

(3 Hours)

[Total Marks: 100]

- NB:** 1. All the questions are compulsory. Choice is internal.  
 2. Figures to the right indicate full marks.  
 3. Draw structures and diagrams wherever necessary.

1. (A) Define the following terms: 16
- |                                 |                            |
|---------------------------------|----------------------------|
| i. Coacervate droplets          | ii. Proteinoid microsphere |
| iii. Secondary active Transport | iv. Tubulin heterodimer    |
| v. Cisternae                    |                            |
- (B) State True or False, giving reasons: 10
- i. Movement of water through semipermeable membrane of the cell is called diffusion.
  - ii. Pasteur's theory is also known as Cosmozoic Theory.
  - iii. Leucoplasts are the colored plastids.
  - iv. Diffusion is an example of active transport.
  - v. Lysosomes have enzymes that have optimum pH in the basic range.
2. Answer the following: (any four) 20
- i. What is the theory of endosymbiosis? Who proposed the same? Justify that endosymbiosis is a evolutionary step in the formation of cell.
  - ii. What was the Miller and Urey Experiment? Explain the experimental set-up and conclusion of the experiment in-detail.
  - iii. In brief explain any two theories which were proposed initially to explain evolution but were later rejected.
  - iv. Compare prokaryotic and eukaryotic cell with the help of a detailed diagram.
  - v. Write an informative note on: RNA world.
  - vi. Discuss the primordial soup in detail.
  - vii. Justify: 'Yeast is a link between prokaryotic and eukaryotic cell.
  - viii. Write a note on structure of animal cell.
3. Answer the following: (any four) 20
- i. Differentiate between microtubules and microfilaments.
  - ii. Explain active transport with an example.
  - iii. With the help of a diagram, explain Singer and Nicolson model of plasma membrane.
  - iv. Discuss the structure of the plant cell wall.

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- v. In detail, explain the processes of ingestion and secretion of molecules across membrane.
- vi. Citing example, explain facilitated diffusion. How is this process different from simple diffusion?
- vii. Write an informative note on endocytosis, with a special mention of its different types.
- viii. Write a note on osmosis.

## 4. Answer the following: (any four)

20

- i. Elaborate on the structure of the golgi complex supported by diagrams. Why is the golgi complex known as the 'traffic police' of the cell?
- ii. Explain the functions associated with peroxisomes?
- iii. Elaborate on the ultrastructure of a chloroplast.
- iv. In detail, explain the different types of plastids.
- v. Why are mitochondria and chloroplasts known as semi-autonomous organelles?
- vi. Discuss the structure, function and types of endoplasmic reticulum.
- vii. What are ribosomes? Write a comparative account of prokaryotic and eukaryotic ribosomes.
- viii. Justify: 'Lysosomes are the digestive machinery of a cell'

## 5. Answer the following: (any four)

20

- i. Elaborate on the heterotroph hypothesis.
  - ii. Give an account of Big bang theory.
  - iii. With the help of a diagram, explain the ultrastructure of a mitochondrion.
  - iv. Discuss the functions of the plasma membrane.
  - v. Discuss the structure of the microbial cell wall with a detailed mention of its constituents.
  - vi. Justify: 'Mitochondrion and chloroplast are autonomous organelles'.
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