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**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)** 5×2=10

(i) Mitochondria

(ii) Golgi apparatus

(iii) Chloroplast.

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