

## M.Sc Semester-2 Examination

407

Life Science

April-2024

## LSC 407 Principles of Plant sciences and Ecology

Time: 2 Hrs 30 Min]

Instructions:

[Max Marks: 70

All questions are compulsory.

Illustrate your answers with neat diagrams wherever necessary.

Question - 1

Write the following

- i) Discuss the structure and composition of the plant cell wall and its functions. [07]
- ii) Discuss the roles of plastids found in plant cells and their respective functions. [07]

OR

- i) What are the key features and functions of chloroplasts in plant cells, particularly in relation to photosynthesis? [07]
- ii) How does the plant cell wall offer support and protection to the cell? [07]

Question - 2

Write the following

- i) What do Differentiation, Dedifferentiation, and Redifferentiation entail in plant growth? [07]
- ii) What factors and conditions are necessary for the growth and development of plants? [07]

OR

- i) What is the definition of Photoperiodism and Vernalisation? [07]
- ii) How do we define plant growth and development, and what distinguishes qualitative from quantitative changes observed in plant growth? [07]

Question - 3

Write the following

- i) Describe the domestication process in plants, emphasizing the human role in selecting and breeding favorable traits for cultivation. [07]
- ii) What are the principles of plant tissue culture and how are they applied in various contexts? [07]

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. [07]
- ii) What is the full form of NBPGR, and what are its main missions and objectives? [07]

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Question - 4

Write the following

- i) Explore the concept of biogeochemical cycles and their importance in regulating Earth's systems. Detail the carbon cycle and elucidate its functions in ecosystem operations. [07]
- ii) Distinguish between biotic and abiotic factors within an ecosystem. Offer examples of each and elaborate on their interactions and significance in upholding ecological equilibrium. [07]

OR

- i) Explain the formation, effects, and environmental repercussions of acid rain and evaluate its influence on ecosystems and human health. [07]
- ii) Elaborate on the phenomenon of global warming, covering its causes, consequences, and potential solutions for mitigating its effects. [07]

Question - 5

Attempt any seven out of twelve

[14]

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

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