

2017

ZOOLOGY

(Major)

Paper : 3.1

(Comparative Anatomy and Histology)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks
for the questions

1. Fill in the blanks (any three) : $1 \times 3 = 3$

- (a) Blood is fluid ____ tissue.
- (b) Lining of colon made up of ____ epithelium.
- (c) Toluidine blue is an example of ____ dye.
- (d) The cell body of neuron is called ____.

2. Write True or False (any two) : $1 \times 2 = 2$

- (a) Smooth muscles are also known as striated muscles.
- (b) The integument acts as an organ of excretion.
- (c) Acetoorcein is a chromosomal stain.

3. Answer the following questions : $1 \times 2 = 2$

- (a) What kinds of muscles constitute the heart?
- (b) Name the hearing part of the inner ear of human.

4. Write notes on any *four* from the following : $2 \times 4 = 8$

- (a) Difference between bones and cartilage
- (b) Hypothyroidism
- (c) Gram staining
- (d) Mode of respiration in amphibia
- (e) Mordant
- (f) Neuron

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

- (a) Comparative account of brain in fish and amphibia
- (b) Draw a labelled sketch of mammalian kidney.
- (c) Respiratory organs of fishes
- (d) Principles and procedures of histological staining in nucleic acid
- (e) Different types of scales in fishes

6. Answer any *three* questions :

- (a) Write about different types of connective tissue with suitable examples.
- (b) Give a comparative account of the thyroid gland in reptiles and mammals.
- (c) Give a brief account of the development and evolution of the eye in vertebrate series.
- (d) Give a comparative account of the integument in vertebrates.
- (e) Write the principle and procedure of silver staining of protein in polyacrylamide gel electrophoresis.
- (f) Draw a labelled diagram of the mammalian and describe its function over reptilian brain.

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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. State the types and mention the functions. Explain the function of smooth endoplasmic reticulum.

Or

Define mitochondrion. State its ultrastructure and function.

- (b) Define nucleolus. State its function. Describe nucleolar cycle. Describe nucleolar organizer region. Reference to biogenesis.

Or

Explain membrane transport. Reference to movement of substances along non-myelinated nerve fibers and muscle fibers.

- (c) Explain the difference between cell surface and plasma membrane. Write a note on cell surface.

Or

What are different types of chromosomes? In which stage of mitosis do chromosomes appear? Discuss the role of microtubules and microfilaments during chromosome movement.

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