COURSES OF STUDIES

FOR

M. PHIL EXAMINATION - 2007

M.Sc. PART - I EXAMINATION - 2007

PART - II EXAMINATION - 2008

ZOOLOGY

RAVENSHAW COLLEGE

(AUTONOMOUS)

CUTTACK

COURSES OF STUDIES

ZOOLOGY

M.PHIL. EXAMINATION-2006
ZOOLOGY (M.Phil)
PAPER - I 100 Marks

Unit - I

1. Regulation of gene expression.
2. Principles and Techniques of Recombinant DNA.
3. Genetic Counselling.
4. Human Chromosomes.
5. Experimental bacterial genetics.

Unit - II

6. Biology of Cancer
7. Radiation and cell response.
8. Scope and prospects of Aquaculture in India.
   Bioindicators of pollution and pollution hazards.
10. Population growth . rand k Selection.

Unit - III

1. Evolutionary history of protein and concept of molecular clock and genomic evolution.
2. Aging in animals, concept and theories of aging.
3. Circadian rhythms.

4. Chromatophores in animals.
5. Cell interaction and differentiation.

Unit - IV

6. Concept of homeostasis.
7. Monoclonal antibodies and their application.
8. Hormonal regulation of metabolism.
9. Simple, partial and multiple correlation and regression.
10. Analysis of variance.

INTENSIVE COURSE

PAPER - I 100 Marks

FISHERIES

Unit - I

1. Aquaculture, scope and importance.
2. Capture fisheries of India
3. Reservoirs and rivers of India and their role in fish production.

Unit - II

5. Ecology of inland and marine water
6. Ecology of phytoplankton, Zooplankton, nekton and benthos.
7. Biochemical oxygen demand.
8. Water quality management for pond culture.
9. Fish preservation and processing technology.

Unit- III

1. Selection of site, construction and management of ponds.
2. Pond fertilization principles and management.
3. Hatcheries and their management.
4. Intensive fish farming and optimization of ponds.
5. Cage culture, pen culture, running water culture and culture in recirculating water.

Unit - IV

6. Culture of sea weed, sea cucumber and mass culture of fish food organisms.
7. Sewage-fed fisheries.
8. Economics of culture fishery operation.
9. Role of fisheries extension in the development of aquaculture in India.

ENVIRONMENTAL BIOLOGY

100 Marks

Unit - I

1. Ecological energetics, Energy transfer, Ecological assimilation, ecological efficiencies.
2. Energy flow and flow model at individual, population and aquatic levels.
3. General concept of biological scaling, allometry of body size with energetic parameters and environmental temperature, Life history and strategies, r and k selection. Clutch size.

Unit - II

4. Concept of system peturbation stress and strain, General idea of organismic adaption to environmental gradients.
5. Pollutants in atmosphere, toxicity and tolerance of animals to pollutants, different pollution controls, methods in respect of air and water pollution.

Unit - III

6. Biological control of geological environment, Mergelink hypothesis, Gaia (Loblock) Hypothesis.
7. Biological magnification

Unit - IV

8. Natural resource management, monitoring, shrinkage and conservation of natural areas, resources and biodata.
9. Water shed and wetland management, conservation of biological diversity, Ecological implications and consequences of river valley and dam projects and of industrialization.

CYTOGENETICS

Unit - I

1. Methods in Cell Biology
   (a) Use of Radioisotopes in cell biology
   (b) In situ hybridization
   (c) Microsurgery, Removal of nucleus and transplantation of nucleus, micro injection
   (d) Application biotechnology

Unit - II

2. Developmental Epigenetics:
   Cytological events during Metamorphosis and Regeneration, Teratogenesis, Drosophila as tool in study of development.
3. DNA rearrangement and amplification during development

Unit - III

4. Gene synthesis technology, polymerase chain reaction, DNA sequencing technique.
5. Molecular probe and their application to diagnosis of human and animal diseases. Introduction to gene therapy.

Unit - IV

6. Transfer of information from DNA to protein, Prokaryote, Eukaryote, Retroviruses.
7. Genome organization and expression.

PHYSIOLOGY

Unit- i

1. Membrane transport, membrane associated receptors, membrane potentials, cell adhesion, intracellular recognition, intracellular junctions.

Unit - II

2. Biological rhythm.
   Temporal organization of cell, Circadian rhythm in organisms, Factors regulating the rhythms.

3. Concept regarding environmental stress, Stress and strain concept, Homeostasis, adaptation (genetic and physiological), Thermal stress, Osmotic stress, ionic stress, Oxygen deficient stress, Pressure stress.

Unit - III

4. Synergism and feed back inhibition in endocrine regulation with special reference to reproduction.
5. Hormonal regulation of carbohydrate and lipid metabolism in mammals.
6. Principles and techniques of fertility regulation.

Unit - IV

7. Use of polyclonal and monoclonal antibodies in study of reproduction.
8. Immuno contraception, gamete to antigens, hormonal antigens.

.....

PAPER - III (PRACTICAL)100 Marks
PAPER - IV (DISSERTATION) 100 Marks

***