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