2025

(FYUGP)

(6th Semester)

BOTANY

Paper : Bcc–M6/BCM–6T

(Plant Physiology)

Full Marks : 75 *Pass Marks* : 40%

Time : 3 hours

(PART : B—DESCRIPTIVE)

(*Marks* : 50)

The figures in the margin indicate full marks for the questions

1. *(a)* Define ascent of sap. Explain in detail cohesion-tension theory. 2+8=10

Or

(b) Write notes on any *two* of the following : 5×2=10

(i) Factors affecting transpiration

(ii) Mechanism of stomatal opening

(iii) Water absorption by root

2. *(a)* What are essential and beneficial elements? Explain the role of essential elements. 5+5=10

Or

(b) Write short notes on the following : 5+5=10

(i) Deficiency symptoms of two macro-nutrients

(ii) Criteria of essentiality

3. *(a)* Define translocation. Explain the flow model in detail with diagrammatic representation. 2+8=10

Or

(b) Write notes on any *two* of the following : 5×2=10

(i) Source-sink relationship

(ii) Electrochemical gradient

(iii) Proton ATPase pump

4. *(a)* Briefly discuss the discovery of auxin. Enumerate on the physiological role of auxin. 10

Or

(b) Write notes on the following : 5+5=10

(i) Brassinosteroid

(ii) Ethylene

5. *(a)* What is vernalization? Explain the mechanism of vernalization. 2+8=10

Or

(b) Write notes on the following : 5+5=10

(i) Discovery phototropins

(ii) Photomorphogenesis

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BOTANY

Paper : Bcc–M6/BCM–6T

(Plant Physiology)

(PART : A—OBJECTIVE)

(*Marks* : 25)

The figures in the margin indicate full marks for the questions

SECTION—I

(*Marks* : 15)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×15=15

1. Water potential values are always

(a) positive ( )

(b) negative ( )

(c) both positive and negative ( )

(d) None of the above ( )

2. In symplastic, water moves from cell to cell via

(a) plasmodesmata ( )

(b) cell wall ( )

(c) intercellular space ( )

(d) None of the above ( )

3. In higher plant, water is lost from aerial part mainly through

(a) stomatal transpiration ( )

(b) cuticular transpiration ( )

(c) lenticular transpiration ( )

(d) guttation ( )

4. Which of the following elements is considered as a beneficial element but not essential?

(a) Boron (B) ( )

(b) Zinc (Zn) ( )

(c) Nitrogen (N) ( )

(d) Sodium (Na) ( )

5. Deficiency of which nutrient causes interveinal chlorosis in plants?

(a) Phosphorus (P) ( )

(b) Nitrogen (N) ( )

(c) Magnesium (Mg) ( )

(d) Calcium (Ca) ( )

6. Phosphorus in plants forms an important constituent of

(a) nucleic acid and ATP ( )

(b) chlorophyll ( )

(c) middle lamella in cell wall ( )

(d) alkaloids ( )

7. The main driving force for passive nutrients absorption in plants is

(a) carrier proteins ( )

(b) ATP hydrolysis ( )

(c) electrochemical potential gradient ( )

(d) phloem pressure ( )

8. In symport transport, protons coupled with other solutes move in

(a) same direction ( )

(b) opposite direction ( )

(c) random direction ( )

(d) None of the above ( )

9. The transfer of sugar from mesophyll cells to sieve tube elements in leaf is called as

(a) phloem loading ( )

(b) phloem unloading ( )

(c) translocation ( )

(d) Both *(a)* and *(b)* ( )

10. Gibberellins were first discovered in relation to

(a) root elongation ( )

(b) leaf formation ( )

(c) seed dormancy ( )

(d) disease in rice plant ( )

11. The plant hormone responsible for seed dormancy is

(a) auxin ( )

(b) abscisic acid ( )

(c) cytokinin ( )

(d) gibberellin ( )

12. The phenomenon of senescence and abscission in plants is associated with plant hormone known as

(a) cytokinin ( )

(b) gibberellin ( )

(c) abscisic acid ( )

(d) ethylene ( )

13. The conversion of P_R to P_{fR} occurs when plants are exposed to

(a) blue light ( )

(b) red light ( )

(c) green light ( )

(d) far-red light ( )

14. Which of the following is a high irradiance response (HIR)?

(a) Phototropism ( )

(b) Seed germination ( )

(c) Chloroplast movement ( )

(d) Shade avoidance ( )

15. The florigen hormone is synthesized in which part of the plant?

(a) Roots ( )

(b) Leaves ( )

(c) Flowers ( )

(d) Stems ( )

SECTION—II

(*Marks* : 10)

Write short notes on any *five* of the following : 2×5=10

1. Guttation

2. Apoplast

3. Macronutrient

4. Role of ATP

5. Facilitated diffusion

6. Jasmonic acid

7. Photoperiodism

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