M.Sc. II Semester Examination, 2021

ZOOLOGY

Paper III

(Molecular Cell Biology)

Time : 3 Hours] [Maximum Marks : 80

Note : *All questions are compulsory. Question Paper comprises of 3 sections.* ***Section A*** *is objective type/multiple choice questions with no internal choice.* ***Section B*** *is short answer type with internal choice.* ***Section C*** *is long answer type with internal choice.*

SECTION 'A'
(Objective Type/Multiple Choice Questions)

Choose the correct answer : **1 × 8 = 8**

1. Which of the following is not a cytoskeletal protein :

(a) Glycophorin A (b) Glycophorin B

(c) Spectrin (d) Band 3 protein

2. Which of the following organell has a continuous connection with nuclear membrane :

(a) RER (b) Golgi complex

(c) Lysosome (d) SER

P.T.O.

3. Name the structure which is used to transfer macro molecules between cytoplasm and nucleoplasm :

(a) Microtubule (b) Nuclear pore

(c) Cilia (d) Centriole

4. The theory states that the accumulation of particular waste products leads to aging :

(a) Immunity theory (b) Metabolic theory

(c) Waste product theory

(d) All of the above

5. Name the signalling which requires physical contacts between cells involved :

(a) Parocrine signalling

(b) Intracellular signalling

(c) Autocrine signalling

(d) Juxtracrine signalling

6. In prokarotes the ribosomal binding on *m*RNA is called :

(a) Hoyness box

(b) Shine Delegarno sequence

(c) Pribnow sequence

(d) TATA Box

7. Which of the following protein does not involve in initiation of replication :

(a) DNA A (b) DNA B

(c) SSB (d) DNA F

8. The sets of DNA generated by using random primer in a PCR reaction is called :

(a) RAPD (b) RFLP

(c) AFLP (d) In situ hybridization

SECTION 'B' **6 × 4 = 24**

(Short Answer Type Questions)

Note : *Answer the following questions in 250 words.*

Unit I

1. Describe the structure of mitochondria.

Or

Describe the functions of Golgi complex.

Unit II

2. Describe the structure and function of nucleolus.

Or

Describe the structure of cilia.

Unit III

3. Give a brief account of Lac operon.

Or

Describe the GPCR pathway of signalling.

Unit IV

4. Describe the procedure and applications of DNA foot printing.

Or

Describe the lipid metabolism related gene disorder in brief.

SECTION'C' **12 × 4 = 48**

(Long Answer Type Questions)

Note : *Answer the following questions in 500 words.*

Unit I

1. Describe the models of plasma membrane related to its structure.

Or

Discuss the structure, types and functions of lysosomes in detail.

Unit II

2. Discuss the fine structure and functions of chromosomes.

Or

Write about the mechanism and regulation of Apoptosis.

Unit III

3. Discuss the cell cycle, its check points and its regulation.

Or

Discuss the process of signalling from plasma membrane to nucleus.

Unit IV

4. Define mobile DNA and discuss the types of mobile DNA.

Or

Write the method of *r*DNA technology and its applications in detail.

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