AS–1365

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 :— 2

(i) Proteins are polymers of _____.

(ii) The molecular formula of phosphoric acid is _____.

(iii) Polynucleated cells of plants are known as _____.

(iv) The centromere present near to the end of chromosome is called as _____.

(B) Choose correct alternative :— 2

(i) _____ is an example of sulfur containing amino acid.

(a) Tryptophan (b) Aspartic acid

(c) Methionine (d) Sulfonic acid

(ii) In RNA, thymine is replaced by :

(a) Uracil (b) Adenine

(c) Guanine (d) Cytosine

(iii) Replication of DNA takes place during :

(a) Prophase (b) Metaphase

(c) 'S' phase (d) G2 phase

(iv) Pairing of homologous chromosome is called as :

(a) Crossing over (b) Synapsis

(c) Chiasma formation (d) Duplication

(C) Answer in **ONE** sentence :— 4

(i) Define simple lipid.

(ii) Define purine bases.

(iii) What is peptide bond ?

(iv) What are the two subunits of 80S ribosome ?

2. Explain :—

(a) Miller experiment. 4

(b) Biotechnology with its importance. 4

(c) Comparison of prokaryotic and eukaryotic cell. 4

OR

(d) RNA world. 4

(e) Endosymbiont theory. 4

(f) Oparin-Haldane theory. 4

3. (a) Describe the classification of Carbohydrates. 4

(b) Give the functions of phospholipids. 4

(c) Differentiate between homopolysaccharides and heteropolysaccharides. 4

OR

(d) Classify phospholipids. 4

(e) Give chemical structures of sucrose and lactose. 4

(f) Explain general properties of lipids. 4

4. Describe in detail structure of proteins. 12

OR

Describe in detail structure of tRNA and mRNA. 12

5. Describe the structure and functions of Golgi Complex. 12

OR

Describe the structure and functions of mitochondria. 12

6. Explain :—

(a) Ion channels. 4

(b) Density gradient centrifugation. 4

(c) Enzymatic cell lysis. 4

OR

(d) Passive transport. 4

(e) Cell lysis by chemical methods. 4

(f) Osmosis. 4

7. Describe the following :—

(a) Role of cytoskeleton in locomotion. 4

(b) What are cell junctions ? Explain the role of tight junctions. 4

(c) Somatic cell division. 4

OR

(d) Reductional cell division. 4

(e) Properties and applications of stem cells. 4

(f) Microtubule and microfilament. 4

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