



ODISHA STAFF SELECTION COMMISSION, UNIT-II, BHUBANESWAR

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No. IIE- 24/2024- 1799 /OSSC,

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Regulation 4 of 2024

By virtue of the powers conferred on Odisha Staff Selection Commission vide schedule-II (b) of "Combined Higher Secondary (10+2) Level or Equivalent Recruitment Examination for Specialist Posts and Services Rules, 2022" Commission hereby publishes the syllabus for Technical papers of different posts noted below:

1. AYUSH Assistant
2. Junior Fisheries Technical Assistant.

These have been decided in consultation with Appointing Authority and/or the Cadre Controlling Authority. The Commission reserves the right to revise the syllabus from time to time in consultation with Appointing Authority and/or the Cadre Controlling Authority.

By order of the Commission,


24.04.2024.
Secretary



DETAILED SYLLABUS FOR TECHNICAL PAPER FOR MAIN WRITTEN EXAMINATION FOR THE POST OF AYUSH ASSISTANT.

1. PHYSICS

- a. Physical World and Measurement
- b. Kinematics
- c. Law of Motion
- d. Work, Energy and Power
- e. Motion of System of particles and Rigid bodies
- f. Gravitation
- g. Properties of Bulk Matter
- h. Thermodynamics
- i. Electric Charges and Fields
- j. Atoms and Nuclei

2. CHEMISTRY

- a. Basic concept of Chemistry
- b. Structure of Atom
- c. Classification of elements & periodicity in Properties
- d. Chemical Bonding and Molecular structure
- e. States of Matter: gases and Liquids
- f. Thermodynamics
- g. Organic Chemistry: Basic Principles & Techniques
- h. Hydrocarbons
- i. Environmental Chemistry
- j. Solid State
- k. Solutions
- l. Chemical Kinetics
- m. Isolation Elements
- n. Alcohols, Phenols, Ethers
- o. Aldehydes, Ketones and carboxylic Acids



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p. Organic Compounds containing Nitrogen

q. Biomolecules

r. Polymers

s. Chemistry in Everyday life

3. BIOLOGY

a. Diversity in living World

b. Structural organisation in animals and Plants

c. Cell Structure and function

d. Plant Physiology

e. Human Physiology

f. Reproduction

g. Genetics and Evolution

h. Biology and Human Welfare

i. Biotechnology and its applications

j. Ecology and Environment



DETAILED SYLLABUS FOR TECHNICAL PAPER FOR MAIN WRITTEN EXAMINATION FOR THE POST OF JUNIOR FISHERIES TECHNICAL ASSISTANT.

Introduction to Inland Fisheries

Unit-1

Introduction to fisheries; importance of fish, present status (global, India and Odisha context). Types of fisheries: freshwater, brackish water, estuaries, riverine, reservoirs, lakes, etc.

Unit-II

Inland fisheries resources, Freshwater resources, Riverine resources, reservoirs, lakes, bheels, wetlands, ponds, tanks and canals. Brackish water resources, lakes, lagoons, estuaries, mudflats, backwaters. Inland fishery resources of Odisha.

Unit-III

Species contributing to inland fisheries: A general account of economically important freshwater and brackish water fin and shell fishes and their distinguishing characters for identification, food and feeding habits, growth, reproduction and migration.

Unit-IV

Fisheries of reservoirs and lakes, conservation of fish stocks, stocking with fish culture and capture management. Floodplain wetlands as capture fishery resources, present status of their exploitation and management. Fisheries resources of Chilika lake and Ansupa.

Unit-V

Coldwater fisheries status, important species, cold water fishery resource management. Fish catching devices, common inland fishery crafts and gears their usefulness, operation, restriction of use, fish aggregating devices.

INTRODUCTION TO AQUACULTURE

Unit-1

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History of aquaculture, present global and national scenario, principles of aquaculture, importance of aquaculture, culture practices, conventional monoculture, composite fish culture, mixed culture, integrated aquaculture, criteria for selection of candidate species for aquaculture, sewage fed fisheries, waste water aquaculture. Method of culture: traditional/extensive, semi-intensive, intensive aquaculture in inland water bodies.

Unit-II

Types of fish farms: freshwater/brackish water, type of ponds- nursery, rearing, grow-out. Layout design and construction of fish farm. Soil types, properties, classification, sampling methods and texture analysis, effects of seepage and their control, location, design and construction of hatcheries, design and construction of cage and pens for fish culture.

Unit-III

Freshwater aquaculture resources- ponds, tanks, lakes and reservoirs. nursery, rearing and grow out pond preparation and management, control of aquatic weeds, predatory and weed fishes, algal blooms, liming, fertilization/manuring, use of bio- fertilizers, stocking, feeding to fishes, pond environment management, fish health management, harvesting.

Unit IV

Freshwater prawn culture and important species for culture, seed stocking and culture practices, brackish water aquaculture, important finfishes and shellfishes for culture, collection of seed, stocking, important species for culture, seed stocking, culture practices.

Unit-V

Ornamental fish culture, important indigenous and exotic ornamental fishes, preparation of indoor system for culture and their rearing management. Catfish and air breathing fish culture. Important species for culture, seed stocking and culture practices. Integrated aquaculture principle, fish cum poultry, fish-cum-duck culture and fish cum cattle rearing.

CHEMISTRY

Unit 1: Some Basic Concepts of Chemistry

Atomic and molecular masses and equivalent mass of elements, acid, base, and salt, oxidants, reductants, and mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions,

stoichiometry and calculations based on stoichiometry, expression of concentration of solutions.

Unit II: Structure of Atom

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

Unit III: Classification of Elements and Periodicity in Properties

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

Unit IV: Chemical Bonding and Molecular Structure

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

Unit V: States of Matter: Gases and Liquids

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

Unit VI: Chemical Thermodynamics

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

First law of thermodynamics - Internal energy and enthalpy. Hess's law of constant heat summation, enthalpy of bond dissociation, combustion,

formation, neutralization, atomization, sublimation, phase transition, ionization, solution and dilution, Second law of

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

Third law of thermodynamics (Statement only).

Unit VII: Equilibrium

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

Unit VIII: Redox Reaction

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

Unit IX: Hydrogen

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

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

Group 1 and Group 2 Elements

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

Unit XI: Some p- Block Elements

General Introduction to p- Block Elements

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

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

Unit XII: Organic Chemistry - Some Basic Principles and Technique

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

Unit XIII: Hydrocarbons

Classification of Hydrocarbons

Aliphatic Hydrocarbons:

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

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

Alkynes - Nomenclature, structure of triple bond (ethyne), methods of preparation, from calcium carbide, vicinal dihalides, physical properties,

chemical reactions: acidic character of alkynes, addition of hydrogen, halogens, hydrogen halides, water, and polymerisation.

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

Biology

Unit I: Diversity in living world

Unit II: Structural organization in animals and plants

Unit III: Cell structure and function

Unit IV: Plant physiology

Unit V: Human physiology

Biology

2nd year Science (Theory)

Unit I: Reproduction

Unit II: Genetics and Evolution

Unit III: Biology and Human Welfare

Unit IV: Biotechnology and its applications

Unit V: Ecology and Environment

