

Total number of printed pages—4

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

2020

(Held in 2021)

**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 questions :  $1 \times 7 = 7$ 
  - (a) What are enzyme inhibitors?
  - (b) Name the group of algae which is prokaryotic in nature.
  - (c) Who proposed the "Fluid Mosaic Model" of plasma membrane?

Contd.

(d) Mention the main role of protein kinase.

(e) \_\_\_\_\_ is known as suicidal bag.  
(Fill in the blank)

(f) What are the three layers of cell wall?

(g) Endosymbiotic theory is related with the origin of \_\_\_\_\_ cell.  
(Fill in the blank)

2. Give brief answers of the following :

2×4=8

(a) Explain the second law of thermodynamics.

(b) Explain the process of endocytosis in the active transport of materials across cell membrane.

(c) Mention *four* differences between mitosis and meiosis.

(d) What are redox reactions, explain with an example?

3. Answer [(a), (b) and (c)] **or** [(a), (d) and (e)] :  
5×3=15

(a) Write the differences between microtubules and microfilaments.

(b) Explain the lock and key hypothesis of enzyme action.

(c) Explain the phases of eukaryotic cell cycle.

(d) Write a note on Michaelis-Menten equation.

(e) Write a note on importance of cell cycle checkpoints and regulation.

4. Answer the following questions :

10×3=30

(a) Write a note on the classification of carbohydrates with suitable examples.  
10

**Or**

What are the main components of a nucleotide of DNA? Explain the structure of different types of DNA.

2+8=10

(b) Discuss the different levels of protein structure. Mention the biological roles of protein.  
6+4=10

Or

Discuss the major classes of storage and structural lipids and their functions. 10

(c) Describe the ultrastructure of nucleus with suitable diagram. 10

Or

Write notes on : **(any two)**  $5 \times 2 = 10$

(i) Mitochondria

(ii) Golgi apparatus

(iii) Chloroplast.