THE OPEN UNIVERSITY OF SRI LANKA

B.Sc. DEGREE PROGRAMME

BOTANY- LEVEL 05

FINAL EXAMINATION 2021/2022

BOU 3102/BOE 5102/BYU5302/BYE5302- PLANT GROWTH AND DEVELOPMENT

Date: 29th October 2022 Time: 9.30 am- 11.30 am

Answer any four (04) of the following questions

01. a) What is the principal natural auxin in plants?
Draw its structure

b) "When sections of coleoptiles are placed in an acidic solution, they elongate as if auxins are present". Comment on this.

c) Name the carrier-mediated, cell to cell, directional transport involved in movement of auxin in plants.
With the aid of a fully labelled diagram, explain the mechanism of auxin transport you mentioned.

02. Discuss the following:

a) Brassinosteroids have been shown to carry out a variety of functions in plants.

b) The flower stalks and petioles of water plants elongate rapidly when submerged.

03. a) What are the two types of germination patterns exhibited by flowering plants? Explain each type briefly

b) Briefly describe the process of seed germination.

c) Briefly state how a germination test is performed

d) How does seed germination facilitate beer making?

04. Explain the mechanism of each plant response given below:

a) Geotropism

b) Leaf abscission

c) Stomatal closure in response to abscisic acid (ABA)

05. Write short notes on the following:

a) Specialized tissues/structures associated with physical dormancy that control water permeability of the seed coat.

b) Sleep movements of leaves of certain legume plants due to circadian ion fluxes into and out of motor cells.

06. a) What is photoperiodism?

b) What plant organs are responsible for the perception of variations in light?

What pigment is responsible for this perception?

c) State whether a short day plant with a critical night length of 11 hours would flower under the following conditions. Give reasons in each case.

i) 14 hours of day light followed by 10 hours of darkness
ii) 12 hours of day light followed by 12 hours of darkness
iii) 12 hours of day light followed by 12 hours of darkness, with a flash of far-red light at the 17^{th} hour
iv) 12 hours of day light followed by 12 hours of darkness, with a flash of red light at the 17^{th} hour 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 the 22^{nd} hour.