

2025

(NEP—2020)

(3rd Semester)

ZOOLOGY (MAJOR)

(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. Plasma membrane is primarily composed of

- (a) phospholipid bilayer ()
- (b) glycoproteins ()
- (c) proteins and carbohydrates ()
- (d) carbohydrates ()

2. The non-specific uptake of small droplets of extracellular fluids by endocytic vesicles is known as

- (a) phagocytosis ()
- (b) pinocytosis ()
- (c) receptor-mediated endocytosis ()
- (d) exocytosis ()

3. 70S ribosome is made up of

- (a) 40S and 30S subunits ()
- (b) 50S and 30S subunits ()
- (c) 60S and 40S subunits ()
- (d) 20S and 40S subunits ()

4. Oxysomes of F_0-F_1 particles occur on
- (a) mitochondrial outer membrane ()
 - (b) thylakoid ()
 - (c) mitochondrial inner membrane ()
 - (d) matrix ()
5. The junctions that hold cells of a same tissue together are called
- (a) tight junctions ()
 - (b) anchoring junctions ()
 - (c) gap junctions ()
 - (d) desmosomes ()
6. The folding of inner membrane of the mitochondria is called
- (a) matrix ()
 - (b) cristae ()
 - (c) porin ()
 - (d) synthase ()
7. DNA replication occurs at which of the following stages of the cell cycle?
- (a) G_1 stage ()
 - (b) S stage ()
 - (c) G_0 stage ()
 - (d) M phase ()
8. Synaptonemal complex is found in which of the following stages of meiosis?
- (a) Diakinesis ()
 - (b) Metaphase-II ()
 - (c) Zygotene ()
 - (d) Anaphase-I ()
9. The chromatids of the paired homologous chromosomes are joined at one or more discrete points called
- (a) telomeres ()
 - (b) centromeres ()
 - (c) chiasmata ()
 - (d) chromonemata ()

10. Agents that cause cancer are called

- (a) cyclin ()
- (b) carcinogens ()
- (c) acetylcholine ()
- (d) anaphase-I ()

(SECTION : B—SHORT ANSWERS)

(Marks : 25)

Write short notes on *five* of the following, taking at least *one* from each Unit : 5×5=25

UNIT—I

- 1. Tenets of cell theory
- 2. Simple transport

UNIT—II

- 3. Structure of mitochondrion
- 4. Functions of lysosome

UNIT—III

- 5. Extracellular matrix
- 6. Structure of nuclear envelope

UNIT—IV

- 7. Significance of meiosis
- 8. Cell cycle checkpoints

(SECTION : C—DESCRIPTIVE)

(Marks : 40)

Answer *four* of the following questions, taking at *one* from each Unit : $10 \times 4 = 40$

UNIT—I

1. What is a prokaryotic cell? Compare the structure of prokaryotic and eukaryotic cells. $2+8=10$
2. Provide a detailed account on the 'fluid mosaic model' of cell membrane with diagram. 10

UNIT—II

3. Describe the structure and functions of ribosomes. $5+5=10$
4. Describe the structure and functions of Golgi complex. $5+5=10$

UNIT—III

5. Write an account on the role of microfilaments and microtubules in the cell. 10
6. Write short notes on the following : $5+5=10$
 - (a) Cell-cell junctions
 - (b) Nuclear transport

UNIT—IV

7. Explain the role of the cyclin-CDK complex in the regulation of cell cycle. 10
8. Define 'cancer'. Write a note on the different types of cancers and their characteristics. $2+8=10$
