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?

(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.

(d) What are carrier proteins? Describe the different types of carrier proteins.

(e) Give an elaborate account of fluid mossaic 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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