

U.G. 1st Semester Examination - 2021

BOTANY

[HONOURS]

Course Code : BOT-H-CC-T-1

(Biomolecules and Cell Biology)

Full Marks : 40

Time : 2½ Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** of the following: 2×5=10
- What is meant by hydrophobic interaction?
 - What is coupled reaction?
 - Distinguish between apoenzyme and coenzyme.
 - Differentiate between prokaryotic cell and eukaryotic cell in terms of organization of genetic material.
 - Mention four different types of chemicals present in plant cell wall.
 - Mention the functions of peroxisome.

- Mention the DNA content of a diploid cell during G1 and G2. In which phase of cell cycle DNA replication occurs?
- What is signal recognition particle (SRP)? What is its role?

2. Answer any **two** of the following : 5×2=10
- What is peptide bond? Briefly discuss the secondary, tertiary and quaternary structures of protein. 1+4
 - State the two laws of thermodynamics. What is entropy?
 - Discuss the origin of eukaryotic cell in the light of endosymbiotic theory.
 - Discuss the role of different kinases in cell cycle regulation.
3. Answer any **two** of the following : 10×2=20
- Compare A, B and Z types of DNA. Describe the structure of tRNA. 5+5
 - Write down Michaelis-Menten equation for a one-substrate enzyme-catalyzed reaction. What is meant by steady-state assumption? Compare competitive, uncompetitive, and mixed inhibition of enzymes. 2+2+6

[Turn over]

- c) With labelled diagram describe the structure of nuclear pore complex. Discuss the molecular organization of chromatin. 5+5
- d) With labelled diagram describe the structure of plasma membrane. Discuss the role of channel, carrier and pump in relation to transport across plasma membrane. 5+5
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