

2011

ZOOLOGY

( Major )

III NT

Paper : 3.2

( **Physiology, Endocrinology,  
Developmental Biology** )

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

*Candidates **eligible** for Internal Assessment shall  
answer from PART—I only ( Marks : 90 )*

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*Candidates **not eligible** for Internal Assessment shall  
answer both from PART—I and PART—II ( Marks : 100 )*

PART—I

( Marks : 90 )

Answer **any two** questions from each Section

**Section—A**

( **Physiology** )

( Marks : 30 )

1. (a) Describe the regulatory mechanism and activities of gastric secretion. 4+4=8
- (b) Write about the nature and actions of pancreatic enzymes. 7

2. Discuss with labelled diagram the initiation and conduction of nerve impulse through nerve fibre. State the functions of different neurotransmitters. 10+5=15
3. Describe the molecular basis of muscle contraction. Mention the theories to explain the mechanism. Write in brief the role of proteins, calcium and energy requirement in muscle contraction. 7+4+4=15
4. Write brief notes on : 5×3=15
- (a) Cellular component of Blood
  - (b) Physiological functions of vitamins of B-complex group
  - (c) Transport of respiratory gases

**Section—B**

**( Endocrinology )**

( Marks : 30 )

5. Give a detailed description of histological structure of adrenal gland in mammal. What are different hormones produced by adrenal? State their physiological functions. 8+7=15



6. Explain the following : 5×3=15
- (a) Physiological effects of thyroid hormone.
  - (b) Role of cyclic AMP in the mechanism of hormone action.
  - (c) Functions of gonadal hormones.
7. Describe in detail the types and physiological functions of hormones of adenohypophysis. Write about the regulation of these hormone secretion. 10+5=15
8. Write short notes on the following (any three) : 5×3=15
- (a) Hypothalamo-hypophysial axis
  - (b) Neurohypophysis
  - (c) Structure of pancreas and its hormones
  - (d) Classification of hormones

**Section—C**

**( Developmental Biology )**

( Marks : 30 )

9. Describe with labelled diagram the developmental process of brain in vertebrates. 15
10. Define metamorphosis. Give a detailed account of physiological and biochemical events that occur during metamorphosis and its regulation in frog. 2+10+3=15

11. (a) What is organizer? Write about the role of organizer in primary embryonic induction describing the stages of induction. 2+6=8
- (b) What are fate maps? Describe how fate maps are constructed by natural and artificial marking. 2+5=7
12. Write short notes on the following (any three) : 5×3=15
- (a) Cell cycle
- (b) Hormonal regulation of metamorphosis in insects
- (c) Organogenesis
- (d) Fate map in chick

PART—II

( Marks : 10 )

( In lieu of Internal Assessment )

13. What are different types of nitrogenous wastes in vertebrates? Discuss urine formation and its regulation. 10

Or

Discuss molecular mechanism of hormone action.

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