2024

BOTANY — HONOURS

Paper : CC-13

(Plant Physiology)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer ***any five*** questions : 2×5

   (a) Why is water potential of living root cells always negative?

   (b) Write down the chemical structure of any synthetic cytokinin.

   (c) State two major advantages of hydroponics.

   (d) What is scarification of seeds?

   (e) What do you mean by chelating agent?

   (f) What is 'Biorhythm'?

   (g) Mention one symptom each caused by Molybdenum and Iron deficiency in plants.

   (h) Why are both active and inactive Gibberellins present together in a plant?

2. Answer ***any two*** questions :

   (a) Mention the physiological roles of Calcium and Manganese in plants. 5

   (b) Define Innate and Induced dormancy of seeds. Briefly describe the hormone regulation of seed dormancy. 2+3

   (c) Write down the role of K^+ ion and blue light in stomatal movement. 2½+2½

3. Answer ***any three*** questions :

   (a) (i) What are the characteristics of Antitranspirants? Mention their types.

   (ii) Suppose there are 2 cells A and B. Cell A has osmotic potential = –16 bars, pressure potential = 6 bars. Cell B has osmotic potential = –10 bars and pressure potential = 2 bars. What is the direction of movement of water? (4+2)+4

   (b) 'Critical Night length is more important than day length.'— Explain. How does vernalization affect gene expression? 5+5

   (c) (i) Describe the tryptophan dependent pathways of Auxin biosynthesis with the help of chemical structure and flow chart.

   (ii) Write down the role of polyamines as plant growth regulator. 6+4

(d) What is 'Programmed Cell Death'? Write down the types of PCD found in plant. Write briefly how plant hormones interact in regulation of plant senescence. What is abscission? 2+2+4+2

(e) Explain, in detail, how water can travel from root to the top of a tree without expenditure of energy. Write down the mechanism by which a plant can overcome the problem of cavitation. 7+3
