

**H-56068-AB**

Seat No. \_\_\_\_\_

**M. Sc. (Part - II) Examination**

April / May – 2003

**Zoology (Special) : Paper - V**

**(A) Molecular Cell Biology, Cytogenetics & Biotechnology**

**(B) Molecular Endocrinology & Reproductive Physiology**

Time : 3 Hours]

[Total Marks : 100

**(A) Molecular Cell Biology, Cytogenetics & Biotechnology**

**NB: All questions carry equal marks.  
All questions are compulsory.  
Illustrate your answers with neat diagrams wherever necessary.**

1. Describe: a). Differential Interference Contrast Microscope  
b). Autoradiography

**OR**

1. Describe: a). Special techniques of Electron Microscopy  
b). PBLC technique
2. Write an account on: a). Sanger Method of Gene sequencing  
b). PAGE

**OR**

2. Write an account on: a). Fluorescence Activated Cell Sorter  
b). *In-situ* Hybridization
3. Write notes on: a). Ultrastructure of Plasma membrane  
b). Structure and functions of Endoplasmic Reticulum

**OR**

3. Write notes on: a). Lysosome and disease  
b). Microtubule and Intermediate filaments
4. Write an account on: a). Cell cycle and its regulation  
b). Protein hormone receptor recycling

**OR**

4. Write an account on: a). G - proteins  
b). Nuclear Receptors
5. Write short notes on **Any three** of the following:
  - a). Second messengers
  - b). Nucleolus
  - c). Northern Blotting
  - d). Cadherins
  - e). Apoptosis
  - f). Determinants in cell differentiation

***(B) Molecular Endocrinology & Reproductive Physiology***

**NB: All questions carry equal marks.  
All questions are compulsory.  
Illustrate your answers with neat diagrams wherever necessary**

1. Describe: a). Regulation of one hormone by another  
b). Importance of NO and DOPA as signalling molecules

**OR**

1. Describe: a). Receptors  
b). Gene Regulation by steroid hormones.
2. Write an account on: a). Evolution of Insulin family proteins  
b). Biosynthesis, secretion and action of Parathormone

**OR**

2. Write an account on: a). Role of pineal gland in reproduction  
b). Heart as a partial endocrine organ
3. Write notes on: a). Biosynthesis of peptide hormones of hypothalamus  
b). Histology and endocrine function of Pancreas

**OR**

3. Write notes on: a). Pituitary cell types  
b). Structure and function of thyroid gland
4. Write an account on: a). Role of adrenal gland in reproduction  
b). Hibernation and its endocrine control

**OR**

4. Write an account on: a). Anti-diuretic Hormone  
b). Hormone regulation of carbohydrate metabolism
5. Write short notes on **Any three** of the following:
  - a). G-proteins
  - b). Biosynthesis of  $1,25(\text{OH})_2\text{D}$
  - c). Hormones of GI tract
  - d). Prostaglandins
  - e). Long feedback loop
  - f). Origin of hormones