Subject Code : P8ZO1

CORE COURSE I - FUNCTIONAL MORPHOLOGY & PALAENTOLOGY OF INVERTEBRATES AND CHORDATES
A. INVERTEBRATES

Unit-I

Organization

Symmetry in animal organization – Asymmetry, radial, biradial and bilateral symmetry – Significance.

Coelom – Evolution of coelom. Acoelomate, pseudocoelomate, coelomate groups (Schizocoel, Enterocoeel, mesenchyme) – Significance.

Metamerism – Evolution of metemerism – Pseudometemerism, cyclo metamerism, corm theory, embryological theory – Significance.

Locomotion

Movement in Annelids, Molluscs and Echinoderms.

Nutrition

Filter feeding in Polychaetes, Molluscs and Prochordates.

Respiration

Gills and trachea in Arthropods – Respiration in Molluscs.

Circulation

Circulation in Arthropods and Molluscs.

Unit-II

Excretion

Different types of excretory organs in invertebrates – their structure and function.

Nervous System

Primitive types – Coelenterates and nerve net; Advanced types – Nervous system in Annelids, Molluscs and Arthropods.

Chemical Co-ordination

Endocrine glands in Crustaceans and Insects – Pheromones and allelochemicals.

Unit-III

Reproduction

Pattern of sexual and asexual reproduction – Invertebrate larval forms and their phylogenic significance.

Invertebrate Fossils

Evolutionary trends and phylogenetic importance of Trilobites, Ammonoids, Belemnoids, Nautiloids, Echinoderm fossils.

Minor Phyla

Organisation and affinites of 1. Chaetognatha, 2. Rotifera, 3. Sipunculida, 4. Phoronida.

B. CHORDATES

A. Comparative study functional Morphology of vertebrates.

Unit-IV

Integumentary System

Exoskeletal structures and their modifications.

Digestive System

Alimentary canal and associated glands

Respiratory System

Gill respiration in cyclostomes and fishes – Pulmonary respiration in tetrapods.

Circulatory System

Types & evolution of heart and aortic arches.

Excretory System

Types & evolution of kidneys.

Unit-V

Nervous System

Brain and spinal cord – cranial nerves, spinal nerves and visceral nerves – Autonomic nervous systems – Sympahtetic – Parasympathetic.

Reproductive System

Reproductive systems – Accessory reproductive glands.

Vertebrate Fossils

Evolutionary significance of Ostracoderms, Placoderms, Crossopterygians, Labyrinthodonts, Dinosaurs, Archaeopteryx and Mesozoic mammals.

Recommended Text Books

INVERTEBRATES

1. BARNES, R.D. (1982), Invertebrate Zoology, IV Ed., Holt Saunders International Edition.

2. BARRINGTON, E.J.W. (1979), Invertebrate Structure and Functions, II Ed., ELBS and Nelson.
3. MOORE, R.C., LOLICKER and FISCHER, A.G. (1952), Invertebrate Paleontology, McGraw Hill Book Co., Inc., N.Y.

CHORDATES

1. WATERMAN, A.J. (1971), Chordate Structure and Function, The Macmillan Company.

References

INVERTEBRATES

1. HIGHNAM, K.C. and HILL, L. (1979), The Comparitive Endocrinology of Invertebrates, ELBS & Edward Arnold (Publishers) Ltd., London.
2. HYMAN, G.H., The Invertebrates, Vol. I to VII, McGraw Hill Book Co., Inc., N.Y.
3. VASANTIKA KASHYAP (1997), Life of Invertebrates, Vikas Publishing House Pvt. Ltd., New Delhi.
4. KOTPAL, R.L., Minor Phyla, Rastogi Publication, Meerut.

CHORDATES

1. COLBERT, H. EDWIN (1989), Evolution of the Vertebrates, II Ed., Wiley Eastern Limited, New Delhi.
2. HARREY POUGH, JOHN B. HEISHER, WILLIAM N. McFARLAND (1990), Vertebrate Life, Macmillan Publishing Co., N.Y.
3. JOLLIE, M. (1962), Chordate Morphology, Reinholt Publishing Corporation, N.Y.
4. KENT, G.C. (1976), Comparitive anatomy of the Vertebrates, McGraw Hill Book Co., Inc., New York.
5. ROMER, A.S. (1974), The Vertebrate Body, W.B. Saunders, London.
6. ROMER, A.S. (1979), HYMAN's Comparitive Vertebrate Anatomy, III Ed., The University of Chicogo Press, London.
7. WEICHERT, C.K. (1965), Anatomy of the Chordates, McGraw Hill Book Co., N.Y.
8. NEWMAN, N.H. (1961), Phylum Chordate, The University of Chicago Press, Chicago.