

U.G. 5th Semester Examination - 2024**BOTANY****[HONOURS]****Course Code : BOT-H-CC-T-11****(Plant Physiology)****Full Marks : 40****Time : 2½ Hours***The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any five of the following questions: $2 \times 5 = 10$
 - a) Distinguish between symplastic and apoplastic pathways of water movement.
 - b) State the role of P-protein in phloem translocation.
 - c) What are the differences between trace and tracer element?
 - d) Name two plant developmental processes controlled by phytochrome.
 - e) Write down the components of water potential.
 - f) Enumerate the typical symptoms of nitrogen deficiency in plants.
 - g) State the role of abscisic acid (ABA) in seed dormancy.

[Turn over]

- h) Name one natural cytokinin and state its source.
2. Answer any **two** of the following questions: $5 \times 2 = 10$
- a) Why is transpiration known as a 'necessary evil'?
How do different factors affect the rate of transpiration? 2+3
- b) Write down the factors causing seed dormancy. 5
- c) What is photoperiodism? How does it influence flowering in plants? 1+4
- d) Describe the role of ethylene in fruit ripening and triple response in seedlings. $2\frac{1}{2} + 2\frac{1}{2}$
3. Answer any **two** of the following questions: $10 \times 2 = 20$
- a) Illustrate the auxin biosynthetic pathway in plants. Define the physiological roles controlled by auxin. Name the physiological role where auxin and cytokinin counteract. 4+5+1
- b) Define transpiration. Describe the mechanism by which stomata and remain open in light. What are the factors that affect transpiration? 1+5+4
- c) What are phytochromes? Describe their role in regulating different plant responses. 2+8
- d) Distinguish between essential and non-essential elements. Name four macronutrients and four micronutrients and define their roles in plant growth. 2+4+4