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Syllabus for Recruitment Examination of Post Graduate Teacher (BIOLOGY)

PAPER -I

Unit I: Diversity of Living World

Systematic aims and components, Binomial system of nomenclature, classification of living organisms (five kingdom classification, major groups and principles of classification within each group), general description of Monera, Protozoa, Fungi, Algae, Bryophytes, Pteridophytes, Gymnosperms, Angiosperms, salient features of animals (non-chordates up to phyla level and chordates up to classes level).

Unit II: Structural Organization in Plants and Animals

Morphology, anatomy and histology of angiosperms- roots, stems, leaf, flowers, inflorescence, fruits and seeds. Plants tissues- meristematic and permanent (epidermal, ground and vascular) cambial activity, secondary growth, types of woods. Animal tissues, morphology, anatomy and histology of earthworm, cockroach and frog. Anatomy of bony fish.

Unit III:-Structural and Functional Organization of Cell

Structure of prokaryotic and eukaryotic cell, cell theory, cell divisions (mitosis and meiosis), cell membrane, cell wall, Cell organelles: structure and their functions. Structure and functions of carbohydrates, proteins. Enzymes: nature, classification and nomenclature. Mechanism of enzyme action, factors affecting enzyme action, vitamins, hormones and steroids, karyotype analysis.

Unit IV:-Plant Physiology

Plant - water relations-Imbibition, osmosis, plasmolysis, water potential. transport of water and solutes across cell membrane, mineral nutrition, functions of macro and micro nutrients and their role, deficiency symptoms. N_2 metabolism-biological nitrogen fixation; lipid metabolism ; Photosynthesis: photochemical reactions, carbon fixation pathways-C3 and C4 and CAM plants. Respiration: Exchanges of gases; Cellular respiration- glycolysis, Krebs cycle, electron transport system, respiratory quotient (RQ) and fermentation, physiological response to abiotic stress ; sensory photobiology ;plant growth regulators and their chemical nature, roles and application in agro- horticulture (auxins, gibberellins, cytokinins, ethylene & ABA); Growth indices (differentiation dedifferentiation & re-differentiation); Plant growth movement, flowering, photoperiodism and its signification, endogenous clock and its regulation, floral induction and development ; vernalization.

Unit V:-Human Biology

Morphology, anatomy, physiology of digestive system; ingestion, digestion, absorption, assimilation and egestion; Nutritional and digestive disorders- PEM, indigestion, constipation, vomiting, jaundice and diarrhea. Gas exchange transport ;pulmonary gas exchange and organs involved, transport of respiratory gases in blood,common respiratory disorders-Asthma, emphysema and occupational respiratory disorders; circulatory system; blood its components and functions,