

## M.Sc Semester-2 Examination

407

Biochemistry

April-2024

Time : 2-30 Hours]

[Max. Marks : 70

**Instructions:** Illustrate your answers with neat diagrams wherever necessary.

**Que 1 Write the following:**

- (i) What is the role of chloroplasts in plant cells? What are the essential features and functions of these organelles in plant biology? (7 Marks)
- (ii) How does the plant cell wall offer support and protection to the cell? (7 Marks)

**OR**

- (i) How does the plant cell wall protect the cell? Discuss the structure and composition of the plant cell wall and its functions. (7 Marks)
- (ii) What is plastid? Discuss the roles of plastids found in plant cells and their respective functions. (7 Marks)

**Que 2 Write the following:**

- (i) What do Differentiation, Dedifferentiation, and Redifferentiation entail in plant growth? (7 Marks)
- (ii) What is the definition of plant growth and development and how can we differentiate between qualitative and quantitative changes that occur in plant growth? (7 Marks)

**OR**

- (i) What is the definition of Photoperiodism and Vernalisation? (7 Marks)
- (ii) What factors and conditions are necessary for the growth and development of plants? (7 Marks)

**Que 3 Write the following:**

- (i) Describe the domestication process in plants, emphasizing the human role in selecting and breeding favorable traits for cultivation. (7 Marks)
- (ii) Write the principles of plant tissue culture and how are they applied in various contexts? (7 Marks)

**OR**

- (i) What is hybrid vigor (heterosis), and how is it attained through the mating of genetically diverse parents? Provide examples of crops where hybrid vigor has been effectively utilized. (7 Marks)
- (ii) What is the full form of NBPGR, and what are its main missions and objectives? (7 Marks)

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**Que 4 Write the following:**

- (i) Discuss the concept of biogeochemical cycles and their importance in regulating (7 Marks) Earth's systems. Detail the carbon cycle and elucidate its functions in ecosystem operations.
- (ii) Write the difference between biotic and abiotic factors within an ecosystem. Offer (7 Marks) examples of each and elaborate on their interactions and significance in upholding ecological equilibrium.

**OR**

- (i) Discuss the formation, effects, and environmental repercussions of acid rain and (7 Marks) evaluate its influence on ecosystems and human health.
- (ii) Elaborate on the phenomenon of global warming, covering its causes, consequences, (7 Marks) and potential solutions for mitigating its effects.

**Que 5 Attempt any seven out of twelve**

(14  
Marks)

- (i) Define greenhouse gases.
- (ii) List out the four types of breeding populations.
- (iii) What are exocytosis and endocytosis?
- (iv) What are desmotubules?
- (v) What is Nitrogen Fixation?
- (vi) Who is the father of the green revolution in India?
- (vii) Explain the food chain and food web.
- (viii) What causes Acid rain?
- (ix) Define ecosystem.
- (x) What are the limiting factors? Explain with examples.
- (xi) Explain Phytohormones.
- (xii) Name two hormones involved in plant defence.

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