

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

**SCHEME & SYLLABUS FOR THE POST OF ASSISTANT
CONSERVATOR FOREST & FOREST RANGE OFFICER GRADE Ist
COMPETITIVE EXAMINATION, 2018
FOREST DEPARTMENT**

OPTIONAL SUBJECT - ZOOLOGY

1. Biodiversity, concept of species and taxonomical hierarchy, concept of five kingdom system, International Code of Zoological Nomenclature, tools for study of taxonomy - Museums and Zoos. Basis of classification of non-chordates and chordates : symmetry, coelom, segmentation and embryogeny. General features, adaptations and life history (Paramecium, Plasmodium, Leishmania, Sycon, Obelia, Taenia, Fasciola, Ascaris, Nereis, Pheretima, Periplaneta, Apis, Lamellideus, Pila, Asterias)
2. Origin of chordates, general features and life history of Branchiostoma, Herdmania (Ascidian tadpole larva) & Petromyzon (Ammocoete larva). Comparative functional anatomy of various systems of vertebrates [Integument & its derivatives, digestive system, respiratory system, circulatory system including heart and aortic arches, urinogenital system, brain & sense organs (eye & ear)]
Chordate adaptations : Scales & fins, migration & parental care in Pisces, parental care in Amphibia. Poisonous & non poisonous snakes, poison apparatus, flight adaptations, bird migration. Adaptive-radiation, dentition in mammals.
3. Structure and function of cell and its organelles (Plasma membrane, mitochondria, golgi bodies, endoplasmic reticulum, ribosome's, lysosomes, nucleus), cell division (mitosis & meiosis), mitotic spindle and mitotic apparatus, chromosome movement.
Chemical constituents of living cells : Biomolecules, structure and function of proteins, carbohydrates, lipids & nucleic acids.

Enzyme : Types, Properties & enzyme action. Vitamins.

4. Metabolism of carbohydrates : Glycolysis, Krebs' cycle, oxidative phosphorylation, interconversion of glycogen & glucose in liver.
Metabolism of protein : Deamination, transamination, decarboxylation.
Synthesis of protein & urea, Ornithine cycle, fate of carbon skeleton.
Metabolism of lipids: Beta-oxidative pathway of fatty acids, brief account of biosynthesis of triglycerides, cholesterol & its metabolism.
Metabolism of nucleic acids.
5. Physiology with special reference to mammals. (Physiology of digestion, blood circulation, respiration, excretion, muscle contraction & nervous system).
Types of endocrine glands, their secretions & functions: pituitary, adrenal, thyroid, pancreas, testis and ovary.
Hormonal control of male and female reproduction, implantation, parturition and lactation in mammals.
Preliminary ideas of neurosecretion, hypothalamic control of pituitary function.
6. Mendelian Inheritance and genetic interactions, genetic code.
Linkage and crossing over, sex determination in *Drosophila* & human beings
cytoplasmic inheritance, multiple gene inheritance.
Chromosomal mutations and mutagens, genetic disorders in humans.
Natural selection, mimicry, isolation & speciation.
7. Gametogenesis: Formation of ova and sperms, vitellogenesis, fertilization, parthenogenesis, cleavage, blastulation, morulation.
Fate maps, morphogenetic movements, gastrulation, embryonic induction, differentiation and competence.
Embryonic adaptations: Extra-embryonic membranes in chick and placentation in mammals.
Metamorphosis in Amphibia, paedogenesis, neoteny, regeneration, teratogenesis, biology of aging, cell death.
8. Ecosystem, biogeochemical cycles, population ecology, community ecology, ecological succession, fresh water and desert ecology with special reference to Rajasthan.
Environmental biodegradation: Pollution and its impact on biosphere and its prevention.

Conservation of natural resources: Mineral mining, aquaculture, forestry, wild life Sancturries, National Parks, Hotspots. Animal distribution with special reference to Rajasthan.

Principles and practices of the following: Vermiculture, Lac culture, Apiculture, Poultry culture, Pisciculture, Pearl culture.

Economic importance of Protozoa, corals and coral reefs, Helminthes, Arthropods, insects and their management.

9. Animal Behaviour: Feeding, learning, instinctive, motivated, social and reproductive.
Methods of studying animal behaviour.
Biostatistics: Mean, mode, median, standard deviation, Probability.
10. Immunology: Types of immunology, organs of immune system, antigen-antibody reactions.
Immunity regulating cells, mechanism of humoral and cell mediated immunity. vaccines, pathogens and parasites.
Definition, scope and application of biotechnology, recombinant DNA technology, human genome project.
Brief concept of animal cell, tissue, organ and embryo culture, transgenic animals.

Note :- **Pattern of Question Paper**

1. Objective type paper
2. Maximum Marks : 200
3. Number of Questions : 120
4. Duration of Paper : Three Hours
5. All questions carry equal marks.
6. There will be Negative Marking.