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



<b>Department</b>	<b>: Botany</b>
<b>Level</b>	<b>: 05</b>
<b>Name of the Examination</b>	<b>: B.Sc. Degree Programme-Final Examination</b>
<b>Course Title and - Code</b>	<b>: Plant Growth and Development- BYU5302</b>
<b>Academic Year</b>	<b>: 2020/2021</b>
<b>Date</b>	<b>: 23<sup>rd</sup> December 2021</b>
<b>Time</b>	<b>: 9.30 a.m. - 11.30 a.m.</b>
<b>Duration</b>	<b>: 2 hours</b>

**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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## ANSWER ANY FOUR (04) OF THE FOLLOWING QUESTIONS

- 1 (a) Briefly describe the general structure of cytokinins
  - (b) Name **two** natural and **two** synthetic cytokinins.
  - (c) Explain the involvement of cytokinins in the following:
    - (i) Regulation of grain yield in rice
    - (ii) Formation of N-fixing nodules in legumes
  - (d) Briefly describe **two** instances where cytokinins cause diseases in higher plants.
  - (e) “Cytokinins prevent or delay senescence”. Comment on this statement.
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02. (a) What is “Bakanae disease” and what is its relationship to the discovery of gibberellins?
  - (b) What is meant by “bolting”?
  - (c) “Germination of cereal grains may not occur in the absence of gibberellic acid”. Discuss this statement.
  - (d) Briefly describe the uses of gibberellins in plant breeding
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- 03 (a) Briefly explain very-low-fluence responses (VLFRs), low-fluence responses (LFRs) and high-irradiance responses (HIRs) of phytochrome.
  - (b) Describe the structure of the phytochrome molecule, indicating the important functional domains.
  - (c) How do “sun plants” differ from “shade plants”? Briefly explain the “shade avoidance response” and how it is regulated by phytochrome.

04. (a) Name and describe the five categories of plants classified according to their photoperiodism-based flowering.
- (b) 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 daylight followed by 9 hours of darkness
  - (ii) 12 hours of daylight followed by 12 hours of darkness
  - (iii) 13 hours of daylight followed by 11 hours of darkness, with a flash of far-red light at the 18<sup>th</sup> hour.
  - (iv) 12 hours of daylight followed by 12 hours of darkness, with a flash of red light at the 18<sup>th</sup> hour followed by a flash of far-red light
  - (v) 10 hours of daylight followed by 14 hours of darkness, with a flash of red light at the 17<sup>th</sup> hour.
- 05 Discuss the following:
- (a) Ethylene-releasing compounds are widely used in horticulture and agriculture
  - (b) Certain structural features are required in substances to exhibit auxin activity
  - (c) From an ecological perspective, dormancy is an important survival mechanism
- 06 Write short notes on the following
- (a) Functions of Programmed Cell Death (PCD) in plants
  - (b) Significance of abscission to plants
  - (c) Practical importance of photoperiodism

