M.Sc., II Semester:
OPEN ELECTIVE-(For Life Science Students).
PRINCIPLES OF ANIMAL SCIENCES.

48 Hrs

1. Introduction : 2 Hrs

a) Characteristics of animals b) Branches of animal science c) Uniqueness of Indian Wildlife d) Animals as natural resource and their Conservation. e) Animals and human welfare.

2. Animal Taxonomy : 3 Hrs

a) Variety of life (different Kingdoms) b) Carl Linnaeus – Taxonomic hierarchy, Binomial nomenclature c) Major and minor phyla – diagnostic features with example for each phylum

3. Biomolecules : 3 Hrs

a) Chemical composition b) Examples and importance of carbohydrates, lipids, proteins, nucleic acids, enzymes and hormones c) Sources and function of vitamins

4. Animal cells and Tissues : 4 Hrs

a) Cell theory b) Brief description of animal cell (light and ultra structure) c) Functions of cell organelles d) Structure and functional diversity in animal cell e) Cell division f) Structure and functions of basic tissues.

5. Structure and functions of organ systems : 18 Hrs

a) Nutrition : Feeding mechanisms in animals – filter feeding, biting and chewing, piercing and sucking, detritus feeding. Human alimentary canal and outlines of digestion and absorption

b) Respiration : Respiratory devices in different habitat, Human respiration – exchange of gases, cellular respiration, and ATP synthesis

c) Circulation : Blood vessels and capillaries, composition of blood, blood coagulation, immunity

d) Excretion : Nitrogenous waste productions, excretory organs in animals, mammalian kidney and urine formation

e) Movement : Locomotion in vertebrates – Swimming, walking running, flying skeletal muscle contraction

f) Co-ordination : Neural and chemical co-ordination, parts of nervous system and their functions, endocrine system and hormones as chemical messengers

g) Reproduction : Asexual and sexual reproduction, significance of sexual reproduction, outlines of human reproduction and fertility control

6. Ecology and Enviromental Biology : 8 Hrs

a) Abiotic and Biotic factors b) Population ecology c) Environment and Micro organisms (microbial ecology) d) Environmental Pollution – brief account of Air, Water, Noise, Pesticide, Metal, sound and soil pollution.

7. Heredity : 4 Hrs

a) Continuity of life – Mendel's laws b) Structure of chromosomes and genes c) DNA and RNA d) Central dogma in molecular biology

8. Evolution : Major theories and Evidences 2 Hrs

9. Applied Zoology : 4 Hrs

a) Brief description, and economic importance of Vermiculture, Apiculture, Sericulture, Fishery, poultry, piggery and diary b) vectors and human parasites.

TUTORIALS 2x16=32 Hrs

REFERENCES :

1. Barnes, R. D. 1974. Invertebrate Zoology, III edition, W. B. Saunders Co., Philadelphia.
2. Barrington, E. J. W. 1976. Invertebrate structure and function. Thomas Nelson and Sons Ltd., London
3. Hyman L. H. 1940. The invertebrates Vol.1 Protozoa through Ctenophora, McGraw hill co., N. Y.
4. Hyman. L. H. 1968. The Invertebrates Vol.8 McGraw Hill Co., N. Y and London.
5. Parker, T. J. Haswell, W. A. 1961. Text book of Zoology, Vol.I, Macmillon Co., London.
6. Russel – Hunter, W.D 1969. A. biology of higher invertebrates, Mac millon Co., Ltd., London.
7. Barrington, E. J. W. 1965. The Biology of Hemichordata and Protochordata – Oliver and Boyd, Edinbourgh.
8. Clark, W. E 1963. History of the Primates IV Edn., Univ. of Chicago Press, Chicago.
9. Malcom Jollie, 1962. Chordata morphology – East-West Press Pvt. Ltd., New Delhi.
10. Romer, A. S. 1966. Vertebrate Paleontolgy, 3rd Ed., Univ. of Chicago Press, Chicago.
11. Romer A. S., 1960. Vertebrate body, 3rd Ed., W. B. Saunders Co., Philadelphia.
12. Young. J. Z., 1950. Life of vertebrates The Oxford University Press, London

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