

2017

ZOOLOGY

( Major )

Paper : 3.2

( Cell Biology )

Full Marks : 60

Time : 3 hours

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

1. Write True or False : 1×7=7

- (a) The number of cells in the multicellular organisms usually remains correlated with the size of the organism.
- (b) The fluid property of plasma membrane is maintained by lipid molecules of plasma membrane.
- (c) Centrioles are morphologically identical to the basal body of cilia and flagella.
- (d) During aerobic respiration, at Krebs cycle level, one ATP molecule is produced from the breakdown of one glucose molecule.

- (e) In non-cyclic photophosphorylation, ATP synthesis occurs in light which needs a constant supply of water molecules to be oxidized and NADP to be reduced.
- (f) Crossing-over occurs in the zygotene stage of meiosis I.
- (g) Nucleolar organizer region is formed from DNA of primary constriction region of some chromosomes.

2. Write short notes on the following :  $2 \times 4 = 8$

- (a) Lysosome
- (b) Cell theory
- (c) Mitotic apparatus
- (d) Nucleosome

3. Answer any *three* from the following :  $5 \times 3 = 15$

- (a) Write a brief note on physiological properties of protoplasm.
- (b) State the differences between prokaryotic cells and eukaryotic cells.
- (c) Explain fluid mosaic model of plasma membrane.
- (d) Write a note on diffusion with suitable example.
- (e) Write notes on electron transport chain and oxidative phosphorylation.

4. (a) Define endoplasmic reticulum. Mention the types and modifications of ER. Explain the functions of rough and smooth endoplasmic reticulums.

1+3+3+3=10

Or

Define mitochondria. Explain the ultrastructure and functions of mitochondria.

1+4+5=10

- (b) Define nucleolus. Explain nucleolar cycle. Describe nucleolar functions with reference to biogenesis of 80S ribosome.

1+4+5=10

Or

Explain membrane excitability with reference to movement of nerve impulse along non-myelinated and myelinated nerve fibers and muscle cells.

1+3+3+3=10

- (c) Explain the differentiation of cell surface. Write a note on the functions of plasma membrane.

5+5=10

Or

What are different events involved in chromosome movement during anaphase? Discuss the formation of microtubules and role of kinetochores during chromosome movement.

4+3+3=10

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