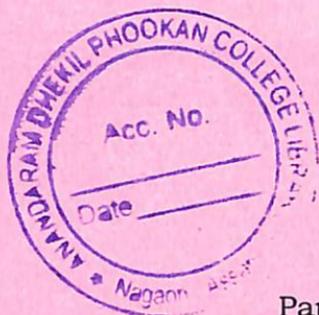


1 (Sem-5/FYUGP) ZLG 41 MJ



2025

ZOOLOGY

(Major)

Paper : ZLG0500104

(Cell Biology)

Full Marks : 45

Time : 2 hours

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

1. Choose the correct answer : 1×5=5

(a) Cytoskeleton consists of

- (i) microtubules
- (ii) microfilaments
- (iii) intermediate filaments
- (iv) All of the above

(b) Gap junctions are absent in

- (i) sperm cells
- (ii) brain cells
- (iii) heart cells
- (iv) liver cells

(2)

(c) Which of the following is the largest single membrane-bound intracellular compartment?

- (i) Ribosomes
- (ii) Golgi complex
- (iii) Nucleus
- (iv) Endoplasmic reticulum

(d) Cristae in mitochondria serves as sites for

- (i) oxidation reduction reaction
- (ii) protein synthesis
- (iii) macromolecules breakdown
- (iv) flavoproteins are phosphorylated

(e) During 'X' phase of cell division centriole divide, DNA replicate and synthesis of histone protein takes place. What is 'X'?

- (i) G₀ phase
- (ii) G₁ phase
- (iii) G₂ phase
- (iv) S phase

(3)

2. Answer any *five* from the following questions :

2×5=10

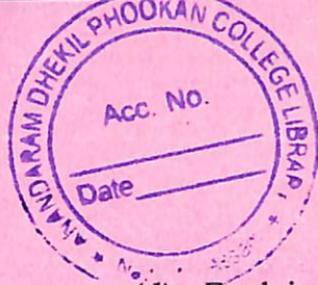
- (a) Differentiate between Viroids and Prions.
- (b) What is euchromatin?
- (c) Describe the structure of lysosome.
- (d) What is ubiquinone?
- (e) Draw the structure of polytene chromosome.
- (f) Write the important functions of microtubule.
- (g) What is cyclin-dependent kinase (CDK)?
- (h) Mention two differences between mitosis and meiosis.
- (i) Define cell signalling.
- (j) What is necrosis?

3. Answer any *four* from the following questions :

5×4=20

- (a) What are the different modes of transport that a cell has to rely on in order to function properly?
- (b) Discuss about anchoring junctions and their functions.
- (c) What is nucleosome? Describe its structure and significance.





(4)

- (d) Explain the structure and function of plasma membrane according to the fluid mosaic model.
- (e) Discuss the components of the endomembrane system.
- (f) Which hypothesis explains the origin of mitochondria?
- (g) Elucidate the different modes of chemical signaling with supporting diagram.
- (h) Discuss the role of cytoskeleton in cell shape and motility.
4. Answer any *one* from the following questions : 10
- (a) What is apoptosis? Explain the mechanism of apoptosis. 2+8=10
- (b) What is oxysome? What is mitochondrial electron transport chain (ETC)? What are the various complexes of ETC? 2+3+5=10
- (c) What are second messengers? How are IP₃ and DAG generated? Elucidate the roles of IP₃ and DAG as second messengers. 2+3+5=10
- (d) What are the various stages of meiotic prophase-I? Enumerate the chromosomal events during each stage. 3+7=10
