

### 3 (Sem-1/CBCS) BOT HC 2

2019

BOTANY

( Honours )

Paper : BOT-HC-1026

( **Biomolecules and Cell Biology** )

Full Marks : 60

Time : 3 hours

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

1. Answer the following questions as directed :

1×7=7

- (a) Name one structural polysaccharide.
  - (b) What are micelles?
  - (c) The initiation codon in eukaryotes is \_\_\_\_\_.
- (Fill in the blank)
- (d) What is the number of Wriggle bonds present in the ATP molecule?
  - (e) What is ligand-gated ion channel?

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- (f) What are lysosomes?
- (g) In which stage of meiosis, synaptonemal complexes are formed?

2. Answer any *four* of the following questions :

2×4=8

- (a) Distinguish between symplast and apoplast.
- (b) Differentiate between histone and nonhistone proteins.
- (c) Define and explain entropy.
- (d) What is the role of protein kinases in cell cycle?
- (e) What do you understand by *in situ* hybridization?
- (f) Write two important features of micro-fibrils.

3. Answer any *three* of the following questions :

5×3=15

- (a) What are lipids? Give a brief account of structure and function of fatty acids.
- (b) Illustrate the structure of t-RNA.
- (c) Define ATP molecule and its role as a energy currency molecule.

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- (d) What are carrier proteins? Describe the different types of carrier proteins.
- (e) Give an elaborate account of fluid mosaic model of plasma membrane with suitable diagram.

4. Answer any *three* of the following questions :

10×3=30

- (a) What are proteins? Describe briefly the different structure of proteins. Mention the biological importance of proteins.  
1+6+3=10
- (b) How are enzyme classified? Discuss the mechanism of enzyme action. 5+5=10
- (c) Define bioenergetics. Discuss the first and second law of thermodynamics and its relevance to biological system. 2+8=10
- (d) Who discovered the double-helical structure of DNA? Enumerate the detailed features of DNA double helix. Mention the difference between A-DNA and C-DNA. 1+6+3=10
- (e) Describe the structure and function of salivary gland chromosomes. 10
- (f) Write an essay on the ultrastructure and chemical composition of mitochondria. 5+5=10

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