac{d}{dx} \)


7. Vector Algebra and Vector Analysis: Coordinates and vectors in \( \mathbb{R}^3 \), the dot product, the cross product, application to geometry, physics. Introduction to vector functions, Differentiations and integration of Vector functions, properties of vector field. Divergence and Curl. Line integrals. The Fundamental Theorem and path independence. Problems an Green Theorem, Stokes theorem, Surface integrals, Divergence Theorem.

8. Analytical Geometry 2D and 3D. Lines, circles, conics in planes. Line, plane, sphere, cone and cylinder on space.


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Syllabus for Combined Educational Services

Library Science

Full Marks: 200
Descriptive: 100
Objective: 100

Unit: I: Laws of Library Science
Ranganathan’s Five laws of Library Science are a set of norms, precepts, and guides to good practices in librarianship. These Laws are also valid guides to practices in the wider area of documentation and information systems and services. After reading this unit, you will be able to:

- Explain your activity in library, documentation, and information work and services in tune with these guiding principles governed by the Five Laws;
- Make use of the Five Laws as a set of logical principles to initiate any new activity in library, documentation, information work, and services.

Unit: II: Circulation Work
Lending documents for home reading is a normal, regular, and on-going activity of most modern service libraries. When hundreds and thousands of documents are on circulation among readers, it is necessary to design a system to operate and control the movements of documents in a library. The work of circulation has, therefore, to be planned and managed with efficiency. This unit discusses all these aspects. After reading this unit, you will be able to:

- Identity the factors with reference to which circulation work can be planned;
- Design a circulation system suitable for a library;
- Describe policy guidelines with reference to all aspects of circulation work;
- Organize and manage the various functions of circulation work.

Unit: III: Fundamental Categories, Facet Analysis, and Facet Sequence
This unit explains the importance of terminology for a scientific subject like classification. It also familiarizes you with the fundamental concepts/terms associated with the discipline of classification.

Unit: IV: Kinds of Entries
You have learnt about a library catalogue, the purpose it serves, and the functions it performs. The preparation of various types of entries constitutes the basic work of cataloguing. This unit introduces you to the different types of entries and their relative functions. After reading this unit, you will be able to:

- Describe a catalogue entry;
- Explain the need for different kinds of entries;
- Distinguish their functional characteristics;
- Identify the composition of entries in a dictionary and a classified catalogue.

Unit: V: Indexing and Abstracting Periodicals
In this unit, we discuss indexing and abstracting periodicals as information access tools. After reading this unit, you will be able to:

- Define indexing and abstracting periodicals;
- Describe their scope and utility;
- Enumerate different types of indexing and abstracting periodicals with examples;
- Explain the importance and uses of indexing and abstracting periodicals.

Unit: VI: Current Awareness Periodicals
In this unit, we introduce you to two important information services offered by libraries and information centers: Current Awareness Services and Selective Dissemination of Information service. After reading this unit, you will be able to:

- Explain the need and purpose of current awareness services (CAS);
- Describe the different types of CAS explain the concept and objectives of Selective Dissemination of Information (SDI) service;
- List the components of SDI and describe them;
- Explain the functional aspects of SDI.

Unit: VII: Library and Information Networks
In this unit, let us try to understand the concept of not works especially library and information networks. What they are and how they function and their role in the provision of information service to the users has also in the resource sharing activities. After reading this unit, you will be able to:

- Understand the concept of computer networking in all its major forms;
- Explain the role of networking in the public domain;
- Know the meaning of library and bibliographic networking;
- The role of networking in resource sharing the information services;
- Explain some of the current developments in networking taking place in the developed countries of the world.

Unit: VIII: Human Resource Development
Human resource development concept and contours; Personal planning; participative management and total quality management.

Unit: IX: Approaches to Library Classification
Postulation and systems approaches; Fundamental categories, facet analysis and facet sequence; Phase relation and common isolates.

Unit: X: Dewey Decimal Classification (DDC); Universal Decimal Classification (UDC); Colon Classification (CC); Current trends in library classification.
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES

STATISTICS

Full Marks:200
Descriptive Type: 100
Objective: 100

Unit- 1: Descriptive Statistics
Brief resume of presentation of data: Measures of central tendency and dispersion: Moments, Skewness and Kurtosis:
Principles of least squares: Correlation. Regression and Spearman’s Rank correlation coefficient: Theory of attributes:
Multiple and Partial correlation(involving three variables only).

