3 (Sem–1/CBCS) BOT HC 2

2021

(Held in 2022)

BOTANY

(Honours)

Paper : BOT–HC–1026

(Biomolecules and Cell Biology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following : 1×7=7

   (a) How many amino acids make up a protein ?

   (b) What is the main function of microtubules ?

   (c) Do you agree that water is an excellent solvent for many substances ? If yes, why ?

(d) What do you understand by facilitated diffusion ?

(e) Who first of all demonstrated that nucleus plays a determinative role in a cell ?

(f) At which stage the bivalents (paired homologs) appear as tetrads ?

(g) Mention the difference between active and passive modes of membrane transport.

2. Distinguish between the following : 2×4=8

(a) Oligosaccharides and Polysaccharides

(b) Endergonic and Exergonic reactions

(c) Phagocytosis and Pinocytosis

(d) Cofactors and Coenzymes

3. Answer ***any three*** of the following : 5×3=15

(a) Discuss briefly on chloroplast as semiautonomous organelle.

(b) Enumerate the main biological functions of lipids.

(c) "Amino acids are called the building blocks of proteins." Justify the statement.

(d) Write about the role of ER signal peptide, signal recognition particle (SRP) and SRP receptor in directing ribosomes to endoplasmic reticulum (ER) membrane.

(e) Write a short note on the role of ATP as an energy currency molecule.

4. Answer the following questions : 10×3=30

(a) Discuss in detail the structure and property of enzymes. 10

Or

Enumerate the resemblances and differences between Z-DNA and B-DNA. 10

(b) What will happen if the checkpoints that regulate the cell cycle fail ? What are the important cell cycle checkpoints and how do they work ? 3+7=10

Or

Describe the structure and functions of fatty acids. 10

(c) With the help of neat labelled diagrams describe the characteristics of prokaryotic and eukaryotic cells. 5+5=10

Or

Give a detailed account of a fluid mosaic model. 10
