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3 (Sem-2/CBCS) ZOO HC 2

2022

ZOOLOGY

(Honours)

Paper : ZOO-HC-2026

(Cell Biology)

Full Marks : 60

Time : Three hours

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

1. Fill in the blanks : **(any seven)** $1 \times 7 = 7$
 - (a) The undefined nuclear region of Prokaryotes are known as _____.
 - (b) Lipid rafts are patches of cholesterol and _____.
 - (c) Gap junction allows the exchange of _____.
 - (d) _____ is also known as 'suicide bag' of a cell.
 - (e) Cristae in mitochondria serves as sites for _____.

Contd.

- (f) F1 particles/oxysome/elementary particles are present in _____.
- (g) _____ fibre is also called actin filaments.
- (h) The type of cell division in which number of chromosomes remains constant in the daughter cell is called _____.
- (i) The non-dividing state of cell is called _____.
- (j) Crossing over occurs in the _____ stage of meiosis I.

2. Answer **any four** from the following :

2×4=8

- (a) Distinguish between virus and viroids.
- (b) Comment on receptor mediated endocytosis.
- (c) State the role of ATP in membrane transport.
- (d) What is endomembrane system ?
- (e) Compare the structure of lysosomes and peroxisomes.
- (f) Write about the significance of chromatin remodeling.
- (g) What are histones ? State the function of histone protein.

- (h) How will you distinguish eukaryotes from prokaryotes ?

3. Answer **any three** from the following :

5×3=15

- (a) Describe the structure and function of tight junction.
- (b) Give an account on different types of membrane protein with its importance.
- (c) Write a note on chemi-osmotic hypothesis.
- (d) Explain how microfilaments helps in the process of cell division.
- (e) Distinguish between heterochromatin and euchromatin.
- (f) Describe the structure and function of nucleolus.
- (g) Describe the importance of nucleosome in DNA packaging.
- (h) Describe the molecular mechanism of cell-cycle regulation.

4. Answer **any three** from the following :

10×3=30

- (a) Describe the structure of plasma membrane based on fluid mosaic model. What do you mean by symporter and antiporter ? Give example. 6+4=10

- (b) Describe the ultrastructure, types and functions of endoplasmic reticulum.
4+1+5=10
- (c) Why mitochondria is considered as powerhouse of cell ? Write a note on oxidative phosphorylation. 2+8=10
- (d) Define cytoskeleton. Describe the structure and function of microtubules.
2+4+4=10
- (e) Describe in detail how micromolecules transported through the plasma membrane ?
- (f) Describe the structure of nuclear pore complex and discuss the mechanism involved in nucleocytoplasmic transport.
5+5=10
- (g) Discuss various stages of meiosis with the help of diagram. What is its significance ?
7+3=10
- (h) What are cell surface receptors ? Describe how signals are transduced through G-protein coupled receptors.
2+8=10
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