

Total number of printed pages-4

3 (Sem-1/CBCS) BOT HC 2

2023

BOTANY

(Honours Core)

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. Fill in the blanks : 1×7=7

(a) Chelating agents acts as _____ inhibitors.

(b) Nucleoside is a compound in which a nitrogenase base is conjugated to a pentose sugar by a _____ .

(c) Oxidation of fatty acid is an example of _____ reaction.

Contd.

- (d) Secondary structure of protein includes _____ .
- (e) A water molecule has _____ polar covalent bonds.
- (f) Replication of DNA takes place in _____ phase.
- (g) A buffer has a definite _____ value.

2. Answer the following questions : $2 \times 4 = 8$

- (a) What are the differences between fats and oils ?
- (b) Cite *two* functions of microtubules.
- (c) What do you mean by Endosymbiotic Theory ?
- (d) Why ATP is called energy currency of the cell ?

3. Answer **any three** of the following briefly : $5 \times 3 = 15$

- (a) Describe the role of protein kinases in cell cycle.

- (b) Discuss on the semi-autonomous nature of mitochondria.
- (c) Explain the different types of enzyme inhibition.
- (d) State the differences between B-DNA and Z-DNA.
- (e) How proteins are inserted in endoplasmic reticulum?

4. Answer the following questions :

- (a) What are enzymes? Describe the mechanism of enzyme action. 2+8=10

Or

What is Chromatin? Describe the molecular organization of chromatin. 2+8=10

- (b) Explain in detail the structural organization of proteins. 10

Or

Discuss the process of protein glycosylation within Golgi apparatus.

- (c) What is bioenergetics ? Discuss the first and second law of thermodynamics and its relevance to biological systems.

2+4+4=10

Or

Give an elaborate account of fluid-mosaic model of plasma membrane with suitable diagram.

8+2=10
