

The Open University of Sri Lanka
Faculty of Natural Sciences
B.Sc./B.Ed Degree Programme



074

Department	: Botany
Level	: 05
Name of the Examination	: B.Sc. Degree Programme-Final Examination
Course Title and - Code	: Plant Growth and Development BYU5302/BYE5302
Academic Year	: 2024/2025
Date	: 10th December 2024
Time	: 9.30 a.m. – 11.30 a.m.

General Instructions

1. Read all instructions carefully before answering the questions.
 2. This question paper consists of **06** questions in **02** pages.
 3. Answer any **04** questions only. All questions carry equal marks.
 4. Answer for each question should commence from a new page.
 5. Draw fully labelled diagrams where necessary
 6. Involvement in any activity that is considered as an exam offense will lead to punishment
 7. Use blue or black ink to answer the questions.
 8. Clearly state your index number in your answer script
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- 1 a) What is the principal natural auxin in plants? Draw its structure.
(10 marks)
- b) Briefly describe the mechanisms involved in the regulation of endogenous auxin levels in plants.
(15 marks)
- c) What are “bound auxins”? Discuss the significance of “bound auxins” to plants.
(15 marks)
- d) Briefly explain how auxin contributes to cell wall elongation.
(30 marks)
- e) “Continuous removal of the apical meristem maintains a plant as a bush”. Discuss this statement.
(30 marks)
2. a) What is meant by photoreversibility of phytochrome?
(10 marks)
- b) Describe the structure of the phytochrome molecule indicating the important functional domains.
(40 marks)
- c) Briefly explain the shade avoidance response of sun plants and how it is regulated by phytochromes.
(50 marks)
3. a) What is meant by “scarification”?
What type of seed dormancy is overcome by scarification?
(20 marks)
- b) Describe the different ways of scarifying seeds.
(30 marks)
- c) List the five basic mechanisms of coat-imposed dormancy.
(25 marks)
- d) Briefly explain why seed dormancy exists in nature.
(25 marks)

4. a) Define the term “senescence”
(10 marks)
- b) Plants show many types of senescence. List the different types of senescence seen in plants
(35 marks)
- c) Briefly explain how chlorophyll catabolism takes place during senescence.
(35 marks)
- d) “Biological senescence followed by death of plants have many advantages to plants”.
Discuss this statement. (20 marks)
5. Write short notes on the following:
- (a) Rhythmic behavior seen in plants in association with daily cycles of light and darkness.
(60 marks)
- (b) Methods available to delay ripening of fruits during storage.
(40 marks)
6. (a) Distinguish between vernalization and stratification (10 marks)
- (b) Two categories of plants have been identified based on vernalization responsiveness of plants. Name and describe these categories giving one example for each category.
(20 marks)
- (c) State whether a short-day plant with a critical night length of 10 hours would flower under the following conditions. Give reasons in each case.
- (i) 15 hours of day light followed by 9 hours of darkness
 - (ii) 12 hours of day light followed by 12 hours of darkness
 - (iii) 13 hours of day light followed by 11 hours of darkness with a flash of red light at hour 18
 - (iv) 12 hours of day light followed by 12 hours of darkness with a flash of red light at hour 18 followed by a flash of far-red light
 - (v) 10 hours of day light followed by 14 hours of darkness with a flash of red light at hour 17
(70 marks)

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