

## P.G. Entrance Examination Syllabus in Zoology 2013

- Unit I: General notes and classification of the phyla **Protozoa, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematehelminthes** upto classes with examples. Functional morphology of *Plasmodium, Entamoeba, Leishmania, Giardia lamblia, Trypanosoma, Fasciola hepatica, Taenia saginata, Wucheraria bancrofti, Schistosoma, Ascaris lumbricoides, Trichinella spiralis, Ancylostoma duodenale*, with special emphasis on the adaptations to their mode of life and environment.
- Unit 2: General characters and classification of the phylum **Annelida, Arthropoda, Mollusca, Echinodermata, Minor Non-Coelomate** phyla (Endoprocta, Rotifera, Nematophora, Acanthocephala) and **Minor Coelomate** phyla (Chaetognatha, Pogonophora, Lophophora, Phoronida, Brachiopoda, Ectoprocta) upto classes with examples.
- Unit 3: General notes and classification of **Protochordates- Cephalochordate and Urochordate; Fishes and Amphibians** upto orders with examples emphasizing their biodiversity, Economic importance and conservation measures.
- Unit 4: General notes and classification of **Reptiles, Birds and Mammals** upto orders with Examples emphasizing their biodiversity, economic importance and conservation measures; Phylogeny of horse, Dentition in Mammals.
- Unit 5: Prokaryotic and Eukaryotic cells. Cellular organelles including Peroxisomes and Glyoxysomes; Cytoskeleton- Microfilaments, Intermediate filaments and Microtubules; Cellular membranes- composition and structure; Cell recognition and Adhesion; Membrane transport- Active and Passive; Endocytosis and Exocytosis; Cellular energy transactions- role of Mitochondria and Chloroplasts; Cell signaling and communication: Signals, Receptors, Signal transduction, Direct intercellular communication; Cell differentiation: Characteristics, types, mechanism and control.
- Unit 6: Mendel's Experiments and the laws of inheritance, Alleles and their interactions, Gene Interactions; Sex determination and Sex linked inheritance; DNA the genetic material, Mechanism and Practical application of DNA, Replication, Proofreading and Repair, Translation: RNA-directed polypeptide synthesis, Regulation of Translation, Post translational Events.
- Unit 7: Mutations-Point Mutations, Chromosomal Mutations, Spontaneous and Induced Mutations; Eukaryotic and Prokaryotic Genomes, Transcriptional and Post Transcriptional regulation of Gene Expression; Human Genetics-Genetic disorders- Single gene disorders, Multifactorial Disorders and Chromosomal Disorders, Genetic Councelling, Gene Therapy, Eugenics; Cloning- Molecular, Reproductive and Therapeutic.

- Unit 8: Immune System: innate and Adaptive Immune system, Antigens and Antibodies reactions, Mechanism of Antibody Mediated Immunity. Major Histo-compatibility Complex (MHC) Microbial cultures- Culture Techniques and Management; Bacterial cell- Structure Growth, Genetics and Pathogenesis; Virus: Structure, Replication, Genetics & Gene therapy, Pathogenesis.
- Unit 9: Glycogenesis- Physiological role of Glycogen, Glycogenolysis, Glycolysis, Oxidation of Pyruvic acid to Acetyl Coenzyme A, Citric Acid Cycle, Pentose Phosphate pathway, Uronic Acid Pathway, Glyconeogenesis, Dicarboxylic Acid shuttle, Glyoxylic Acid Pathway; Oxidation of Triacylglycerol- Beta Oxidation of fatty Acids, Metabolism of Glycerol, The Ketone bodies- formation, utilization, Ketosis, Ketoacidosis; synthesis of fatty acids.
- Unit 10: Biosynthesis and Degradation of Amino Acids, Ornithine Cycle, Fat and Water soluble Vitamins; Enzyme action, Factors affecting Enzyme activity, Kinetics, Enzyme inhibition, Allosteric Enzyme, Coenzymes, Isoenzymes.
- Unit 11: Major products of Digestion, Absorption, Defecation; Cutaneous respiration, Gills and Lung, Air Sacs, Dissociation Curve of Oxy-haemoglobin, Respiratory pigments, Chloride Shift; Evolution of heart, Blood groups-ABO system, Rhesus system, Clotting of blood- Mechanism factors affecting clotting and Natural inhibitors; Kidney structure and function, Ammonotelic, Uricotellic and Uriotelic animals. Excreting Nitrogenous wastes- Ammonia, Urea, Uric Acid; Chemoreceptors, Mechanoreceptors, Photoreceptors, Nervous system.
- Unit 12: Gametogenesis and Fertilization; Cleavage, Blastulation and Gastrulation; Differentiation and growth; Embryonic induction and Organizers:- Primary, Secondary, Tertiary and Quaternary organizers; Regeneration- Types, Mechanism and physiological process involved and factors affecting regeneration; Hormones: Types of Hormones and their actions Hormonal control of Testicular and Ovarian Functions.
- Unit 13: Cultivable Fish species, Composite fish Culture; induced breeding techniques in fishes; Sericulture- Types of silk and kinds of silk worms, Rearing techniques and diseases affecting Sericulture and their management; Bee keeping methods, Diseases and tools For Bee keeping; Lac Culture: Types of Lac, life cycle of Lac insect, Harvesting and Extraction of Lac, uses and Enemies of Lac.
- Unit 14: Ecosystem: Components, food chains and food webs; Population size, growth, limiting Factors, Carrying capacity, Natality, Mortality; Water Pollution causes, effects and Management; Animal behaviour- Biological Rhythm, Orientation and Navigation; Evidences and Theories of Organic Evolution; Species and their formation.
- Unit 15: Important Sanctuaries and National Parks of India, Endangered wild life species; Species Extinction due to Habitat Loss; Introduction of Predators, Competitors and Pathogens; Over-exploitation; Rapid Climatic change; Habitat Restoration and Species recovery by Captive propagation; Wildlife of Jammu and Kashmir- Mammals and Birds (Pheasant and Waterfowl).