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**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 ?

Contd.

- (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

