

ZOOLOGY (CODE NO. 03)**1. Cell structure and function**

- (1) Difference between Prokaryotic and eukaryotic cell.
- (2) Structure of animal cell.
- (3) Structure and functions of the following cell organelles.
Plasma membrane, Golgi bodies, Mitochondria, Endoplasmic reticulum Lysosome, Ribosomes.
- (4) Cell cycle-mitosis, meiosis
- (5) Structure of nucleus including nuclear membrane.
- (6) Chromosomes - structure, type, structural and numerical abnormalities.
- (7) Gene mutations (spontaneous and artificial).
- (8) DNA - Structure, replication, transcription and translation
- (9) Recombinant DNA: Process and application
- (10) DNA Finger printing - process and application.
- (11) Sex determination in Drosophila and man.
- (12) Sex linked inheritance in man-haemophilia and colour blindness.

2. Systematics

- (1) Classification of non-chordates (up to sub classes) giving general features and examples of the following phyla -
Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, and Hemichordata.
- (2) Structure; reproduction and life history of the following types:
Amoeba, Monocystis, Plasmodium, Paramecium, Sycon, Obelia, Aurelia Fasciola, Taenia, Ascaris, Neanthes, Pheretima, Hirudinia, Palaemon, Periplaneta, Unio, Pila, Asterias and Balanoglossus.

- (3) Classification of chordates up to orders, giving general features and examples of the following:
urochordata, cephalochordata, Agnatha, Gnathostomata-Pisces, Amphibia, Reptilia, Aves and Mammalia.
- (4) Comparative functional anatomy of the following based on type animals (Scoliodon, Rana, Uromastix, Columba and Oryctolagus), integument and its derivatives, endoskeleton (only limbs & girdles) digestive system, respiratory system, circulatory system including heart and aortic arches, urinogenital system, brain and sense organs (eye and ear), endocrine glands (Pituitary, thyroid, parathyroid, adrenal, pancreas and gonads) their structure and function.

3. Vertebrate Physiology and Biochemistry

- (1) Chemical composition of protoplasm, nature and function of enzymes, vitamins, their sources and roles, Colloids and hydrogen ion concentration, Biological oxidation, Electron transport chain and role of ATP, glycolysis, citric acid cycle; Vertebrate hormones - their type, sources and functions. Pheromones and their role.
- (2) Neuron and nerve impulse-conduction and transmission across synapses, neurotransmitters and their role, including acetyl cholinesterase activity.
- (3) Homeostasis, osmoregulation, active transport and ion pump.
- (4) Metabolism of lipids and proteins.

4. Embryology

- (1) Gametogenesis, fertilization.
- (2) Cleavage.
- (3) Development upto gastrulation in frog and chick.
- (4) Metamorphosis in frog.
- (5) Retrogressive metamorphosis in ascidian.
- (6) Extra-embryonic membranes in chick and mammal.

- (7) Placentation in mammals.

5. Organic Evolution

- (1) Origin of life
- (2) Evidences and theories of organic evolution.
- (3) Zoogeographical realms, insular fauna, geological eras.
- (4) Evolution of man.

6. Ecology, Wildlife and Ethology

- (1) Abiotic and biotic factors, concept of ecosystem, food chain and energy flow, adaptation of aquatic, terrestrial and aerial fauna, intra-and inter-specific animal relationships.
- (2) Environmental pollution - Types, sources, causes, control and prevention.
- (3) Wildlife of India, endangered species of India, sanctuaries and national parks of M.P.
- (4) Biological rhythms.

7. Economic Zoology

- (1) Beneficial and harmful insects including insect vectors of human diseases.
- (2) Industrial fish and fisheries.
- (3) Non-poisonous and poisonous snakes of India.