

**B.Sc. (Part-I) Semester—I Examination**  
**IS : BIOTECHNOLOGY (R/V)**  
**(Cell Biology and Biomolecules)**

Time : Three Hours]

[Maximum Marks : 80

**Note** :— (1) All questions are compulsory.

(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks :

(i) Eukaryotic cells have a true \_\_\_\_\_ with nuclear envelope.

(ii) Protein part of enzyme is called \_\_\_\_\_.

(iii) Codons are present on \_\_\_\_\_.

(iv) Replication of DNA occurs during \_\_\_\_\_ phase of cell cycle. 2

(B) Choose correct alternatives :

(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 Proteins

(ii) 70S ribosomes are present in :

(a) Prokaryotes

(b) Eukaryotes

(c) Present in both (a) and (b)

(d) Absent in both (a) and (b)

(iii) Other than nucleus DNA is also present in :

(a) Golgi Complex

(b) Ribosomes

(c) Chloroplast and Mitochondria

(d) Endoplasmic reticulum

(iv) The monosaccharide is often called as :

(a) Simplex Sugar

(b) Complex Sugar

(c) Both (a) and (b)

(d) None of above 2

(C) Answer in **one** sentence :

(i) Who Discovered Nucleus ?

(ii) What is Mitosis ?

(iii) Define enzyme.

(iv) What are Polysaccharides ? 4

2 Explain :

(a) Concept of cell theory. 4

(b) Differences in Prokaryotic and Eukaryotic cells. 4

(c) Endosymbiont theory. 4

**OR**

(d) Oparin — Haldane hypothesis. 4

(e) RNA World. 4

(f) Exceptions to cell theory. 4

3. Describe :
- (a) Biological role of Carbohydrates. 4
  - (b) Importance of Biomolecules. 4
  - (c) Properties of Triglycerides 4
- OR**
- (d) Properties of lipids. 4
  - (e) General properties of organic molecules. 4
  - (f) Importance of Polysaccharides. 4
4. Describe :
- (a) Functional aspects of tRNA 4
  - (b) Nitrogenous bases in DNA. 4
  - (c) Classification of enzymes. 4
- OR**
- (d) Functional aspects of mRNA. 4
  - (e) Industrial applications of enzymes. 4
  - (f) Secondary structure of proteins. 4
5. Describe the ultra structure and function of Chloroplast in detail. 12
- OR**
- Describe the structure and function of Nucleus in detail. 12
6. Describe in detail, density gradient and differential centrifugation. 12
- OR**
- Describe in detail, various methods of cell lysis. 12
7. Explain :
- (a) Cell junction. 4
  - (b) Interphase in cell cycle. 4
  - (c) Applications of stem cells. 4
- OR**
- (d) Cancer. 4
  - (e) Cell-cell signalling. 4
  - (f) Prophase-II of meiosis. 4