Unit- 2: Probability Theory
Random experiments, sample points, sample space, events etc: Definitions of probability and related problems:
Theorems of total compound and conditional probability: Baye’s theorem: Discrete and continuous random variables:
Probability mass function(pmfn), probability density function(pdf), marginal and conditional distribution functions:
Mathematical expectations – Addition and multiplication theorem of expectations, conditional expectation and variance.

Unit- 3: Probability Distributions
Probability generating, moment generating and cumulant generating functions: Markov’s and Chebysheff’s Inequality,
central limit theorem. Weak and Strong law of large numbers: Standard distributions – Bernoulli, Binomial, Poisson,
Geometric and Hyper-geometric distributions: Normal, Cauchy, Exponential, beta and Gamma distributions: Bivariate
normal distributions and its properties.

Unit- 4: Numerical Analysis
\( \Delta \), V and E operators – their interrelationships and problems related to them: Interpolation and extrapolation meanings
and assumptions: Newton’s forward, backward and divided difference formulae, Lagrange’s interpolation formula,
Inverse interpolation, Central difference formula due to Gauss. Bessel and Stirling’s; Trapezoidal, Simpson’s and
Weddle’s rules of numerical integration with illustration: Solutions of ordinary differential equations and solution of
algebraic equation by Newton-Raphson’s method.

Unit- 5: Sampling Distributions
Random sample, parameter and statistic; Sampling distribution of a statistic, standard errors of sample mean, sample
proportion and moments; Sampling distribution of sample mean and variance for normal population; Sampling
distributions of \( \chi^2 \) (chi-square). T and F statistic and their properties and applications; Test of significance based on
\( \chi^2 \), t and F statistics; Large sample test for proportions. Fisher’s Z-test for correlation coefficient.

Unit- 6: Statistical Inference
Estimate and estimators; Problems of point and interval estimation; Criterion of a good estimator- Unbiasedness,
consistency, efficiency and sufficiency with simple illustration; Problems of unbiased estimators related to standard
distributions; Concepts of statistical hypothesis. Null and Alternative hypothesis; Simple and composite hypothesis;
Type-I and Type-II errors; Critical region, one and two tailed tests, level of significance and power of a test; Most
powerful(MP) and Uniformly MP test with illustrations(binomial, Poisson, normal_). Confidence interval and confidence
limits; Maximum likelihood(ML) estimation and its properties.

Unit- 7: Sample Survey
Concepts of population, sample, census and sample survey-their advantages and disadvantages; Need for sampling,
Pilot survey, sources of sampling and non-sampling errors; Different types of sampling; Simple random sampling(WR
and WOR), stratified random sampling and Systematic sampling – their unbiased estimate of mean; Sampling for
proportion: Proportional, Neyman and Optimum allocations; Cluster sampling, Double sampling and Multiphase
sampling; Ratio and Regression method estimation under SRS, their biases and mean square error.

Unit- 8: Analysis of Variance(AoV) and Design of Experiment (DoE)
Analysis of variance technique and basic assumptions; Analysis of variance of one-way and two-way classifications;
Basic principles of Design of Experiments(DoE): CRD, RBD and LSD-their analysis and advantages and disadvantages;
Factorial Experiments- its advantages over single factor experiments; Confounding in Designs(2^n =2,2,2&5); Missing plot
technique in RBD and LSD.

Unit- 9: Index Number, Time Series, Statistical Quality Control (SQC) & Demography
Index number- its definition, construction and applications; Price and Quantity index numbers; Simple aggregate and
weighted average methods; Laspyre’s, Paache’s and Fisher’s index numbers; Time and Factor reversal tests; Cost of
living index number-construction and uses: Time series and its components; Additive and multiplicative models;
Determination of trend, growth curves and seasonal variation; Demography-meaning and scope; Sources of
demographic data; Different types of mortality and fertility rates; Gross and Net reproduction rates; Complete life table-its
main features, mortality, probability of dying and life expectancy of birth; Cocepts and importance of SQC; Assignable
and Chance causes of variations; Control charts for variables and attributes; Mean ( \( \bar{X} \)), Range(R), p and c-charts.

Unit- 10: Economic Statistics and Computer Application
Laws of demand and supply; Price elasticity of demand; Analysis of income distribution; Pareto law and distribution;
Engel’s curve, Lorenz curve; Estimation of elasticity from time series data. History and development of computer;
Computer system, different components and their functions; Number systems-decimal, binary and octal etc. Conversion
from one number system to another. Programming languages – Machine language, assembly language and high level
language; Algorithm and Flowcharts; Elements of BASIC programming language; Basic statements-REM, IN-PUT,
READ-DATA, PRINT, DO, GO etc. (Simple programme using these statements- Calculation of mean, variance,
construction of frequency distribution table, correlation coefficient).

