SYLLABUS FOR THE SUBJECT OF ZOOLOGY

PAPER – I

Total Marks: 100

Invertebrate and Chordate Zoology

Section – A

Invertebrate: Introduction General organizations (Structure, function, mode of life, Reproduction, life cycles, adaptation, distribution and Economic Importance) of the Following groups with special reference to the Topic mentioned in each group:-

Protozoa: Animal – like Protists:
Origin and Phylogenetic relationship of protozoa, parasitism, Locomotion, Nutrition, Reproduction, Economic Importance and Harmful Protozoa.

Porifera: Mullticellular and Tissue level of organization: origin and Evolutionary perspeetive, Evolutions of canal system, skeleton and Reproductive System in Porifera.

Coelenterata: Boy wall and Nematocysts, Polymorphism, Coral and Coral reefs, Economic Importance of Coral reefs.

Platyhelmenthes: The Triploblastic Acoelomate Body plan: Evolutionary perspective, Parasitic adaptation, life cycle of Fasciola Hepatica (liver fluke)

Nematoda The Pseudocoelomate Body Plan:

(Aschelminthes): Evolutionary Perspective, General characteristic, Economic Importance. Parasitic Nematodes of man.

Ammelida: The Metameric Body Form:
Evolutionary relationship with other animals, Metamerism and Tagmatization, Phylogenctic Consideration.

Mollusca: Origin of Coelome, Diversity in Gastropods, Bivalve and Cepholopods, Torsion, shell in Mollusca, modification of foot in Mollusca

Arthropoda: Ebolutionary Perspeetive, Metamarphosis, Ecdysis, Appendages feeding, Respiration, Social insect, Economic Importance of Insects, Larvae in various Classes of Arthropoda.

Echinodermata: Skeletion, Water vascular System, Larval farms and their evolutionary significance, Phylogenetic Consideration.

Section – B

Chordata: Origin and basic plan of chordate, basic plane of vertebvrate body, Earliest known vertebrate, Primitive jawed vertebrate, Evolution of jaw in vertebrate, Swimblader in Fishes, Excretion and Osmoregulation.

Amphibian: First terrestrial vertebrates:
Evolutionary perspective, Excretion and Osmoregulation, Reproduction and development.

Reptile: The First Amniotes
Evoluion of Reptile, Rise and Fall of Reptile, Extinction of Dinosaurs, Exeretion and Osmoragulation, Poisonous apparatus and biting mechanism of poisonous snake.

Aves: Birds, Feathers, Flight and Endothermy:
Phylogenetic Relationship and evolution of Birds, Evolution of flight in Aves, Aerial adaptation and Migration of Birds.

Mammalia: Specialized teeth, Endothermy:
Origin of mammals, Evolutionary perspectives, Diversity among mammals, adaptation in External Structure and Locomotion, vertebrate Excretion, osmoregulation, Reproduction and development, Dentition in vertebrae, Comparative account of Evolution of Heart, gridles Skull, development, nervous system, Stomach in the vertebrate and urinogenital ducts in vertebrates;

BOOKS RECOMMENDED (LATEST EDITION)

1. *Barrington E. J. W., 1969 Invertebrate Structure and Function. The English Language Book Society and Nelson London.*
2. *Willmer,P. 1991 Invertebrate Relationships (pattern in animal evolution) Cambridge University Press.*
3. *Barnes, R.D.(1980). Invertebrate Zoology (4th ed.), Saunders, Philadelphia.*
4. *Hegner and Engemann. Invertebrate Zoology Macmillan Publishing Company Inc, New York.*
5. *Parker and Haswell. A Text Book of Zoology. (Vol.!) Macmillan London.*
6. *Borredaile, L.A., Potts, F.A. Eastham, L.E.S., Saunders, J.T. and Kerkut, G.A. (1961). The Invertebrata. Cambridge University Press.*
7. *Hyman L.H, The Invertebrates. McGraw Hill Book Company Inc.*
8. *Bhatti, H.K. and Hashmi, T .H. Invertebrate Zoology Caravan Book Corporation, Lahore.*
9. *Dhami and Dhami. Comparative Invertebrate Morphology.*
10. *F. Harvey Pough, John, Bheiser, William N. Mcfarland Vertebrate life. 2nd Edition, 1985., and 3rd Edition, 1990.*
11. *G.C. Kent, 1987. Comparative Anatomy of vertebrates.*
12. *Yong, J. Z. 1965. The life of Mammals.*
13. *Young, J.Z. 1981. The Life of Vertebrate.*
14. *Romer & Parson, The vertebrate body. 6th Edition.*
15. *Edwin H Colbert. 1980. Evolution of the verttbrates. 3rd edition.*
16. *Miller. A.S. and Harley. J.B., (1999) & 2002; Zoology. 4th &5th Edition (International). Singapore: McGraw Hill.*
17. *Hickman, C.P., Roberts. L.S. and Larson. A. 2001. Integrated Principles of Zoology. 11 th Edition (International). Singapore: McGraw Hill Pechenik, J .A. (2002) Biology of Invertebrate. 4th Edition (International). Singapore: McGraw Hill.*
18. *Campbell, N.A. (2002). Biology Sixth Edition. Menlo Park. California: Benjamin/Cummings Publishing Company. Inc.*

PAPER -II

Total Marks: 100

General Zoology

SECTION-A

Cell Biology:

Generalized Structure of Prokayotic and Eukaryotic Cell, Morphology, chemical composition and Functions of cellular organelles, Enzymes Catalysis, Regulation & Inhibition, Metabolic Pathways,Glycolysis, Kreb cycle and Electrons Transport chain. Nucleic acid, Mechanism of Protein synthesis, Transcription and Translation, Mitosis, Meiosis.

