

AP-411

B.Sc. Part—I (Semester—I) Examination

1S : BIOTECHNOLOGY (R/V)

(Cell Biology and Biomolecules)

Time : Three Hours]

[Maximum Marks : 80

N.B. :— (1) **ALL** questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. (a) Fill in the blanks : 2
- (i) The ——— is basic structural and functional unit of living organism.
 - (ii) Protein part of the enzyme is called ———.
 - (iii) Organelle other than nucleus and chloroplast which include DNA is ———.
 - (iv) Ribosomes play an important role in ———.
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- (b) Choose correct alternative : 2
- (i) Singer and Nicolson model of plasma membrane differ from Robertson model in
 - (a) Number of lipid layers
 - (b) Arrangement of lipid layers

- (c) Arrangement of Proteins
- (d) Absence of Protein.
- (ii) DNA replication occurs during cell cycle in
- (a) S-phase
 - (b) G1-phase
 - (c) G2-phase
 - (d) M-phase.
- (iii) Prokaryotic cell lacks _____.
- (a) Nuclear membrane
 - (b) Nucleus
 - (c) Membrane bound organelles
 - (d) All of these.
- (iv) The monosaccharide often called as _____ sugar.
- (a) Simplex
 - (b) Complex
 - (c) Both (a) and (b)
 - (d) None of above.

7. (a) Explain nature of microtubules. 4
- (b) Discuss cell cycle and its significance. 4
- (c) Describe the Biotechnological applications of stem cells. 4
- OR**
- (d) Explain cell signaling. 4
- (e) Discuss mitosis and its importance. 4
- (f) Give the properties of stem cells. 4

- (C) Answer in **one** sentence : 4
- (i) Mention the important function of plasma membrane.
 - (ii) Who discovered Nucleus ?
 - (iii) What is the main function of Endoplasmic reticulum ?
 - (iv) What is mitosis ?
2. (a) Discuss the endosymbiont theory. 4
- (b) Describe the characteristic features of prokaryotic cell. 4
- (c) Explain cell types and their diversity. 4

OR

- (d) Differentiate between Prokaryotic and Eukaryotic cells. 4
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- (e) Discuss the concept of RNA world. 4
- (f) Describe Oparin and Haldane concept. 4
3. (a) Explain the polysaccharides. 4
- (b) Discuss properties of lipids. 4
- (c) Describe nature of biomolecules. 4

OR

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- (d) Mention the biological role of carbohydrates. 4
- (e) Describe classification of conjugated lipids. 4
- (f) Explain, general properties of biomolecules. 4
4. Describe in detail, the structural and functional aspects of t-RNA. 12

OR

Discuss the classification of enzymes and various factors affecting enzyme activity. 12

5. (a) Describe the structure of plant cell wall. 4
- (b) Explain role of Endoplasmic reticulum. 4
- (c) Discuss importance of Lysosomes. 4

OR

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- (d) Explain ultra structure of chloroplast. 4
- (e) Give the functions of vacuole. 4
- (f) Discuss importance of Golgi complex. 4
6. Explain the cell transport across membrane by various means. 12

OR

Discuss the types of centrifugation methods and its biological significance. 12