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SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
HINDI

पूर्णक : 200 निवंदनपक प्रसन : 100 वस्तुनिष्ठ प्रसन : 100
खण्ड (क) पद्य (कविता) Poetry
1. साहित्य : मैथली सारण गुप्त 2. कृतक्षेत्र : समाधारिसंग हिन्दी
3. अंग्रेज़ी में : मंजिला गहना विषय 4. भारत माता : सूरत दरबार
5. संसद से सड़क तक : सुदामा शान्त शुभेच्छ 6. निर्गुण निमानुषण : हरिश्चंद्र राम वर्मन
7. कबीर-मानी : कबीर

खण्ड (ख) प्रसन Prose
इकाई (Unit) I – उपन्यास (Novel)
1. उपन्यास के व्यक्तियों और विकास : 2. गोदान : प्रेमचंद
3. गीत दर्शनी : भीमल शुक्ल 4. गुप्ता सच : प्रदर्शन
5. मैथली आंबल : वाणिज्य नव पत्ता 6. अंधी धन न अपना : अनंति दिसमंद

इकाई (Unit) II – दrame & one act play एवं एकाहको
1. पट्टा बच्चा स्कूल : महानायक (एकाहको) 2. अवधार : सफदर हासंग (एकाहको)
3. अंग्रेजी नामों : भारतेंद्र हरिचंद्र 4. जनवरी : मनु भंधरी
5. चमत्कार प्रसाद : अकादमिक संस्करण

इकाई (Unit) III – कहानी (Story)
1. पट्टा को धोंग भाग्य का टर्म : प्रेम कंद 2. बंदर और भैंडी /भलाराम का जीव : हरिचंद्र धरसई
3. विलास कालेक नाम पानी दे : मनु भंधरी 4. चिकन की धार : भोपाल सहसनी
5. जानांक का पट्टा : कृतक्षेत्र चंद 6. खिंतन : महाराजी सरना

इकाई (Unit) IV – निबंध (Essay)
1. किताब : हजारी प्रसाद वंदे 2. बजार दर्शन : मेनेक्र शुमार
3. उपसागी : आनंदार रामचंद्र शुक्ल

इकाई (Unit) V – हिंदी भाषा की उपलब्धित, विकास और हिंदी साहित्य का इतिहास
1. आत्मकाल : प्रमुख कवि और उनकी रचनाएँ 2. भविकाल : प्रमुख कवि और उनकी रचनाएँ
3. रीतिकाल : प्रमुख कवि और उनकी रचनाएँ 4. आधुनिक काल : भारतेंद्र युग, हिंदेश्वर युग, शुक्ल युग, झांसियादव, प्रांतीवाद

खण्ड (ग) भाषा विज्ञान और हिंदी भाषा
इकाई (Unit) I – हिंदी व्याकरण (Grammar)
1. भंडार, संज्ञा, सर्वनाम, विनं, वचन, त्यों-रूप, स्रोत-रूप, प्रणालीकृत क्रिया, काल आदि।
2. उपसागर, अर्थ, प्रत्यय, कारक, बिनोद शब्द
3. संधि और समास
4. मूलायांक और लोकबोधाकारण
5. शब्द, संस्करण, संस्कृति, बिनी एवं अन्य तथाकथा तथा उनका महत्त

इकाई (Unit) II – संरचना (Composition)
1. संस्करण (सात लेखन), पत्र लेखन, पत्रलिखन, अपारित लेखन, निबंध लेखन

इकाई (Unit) III – अनुवाद एवं कानूनियों हिंदी (Translation and official Hindi)
1. अनुवाद : हिंदी – अंग्रेजी – हिंदी एवं भाषण लेखन
2. कानूनियः हिंदी : विज्ञान, शिक्षायी पत्र आदि

इकाई (Unit) IV – सामाजिक ज्ञान (General knowledge)
1. स्मल भांडार (क्रियाएँ, प्रांतीव एवं राज वर्ग) सामाजिक संबंधित विषयों पर
2. रस्ता संबंधी (क्रियाएँ, प्रांतीव एवं राज वर्ग पर सामाजिक ज्ञान)
3. साहित्य संबंधी
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES EXAMINATION

MANAGEMENT
(Units 1-10)

Full Marks : 200
Descriptive Type : 100
Objective : 100

Unit 1  Organization Behaviour & Management Concepts.

