

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.

(2)

- (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.

(3)

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. $4+3+3=10$
