2023

(CBCS)

(5th Semester)

ZOOLOGY

FIFTH PAPER

(Cell Biology)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. The two domains to which prokaryotes are classified into are

(a) bacteria and Protista ( )

(b) bacteria and Archaea ( )

(c) Eukarya and Archaea ( )

(d) Monera and Eukarya ( )

2. Which of the following structures is absent in eukaryotes?

(a) Organised nucleus ( )

(b) Membrane-bound organelle ( )

(c) Mesosome ( )

(d) Nuclear envelope ( )

3. What is the major role of peroxisomes in our body?
   (a) Breakdown of formaldehyde ( )
   (b) Breakdown of protein ( )
   (c) Breakdown of hydrogen peroxide ( )
   (d) Breakdown of phthalate ( )

4. The lysosomal membrane is rich in
   (a) sterol ( )
   (b) cardiolipin ( )
   (c) amino acid ( )
   (d) sialic acid ( )

5. Which type of endocytosis is sometimes referred to as 'cell-drinking'?
   (a) Pinocytosis ( )
   (b) Phagocytosis ( )
   (c) Receptor-mediated endocytosis ( )
   (d) All of the above ( )

6. Which of the following cells will play a role in phagocytosis?
   (a) RBCs ( )
   (b) Basophils ( )
   (c) Lymphocytes ( )
   (d) Neutrophils ( )

7. The junctions that hold cells of a same tissue together are called
   (a) tight junctions ( )
   (b) anchoring junctions ( )
   (c) gap junctions ( )
   (d) desmosomes ( )

8. Which of the following controls various metabolic activities of the cell?
   (a) Nucleolus ( )
   (b) Nucleus ( )
   (c) Nucleoplasm ( )
   (d) Nuclear membrane ( )

9. Which one of the following is the quiescent stage of cell cycle?

(a) M ( )

(b) G_2 ( )

(c) G_1 ( )

(d) G_0 ( )

10. Meiosis I is the reductional division and meiosis II is the equational division because of the

(a) separation of chromatids ( )

(b) crossing-over ( )

(c) disjunction of homologous chromosomes ( )

(d) pairing of homologous chromosomes ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Write short notes on the following : 3×5=15

UNIT—I

1. Fluid mosaic model

OR

2. Structure of eukaryotic cell

UNIT—II

3. Functions of endoplasmic reticulum

OR

4. Functions of ribosome

UNIT—III

5. Endocytosis

OR

6. Functions of mitochondria

UNIT—IV

7. Karyotype

OR

8. Nuclear pore complex

UNIT—V

9. Carcinogens

OR

10. Meiosis I

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer the following questions : 10×5=50

UNIT—I

1. What is cell theory? Explain its tenets and limitations.

OR

2. Describe in detail the structure of prokaryotic cell with suitable diagram.

UNIT—II

3. Describe the structure and functions of Golgi complex.

OR

4. Explain the structure and functions of lysosome.

UNIT—III

5. Describe the different types of cytoskeleton with diagram.

OR

6. Write short notes on the following :
   (a) Structure of mitochondria
   (b) Phagocytosis

UNIT—IV

7. Explain in detail the types of cell-cell interactions.

OR

8. Give an account on the structural organization of chromosomes.

UNIT—V

9. Describe the regulation of cell cycle through cyclin-CDK complexes.

OR

10. Give a detailed account of different types and characteristics of cancer.

★★★

2023

(CBCS)

(5th Semester)

ZOOLOGY

FIFTH PAPER

(Cell Biology)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. The two domains to which prokaryotes are classified into are
   (a) bacteria and Protista ( )
   (b) bacteria and Archaea ( )
   (c) Eukarya and Archaea ( )
   (d) Monera and Eukarya ( )

2. Which of the following structures is absent in eukaryotes?
   (a) Organised nucleus ( )
   (b) Membrane-bound organelle ( )
   (c) Mesosome ( )
   (d) Nuclear envelope ( )

3. What is the major role of peroxisomes in our body?
   (a) Breakdown of formaldehyde ( )
   (b) Breakdown of protein ( )
   (c) Breakdown of hydrogen peroxide ( )
   (d) Breakdown of phthalate ( )

4. The lysosomal membrane is rich in
   (a) sterol ( )
   (b) cardiolipin ( )
   (c) amino acid ( )
   (d) sialic acid ( )

5. Which type of endocytosis is sometimes referred to as 'cell-drinking'?
   (a) Pinocytosis ( )
   (b) Phagocytosis ( )
   (c) Receptor-mediated endocytosis ( )
   (d) All of the above ( )

6. Which of the following cells will play a role in phagocytosis?
   (a) RBCs ( )
   (b) Basophils ( )
   (c) Lymphocytes ( )
   (d) Neutrophils ( )

7. The junctions that hold cells of a same tissue together are called
   (a) tight junctions ( )
   (b) anchoring junctions ( )
   (c) gap junctions ( )
   (d) desmosomes ( )

8. Which of the following controls various metabolic activities of the cell?
   (a) Nucleolus ( )
   (b) Nucleus ( )
   (c) Nucleoplasm ( )
   (d) Nuclear membrane ( )

[Contd.

9. Which one of the following is the quiescent stage of cell cycle?

(a) M ( )

(b) G_2 ( )

(c) G_1 ( )

(d) G_0 ( )

10. Meiosis I is the reductional division and meiosis II is the equational division because of the

(a) separation of chromatids ( )

(b) crossing-over ( )

(c) disjunction of homologous chromosomes ( )

(d) pairing of homologous chromosomes ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

3×5=15

Write short notes on the following :

UNIT—I

1. Fluid mosaic model

OR

2. Structure of eukaryotic cell

UNIT—II

3. Functions of endoplasmic reticulum

OR

4. Functions of ribosome

UNIT—III

5. Endocytosis

OR

6. Functions of mitochondria

UNIT—IV

7. Karyotype

OR

8. Nuclear pore complex

UNIT—V

9. Carcinogens

OR

10. Meiosis I

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer the following questions : 10×5=50

UNIT—I

1. What is cell theory? Explain its tenets and limitations.

OR

2. Describe in detail the structure of prokaryotic cell with suitable diagram.

UNIT—II

3. Describe the structure and functions of Golgi complex.

OR

4. Explain the structure and functions of lysosome.

UNIT—III

5. Describe the different types of cytoskeleton with diagram.

OR

6. Write short notes on the following :
   (a) Structure of mitochondria
   (b) Phagocytosis

UNIT—IV

7. Explain in detail the types of cell-cell interactions.

OR

8. Give an account on the structural organization of chromosomes.

UNIT—V

9. Describe the regulation of cell cycle through cyclin-CDK complexes.

OR

10. Give a detailed account of different types and characteristics of cancer.

★★★