Unit 2  Schools of Management thoughts: Organizational Behaviour
Significance of social, psychological factors for understanding organizational behavior/Relevance of theories of motivation, Contribution of Maslow, Herzberg, McGregor, McClelland and other leading authorities/ Research studies in leadership/ Management by Objectives/ Small group and intergroup behaviour/ Application of these concepts for understanding the managerial role, conflict and co-operation, work norms and dynamics of organizational behavior/Organizational change.

Organizational Design: Classical neoclassical and open systems, theories of organization/ Centralization, decentralization, delegation, authority and control/Organizational structure, Systems and processes, strategies, policies and objectives/ Decision making, communication and control/ Management information system and role of computer in management.

Unit 3  Economic Environment.
National Income, analysis and its in business forecasting/ Trends and structure in Indian Economy, Government programmes and policies/ Regulatory policies: monetary, fiscal and planning and the impact of such macro policies and enterprise decisions and plans/ demand analysis and forecasting cost analysis, pricing decisions under different market structure pricing of joint products and price discrimination.

Unit 4  Quantitative Methods.


Unit 5  Marketing Management.
Concept of marketing mix-market segmentation Product differentiation strategies-Consumer Motivation and 2Behavior, Segmentation, targeting and positioning, Brand, distribution; Public distribution system, price and promotion.

Decision-Planning and control of marketing programmes-Marketing research and Models-Sales organizational dynamics-Marketing Information system.

Export incentives and promotional strategies-Role of Government, trade association and Individual organization-problems and prospects export marketing.

Unit 6  Production and Materials Management.

Plant Design: Process planning plant size and scale of operations, location of plant, layout of physical facilities. Equipment replacement and maintenance.

Functions of Production Planning and control-Routing. Loading and scheduling for different types of production systems. Assembly line, Balancing, Machine Line Balancing.

Role and importance of materials management, materials handling, value analysis, Quality Control, Waste and Scrap disposal, Make or Buy decision Codification, Standardization and spare parts inventory. Inventory control-ABC. Analysis Economic order quantity, Recorder point. Safety stock. Two Bin systems.

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Unit 7  Financial Management.
General tools of Financial Analysis: Ratio and analysis, funds flow analysis, cost-volume profit analysis, cash budgeting, financial and operating leverage.

Investment Decision: Steps in capital expenditure management, criteria for investment appraisal, cost of capital and its application in public and private sectors, Risk and analysis in investment decisions, organizational evaluation of capital expenditure management with special reference to India.

Financing decisions: Estimating the firms of financial requirements, financial structure determinations, capital budgeting decision, capital markets, and institutional mechanism for funds, with special reference to India, security analysis, leasing and sub-contracting.

Working capital Management: Determining the size of working capital, managing the managerial attitude towards risk in working capital, management of cash, inventory and accounts receivables, effects of inflation on working capital management.

Income Determination and Distribution: Internal financing, determination of dividend policy, implication of inflationary tendencies in determining the dividend policy, valuation and dividend policy.


Unit 8  Human Resource Management.
Characteristic and significance of Human resources, Personal Policies-Man-Power and Planning Recruitment and Selection technique-Training and Development; Promotions and performance appraisal-job evaluation; Wage and Salary Administration; Employee Morals and motivation; Conflicts Management, management of change and development. Management of organizational climate and Industrial Relations

Unit 9  Strategic Management
Concept- Strategic planning and decision making; Strategy implementation; Financial strategies.

Unit 10  Globalization
Issues in globalization-mergers, acquisition, offshore and business operations.

****E****N****D****
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
PUBLIC ADMINISTRATION
Full Marks: 200
Descriptive Type: 100
Objective Type: 100

Unit I  INTRODUCTION
Meaning, scope and significance of Public Administration. Wilson’s Vision of Public Administration; Evolution of the discipline and its present status; New Public Administration; Public choice approach; Challenges of Liberalisation, Privatisation, Globalisation; Good Governance; Concept and application; New Public Management.

Unit II  ADMINISTRATIVE THOUGHT
Scientific management and Scientific management movement; Classical Theory; Weber’s Bureaucratic Model- its critics and post Weberian developments; Dynamic Administration.

Unit III  ORGANISATIONS
Theories- systems, contingency, structure and forms: Ministries and Department, Corporations, Companies and Commissions; Head Quarters and Field relationships; Authorities; Public-Private Relationships.

