B.Sc. Part–I Semester–I Examination

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 :

(i) Bacteria contain _____ types of ribosomes.

(ii) _____ is called as power house of cell.

(iii) _____ accelerates the biological reactions.

(iv) Equatorial plate formation takes place during _____. 2

(B) Choose the correct alternative :

(i) DNA synthesis takes place during _____.

(a) G_1 phase (b) G_2 phase

(c) S phase (d) M phase

(ii) Which is not membrane bound organelles ?

(a) Mitochondria (b) Chloroplast

(c) Endoplasmic Reticulum (d) Ribosome

(iii) _____ is not present in mRNA.

(a) Adenine (b) Guanine

(c) Cytosine (d) Thymine

(iv) Oxysomes are present in :

(a) Ribosomes (b) Mitochondria

(c) ER (d) Chloroplast 2

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

(i) Define Simple lipid.

(ii) Give Pyrimidine bases of RNA.

(iii) Define Protein.

(iv) Define Mitosis. 4

2. Explain :

(a) Cell diversity 4

(b) Concept of cell theory 4

(c) Endosymbiont theory 4

OR

(d) Miller's experiment 4

(e) RNA world 4

(f) Oparin-Haldane concept 4

3. Describe :

(a) Biological importance of Carbohydrates 4

(b) Structure of phospholipids 4

(c) General properties of Lipids 4

OR

(d) Biological importance of Lipids 4

(e) Structure and functions of Glucose 4

(f) Hydrophilic and Hydrophobic groups. 4

4. Explain classes of Enzymes and describe the effect of Temperature and Substrate concentration on enzyme activity. 12

OR

Explain structure and functions of mRNA and tRNA. 12

5. Explain in detail various models of plasma membrane structure. 12

OR

Describe structure and functions of Mitochondria. 12

6. Explain :

(a) Enzymatic cell lysis 4

(b) Ion channels 4

(c) Density gradient centrifugation 4

OR

(d) Chemical method of cell lysis 4

(e) Passive transport 4

(f) Differential centrifugation 4

7. Describe the following :

(a) Pachytene 4

(b) Cell junction 4

(c) Cell locomotion 4

OR

(d) Cell signaling 4

(e) Mitotic Metaphase 4

(f) Applications of stem cells. 4