

M.Sc. FINAL ZOOLOGY - 2006-07

PAPER -II

**VERTEBRATE ENDOCRINOLOGY, IMMUNOLOGY
AND MOLECULAR BIOLOGY**

Duration : 3 hours

M.M. 100

UNIT - I

1 Development, structure and function of various endocrine glands.

- (a) Pituitary
- (b) Adrenal
- (c) Pancreas
- (d) Thyroid
- (e) Parathyroid
- (f) Thymus

2 Neuro-endocrine system and neurosecretion

UNIT-II

3 General principles of hormone action:

- (a) Nature of hormone action
- (b) Hormone receptors, signal transduction mechanism

(d) Hormonal regulation of carbohydrate lipid and nitrogen metabolism

(e) Termination of hormone action

4 Hormone structure and evolution:

(a) chemical nature and salient features of hormones

(b) Evolution of protein hormones and their receptors

5 Metabolism of hormones

UNIT-III

6 Biosynthesis and secretion of hormones:

(a) Hormones in circulation and other body fluids

(b) Biosynthesis of steroid hormones *de novo*

(c) Biosynthesis of amino acid derived small sized hormones (e.g. T_4 , epinephrine etc.)

(d) Biosynthesis of simple peptide hormones

(e) Co-translational & post translational modification of hormone structures

7 Hormones, growth and development.

8 Hormones and reproduction :

(a) Seasonal breeders

UNIT-IV

- 9 Innate and acquired immunity and nature of immune response.
- 10 Nature of antigens and superantigens:
 - (a) Antigenicity and Immunogenicity
 - (b) Factors influencing Immunogenicity
- 11 Structure and function of antibodies:
 - (a) Classes and sub-classes
 - (b) Antibody mediated effector functions
- 12 Complement system, MHC I and II
- 13 Immunological tolerance and anti immunity.
- 14 Hypersensitivity & immune response to infective agents, especially intracellular parasites.

UNIT-V

- 15 History and scope of molecular biology.
- 16 DNA replication and transcription :
 - (a) Prokaryotic and eukaryotic DNA replication
 - (b) Mechanism of DNA replications and transcription
 - (c) Enzyme and accessory protein involved in DNA replication
 - (d) Regulatory elements and mechanism of transcription regulation

REFERENCE BOOKS (LATEST EDITIONS):

- 1 E.J.W. Barrington. General and Comparative Endocrinology, Oxford, Clarendon Press.
- 2 P.J. Bentley. Comparative Vertebrate Endocrinology, Cambridge University Press.
- 3 R.H. Willams. Text Book of Endocrinology, W.B. Saunders
- 4 C.R. Martin. Endocrine Physiology. Oxford University Press.
- 5 A Gorbman et al. Comparative Endocrinology, John Wiley and Sons.
- 6 Kuby. Immunology, W.H. Freeman, USA
- 7 W. Paul. Fundamentals of Immunology
- 8 I.M. Roitt. Essential Immunology, ELBS Edition.
- 9 J. Darnell, H. Lodish and D. Baltimore : Molecular Cell Biology Scientific American Book, Inc. USA.
- 10 B. Alberts, D. Bray, J. Lewis, M. Raff, K. Roberts, and J.D. Watson : Molecular Biology of the Cell, Garland Publishing Inc., New York.
- 11 G. Karp, Cell and Molecular Biology John, Willey.
- 12 David Freifelder : Molecular Biology Narosa Publications
- 13 T.A. Brown, : Gene cloning- IV Edition. Chapman and Hall