Unit IV  ACCOUNTABILITY AND CONTROL
Concepts and control; Legislative, Executive and Judicial Control over Administration and Citizen; Role of Media, interest groups, Voluntary organizations, Civil Society; Right to Information.

Unit V  DEVELOPMENT AND DYNAMICS
Concept of development; changing profile of development administration; Bureaucracy and development; Impact of Liberalisation on administration in developing countries.

Unit VI  FINANCIAL INSTITUTIONS
Monetary and Fiscal policies; Public Borrowing and Public debt budgets- Types and forms; Budgetary process; Financial accountability; account and audits.

Unit VII  LEGACY, PHILOSOPHICAL AND CONSTITUTIONAL FRAMEWORK IN INDIA
Legacy of British Rule in Politics and administration in India. Bureaucracy and Democracy, Bureaucracy and Development in India.

Unit VIII  Public Sector in modern India and impact of Liberalisation and Privatisation.
Role, composition function of the Planning Commission and National Development Council.

Unit IX  Union-State Administration, Legislative and Financial relations. Role of Finance Commission.

Unit X  Significant issues in Indian Administration; Values in Public Service; Regulatory Commission, National Human Rights Commission, Problem of Administration in Coalition Politics (regimes); Corruption and Administration, Disaster Management, Criminalisation of Politics and Administration, Police-Public relations and reforms in Police (74th Constitutional Amendment).

********END*******

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SYLLABUS FOR COMMON EDUCATIONAL SERVICES
FUNCTIONAL ENGLISH

Full Marks: 200
Descriptive: 100
Objective : 100

UNIT I: PHONETICS AND SPOKEN ENGLISH
(a) Describing English segments- Consonants, Vowels and Diphthongs.
(b) Allophonic variants
(c) Phonetic Transcription of the English Language
(d) Identifying the intonation patterns of spoken English and its characteristic rhythm.
(e) Placement of stress in English.
(f) Detailed analysis of the English syllable and its structure.

UNIT II: METHODS AND APPROACHES OF TEACHING ENGLISH
(a) Approaches to Language Teaching.
(b) Perspectives of the Classroom, the Teacher and the Learner.
(c) Effective pedagogy: Principles of Learning and Teaching.
(d) Use of Technology in Second Language Teaching and Learning.
(e) Fundamental Principles of Testing.

UNIT III: FUNDAMENTALS OF ENGLISH LINGUISTICS
(a) English Phonology and Morphology
(b) Syntax and Semantics
(c) Application of Linguistics to language teaching

UNIT IV: MATERIALS FOR THE TEACHING OF ENGLISH
(a) Role of materials in the Learning activity of Language Classrooms.
(b) How to choose, adapt and analyze materials for developing and testing the language skills-
listening, speaking, reading and writing.

UNIT V: GRAMMAR IN LANGUAGE LEARNING AND LANGUAGE TEACHING
(a) Verbal element of a sentence.
(b) Detailed analysis of the tenses of English in terms of form, function, and meaning.
(c) Interrelated character of Grammar, phonology and meaning.
(d) Sentence as a unit of grammatical analysis.

UNIT VI: LANGUAGE AND SOCIETY
(a) Linguistic competence and communication competence.
(b) Speech community, Speech act, speech event, speech repertoire.
(c) Variety, Dialect, Register.
(d) Language variety, Native, Non-Native Regional, Social, Standard, Non-Standard elaborate and
restricted.

UNIT VII: ORAL COMMUNICATION
(a) Conversational English: conversation/oral communication(in formal & informal occasions-
Nature, role, characteristics, techniques, procedures and decorum)
(b) Essential Elements of Public Speaking: Group Dynamics and Meetings, Seminars & Symposia,
Teaching & Speech Presentation, Hosting and attending (Important, nature, role, characteristics,
techniques, procedures, elements and decorum)

UNIT VIII: STYLE AND VARIETIES OF ENGLISH
(a) British, American and Indian English in terms of Pronunciation, usage and grammar.
(b) Standard English (as opposed to non standard variety e.g. slang, cockney etc.

UNIT IX: MASS COMMUNICATION AND BROADCASTING
(a) Introduction to Mass communication: Importance, Role,nature and essential elements.
(b) News casting on TV: Importance, role, requisite traits and qualities of a Newscaster.
(c) T.V programme presentation: Anchoring, Interviews & Interviewing, Talk Shows: Importance,
role, techniques, procedure & requisite traits/personality.
(d) Radio programme presentation: News reading, Radio talk, Radio drama, Disc jockey: Role,
importance, requisite traits and essential elements

UNIT X: ENGLISH FOR WRITING PURPOSES
(a) Forms of writing-Formal, Informal, Literary and Non-Literary.
(b) Creative Writing & Feature Writing
(c) News writing- Difference between Newspaper and Radio & TV with reference to Language.
(d) Advertisement: Banners, posters, pamphlets. hoardings. invitations, captions etc.

