2025

(NEP—2020)

(5th Semester)

BOTANY (MAJOR3/MINOR)

(Plant Physiology)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Absorption of water mainly due to transpiration is

(a) passive absorption ( )

(b) osmotic absorption ( )

(c) non-osmotic absorption ( )

(d) active absorption ( )

2. The most abundant element present in plant is

(a) nitrogen ( )

(b) manganese ( )

(c) iron ( )

(d) carbon ( )

3. Which of the following minerals is required for the synthesis of chlorophyll?

(a) Copper ( )

(b) Potassium ( )

(c) Nitrogen ( )

(d) Magnesium ( )

4. The most important product of light reaction of photosynthesis is

(a) oxygen ( )

(b) NADPH ( )

(c) ATP ( )

(d) All of the above ( )

5. Most oxygen in the atmosphere is contributed by plants from

(a) photosystem ( )

(b) photolysis of water ( )

(c) photorespiration ( )

(d) photooxidation ( )

6. The first stable product of C_3 pathway is

(a) oxaloacetic acid ( )

(b) RuBP ( )

(c) PGA ( )

(d) PGAL ( )

7. Krebs cycle takes place in

(a) mitochondria ( )

(b) cytoplasm ( )

(c) grana ( )

(d) endoplasmic reticulum ( )

8. The enzyme for electron transport chain is present in

(a) cytoplasm ( )

(b) matrix ( )

(c) outer mitochondrial membrane ( )

(d) inner mitochondrial membrane ( )

9. Ethylene is employed for

(a) increasing light ( )

(b) stimulation ( )

(c) ripening ( )

(d) apical dominance ( )

10. In higher plants, cell elongation is due to hormone

(a) florigen ( )

(b) auxin ( )

(c) cytokinin ( )

(d) gibberellin ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Write short notes on *five*, taking at least *one* from each Unit : 3×5=15

UNIT—I

1. Water potential

2. Antitranspirant

UNIT—II

3. CAM plants

4. Photosystem

UNIT—III

5. Structure of mitochondria

6. Respiration

UNIT—IV

7. Synthetic growth regulators

8. Ethylene

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer *five* questions, taking at least *one* from each Unit : 10×5=50

UNIT—I

1. What is transpiration? Describe the mechanism of stomatal regulation of transpiration. 2+8=10

2. Write short notes on the following : 5×2=10

(a) Active and passive absorption of water

(b) Deficiency symptoms of N, P, K, B and S

UNIT—II

3. What is photosynthesis? Describe carbon fixation in C_3 plants. 2+8=10

4. Write notes on the following : 5×2=10

(a) Photorespiration

(b) Photosynthetic apparatus

UNIT—III

5. Give a detailed account on the process of glycolysis. 10

6. Write on the following : 5×2=10

(a) Electron transport system

(b) Respiratory quotient

UNIT—IV

7. What are plant growth hormones? Describe the physiological roles of auxin and ethylene. 2+8=10

8. Write notes on the following : 5×2=10

(a) Role of ABA in stress management

(b) Mobilization of endosperm food reserves by gibberellins

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