SECTION -B

General Physiology:

Excretion and Homeostasis, osmoregulation, vertebrate nephrone as osmoregulatory organ, Thermoregulation in Animals, Movements and Muscle, ultra structure of Muscle fibril, mechanism of contraction, Physiological anatomy of digestive Tract, Potential and movement in Gastrointestinal Tract, Respiration, Respiratory Mechanism, Respiratory Pigments, Transport of O2 and Co2; cardiovascular Mechanism, electrical activity of Heart, Blood Pressure, Coordination in animals, Nervous coordination and chemical coordination, Nervous system, nerve Impulses, Harmones and their Biological action. Mechanism of Active membrane Potential and Resting membrane Potential,
synopsis.

SECTION -C

Genetics: Mendelian Principles, Multiple alleles, Interaction of genes, Linkage and crossing over, maping of genes, Sex-determination and Sex-linkage, Mutations, gene concept, Chromosomal aberrations, DNA as a genetic material, genetic Code, DNA Recombinant Technology, Application of genetic Engineering, Transgenic animals.

Section -D

Evolution: Theories of origin of Life, Biochemical origin of life, Lamarckism, Darwinism and Neo-Darwinism, Hardy Weinberg Principle, Mutation Pressure, Selection Pressure, Genetic drift species concept, Mechanism of evolution, modern concept of Natural Selection, Adaptive radiation.

SECTION – E

Ecology:

Concept of Ecosystem. Biogeochemical cycle, Animal adaptation to major Habitats, Energy flow in the Ecosystem, Food chain, Food web, Productivity of Ecosystem Environmental Pollution, Water Pollution and Lamo Pollution.

BOOKS RECOMMENDED (Latest Edition):

1. *Watson, J.D., Hopkin, N.H, Roberts, J.W., Streitz, J.A. and Weiner, M.A. (1990). Molecular Biology of the Gene. Benjamin, California.*
2. *Turner, P.C., Mclennon, A.G., Bates, A.D. and White, M.R.H. (1998).*
3. *Karp G. (2002). Cell and Molecular Biology. John Wiley & Sons, Inc. New York.*
4. *Twyman. R.M. (1998). Advanced Molecular Biology. Bios Scientific Publishers.*
5. *Weaver R.F. (1999). Molecular Biology, WCB/McGraw-Hill New York.*
6. *Adams, R.L.P., Knowler, J.T. and Leader, D.P. (1986). The Biochemistry of the Nucleic Acids. Champan and Hall.*
7. *Cell and Molecular Biology (8^{th} Edition) De – Robbertis & De Robertis FMA.*
8. *Modern Genetics by Ayala, F.J. and Kiger, JaA.Jr.*
9. *Loewy, A.G. and Siekevitz. Cell structure and function, Holt Rinehart N.Y.*
10. *Levine, R.P. Genetics. Holt Rinehart and Winston, N.Y.*
11. *Robert F. Weaver, Philip W. Hedick, Basic Genetics.WCB.*
12. *Generald Karp, Cell and Molecular Biology, John Weley & sons.*
13. *Strickberger, M.W., Genetics. McMillan Co., New York.*
14. *Winchester, A.M. Genetics. Haugton-Miffin Co.*
15. *Scheeler, P. and Bianchi, D., Cell and Molecular Biology.*

16. *Gagong, W.F. 1987, Prentice Hall, Inc. Review of Medical Physiology.*
17. *Gordon M.S., Bartholomew, G.A. Grinnel A.D., Jorgensen, C.B.., and F.N., Animal Physiology: Principles and Adaptations, N.Y.*
18. *Guyton, A.C., Textbook of Medical Physiology, W.B. Saunders Company, Philadephia.*
19. *Prosser, C.L. Comparative Animal Physiology, Saunders Philadelphia.*
20. *Hoar, W.S., General and Comparative Physiology, Inc, New Jersev.*
21. *Sadar, M.H. and Smith, M.S., 1993. EIA Methods and Procedure. Impact Assessment Institute, Carleton University, Ottawa, Canada.*
22. *Smith, R.L., Ecology and Field Biology, Harper and Row.*
23. *Michael, I. Mckinney and Robert, m Schoch, 1998. Environmental Science, Hones and Bartett Publisher, International.*
24. *Chapman, J.L and Reiss, M.J., 1997. Ecology (Principles and applications), Cambridge University Press.*
25. *Kormodndy, E.J., 1996. Concepts of Ecology. Prentice Hall, India.*
26. *Eckert and Randall, Animal Physiology.*
27. *Odum, E.P., Fundamentals of Ecology. W.B. Saunders.*
28. *Macfadyen, Animal Ecology: Aims and Methods.*
29. *Prosser, C.L., Cooperative animal physiology. W.B. Saunders.*
30. *Hoar, W.S., General and Comparative Physiology. Prentice Hall Inc.*
31. *Nebel, B.J., Environmental Science. Prentice Hall Inc.*
32. *Can, A.J., Animal species and their evolution. Hutchjinson's U.L. London.*
33. *Moody, P.A., Introduction to Evolution. Harper and Row.*