THE OPEN UNIVERSITY OF SRI LANKA

B.Sc. DEGREE PROGRAMME

BOTANY –LEVEL 05

FINAL EXAMINATION – 2008/2009

BTU 3103/BTE 5103 – PLANT GROWTH AND DEVELOPMENT

DURATION : TWO AND A HALF (2 ½) HOURS

DATE : 24th December 2008 **TIME: 1.00 p.m. – 3.30 p.m.**

ANSWER ANY FOUR (04) OF THE FOLLOWING QUESTIONS.

01. (a) What are cytokinins?

(b) Discuss the various ways by which the cytokinin level of tissues is regulated.

(c) Cytokinins have a variety of physiological roles in plants. Describe briefly the different roles played by cytokinins in plants.

(d) Briefly discuss the mode of action of cytokinins.

02. (a) "Ethylene regulates accommodation growth in water plants". Comment of this statement.

(b) What is meant by "triple response of dark-grown seedlings"?

(c) Ethylene is used in agriculture for various purposes. Briefly describe the uses of ethylene in agriculture.

(d) If a leaf is sprayed with a solution of ABA (Abscisic Acid), and an epidermal peel of the leaf is observed under the microscope, what would you observe? Explain the mechanism involved in bringing about what you observed?

03. Discuss the following.

(a) In temperate countries, potatoes meant for cooking are usually stored under cover in a frost-free place.

(b) Release from apical dominance can be achieved through the application of cytokinins to the apical bud.

(c) Plant hormone gibberellin acts as a chemical signal to bring about certain biochemical changes in germinating cereal grains.

04. (a) Dormancy of seeds results from a single or a combination of several factors. Discuss these factors briefly.

(b) Briefly explain how certain environmental factors can often cause a release from seed dormancy.

(c) What is meant by "scarification" and what type of seed dormancy is overcome by scarification? Discuss <u>two</u> different ways of scarifying seeds.

(d) Briefly explain the significance of seed dormancy.

05. (a) How does low temperature influence flowering behaviour?

(b) Distinguish between vernalization and stratification.

(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 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 hour 18.
(iv) 12 hours of daylight 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 daylight followed by 14 hours of darkness with a flash of red light at hour 17.

06. Write short notes on the following.

(a) Auxin measurement by radioimmunoassay

(b) Use of growth hormones in inducing parthenocarpic fruit set.

(c) Zygotic embryogenesis in dicots.