***END***
SYLLABUS FOR COMBINED EDUCATIONAL SERVICES
LINGUISTICS
(Units I-X)

Full Marks: 200
Descriptive:100
Objective:100

Unit I: Introduction to Linguistics
a. Language and Communication: definition of language, verbal and non-verbal communication; human and non-human communication; Language and Society; Medium of language; Written and Spoken
b. Language structure: The concept of linguistic sign; synchronic and diachronic approaches; syntagmatic and paradigmatic relation; language and parole
c. Linguistic analysis: Basic concepts in phonetics, phonology and morphology; morphology; morphemic processes; grammatical categories.
d. Classification of Languages: Genetic, typological and areal; Linguistic typology: Language and dialects, standard and vernacular languages.

Unit II: Phonetics
a. Study of Speech: Articulatory, auditory and acoustic aspects; Anatomy and physiology and speech production; Airstream process, articulation process, oral and nasal process.
b. Classification of sounds; Place and manner of articulation
c. Complex articulation; segmental articulation Co-articulation: Double articulation, secondary articulation, palatalization, pharyngalization etc.
d. Phonetic transcription (IPA)

Unit III: PHONOLOGY
a. Relation between phonetics and phonology; phonological reality of units and boundaries; biuniqueness, neutralization and free variation; contrast and complementary distribution.
b. Syllable: Structure of syllable and syllable types, suprasegmental features.

Unit IV: Morphology
a. Basic concepts in Morphology
b. Compounds: type of compounds; formal vs. semantic classification; dvandva, bahuvrihi etc rules of compound formation.
c. Word formation: Types of word formation
d. Morphological alternation: Phonological changes, backformation; concatenation; cliticization; regular and irregular alternation; typological classification of language based on morphological types.

Unit V: Syntax
a. Sentence: Definition and types; Basic phrasal categories.
c. Modules: concepts of government, C-command, movement; theta theory, case theory, binding theory, bounding theory and control theory.
Unit VI: Generative Phonology
a. Distinctive feature and natural class; Jakobsonian features, Chomsky and Halle’s feature analysis.
b. Rule formalism and rule ordering: basic rule notation, abbreviatory devices; rule ordering hypothesis, functional considerations; naturalness and markedness.
c. Constraints: The syllable; Representation of syllable structure; onset rhyme theory; mora theory; The CV-tier; A generative CV-phonology model of syllable structure. Tone and intonation; Metrical phonology;

Unit VII: Sociolinguistics
a. Sociolinguistics and sociology of language; speech community; language, dialects, register, isoglosses, diffusion and wave theory.
b. Language culture and thought.
c. Language change and language contact.
d. Literacy: Education policy; language policy in multi-lingual contexts; language immersion.

Unit VIII: Language Typology
a. Language universals; types of universals; genetic; India as a linguistic area; Chomsky’s concept of language universals and of parametric variation.
b. Phonological and morphological typology Syntactic Typology: Word order typology (Lehman’s Hawklin’s and Vennemann’s approaches; participal and genitival constructions with special reference to South Asian languages.
c. Semantic and sociolinguistic typology: Universals of the semantics of kinship and color terms; politeness phenomena and Brown and Levinson’s cross cultural universals.

Unit IX: Language Education
a. Theories of second language acquisition: Second language learning: history; the main approaches the role of L1 in SLA; Krashen’s Monitor Model; Schumann’s Acculturation Model; Accommodation theories.
b. Language teaching method: Methods of language teaching; Grammar translation methods, communicative approach etc.
c. Social psychological aspects.
d. Teaching a second language: the affective filter; role of the teacher and teaching materials syllabus, second and foreign language teaching.
e. Consequences of learning another language: The bilingual brain; bilingualism and cognitive development; SLA and bilingual education; metalinguistic awareness; bilingualism and biculturalism.

Unit X: Multilingualism
a. Basic concepts; social and social psychological aspects of multilingualism; multilingualism and the human brain; ethnographic perspectives.
b. Multilingual societies: language in education and the multilingual classroom; patterns of language use and language dominance configuration; language of ethnicity and race societies.
c. Language attitudes and social stereotypes; language and identity; measurement of social and linguistic attitudes.

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