

Bs/BCM-6(T)

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(FYUGP)

(6th Semester)

BOTANY

Paper : BCM-6(T)

(Plant Physiology)

Full Marks : 75

Pass Marks : 40%

Time : 3 hours

*The figures in the margin indicate full marks
for the questions.*

(PART : A—OBJECTIVE)

(Marks : 25)

SECTION—I

(Marks : 15)

Choose the correct option :

1×15=15

1. Which of the following increases the water potential?

- (a) Turgor pressure
- (b) Increase in temperature
- (c) Both (a) and (b)
- (d) None of the above

2. Water potential is equal to osmotic potential when the pressure potential is
 - (a) positive
 - (b) negative
 - (c) equal to zero
 - (d) None of the above
3. Active absorption of water by the roots occur by the process of
 - (a) osmosis
 - (b) diffusion
 - (c) facilitated diffusion
 - (d) Both (a) and (b)
4. Plants wilt when the rate of transpiration is
 - (a) lower than the rate of water absorption
 - (b) higher than the rate of water absorption
 - (c) equal to the rate of water absorption
 - (d) None of the above
5. Which of the following is not a macro-nutrient?
 - (a) Calcium
 - (b) Magnesium
 - (c) Chlorine
 - (d) Phosphorus

6. Deficiency of which nutrient causes 'whiptail of cauliflower' and 'yellow spot of citrus'?
- (a) Sulphur (S)
 - (b) Boron (B)
 - (c) Iron (Fe)
 - (d) Molybdenum (Mo)
7. Which nutrient is a component of chlorophyll?
- (a) Magnesium (Mg)
 - (b) Potassium (K)
 - (c) Chlorine (Cl)
 - (d) Manganese (Mn)
8. The translocation of water and minerals takes place through
- (a) apoplast
 - (b) symplast
 - (c) Both (a) and (b)
 - (d) None of the above
9. The principal translocatory form of sugar in phloem is
- (a) glucose
 - (b) sucrose
 - (c) fructose
 - (d) galactose

10. The plant hormone responsible to break seed dormancy and induce germination is
- (a) auxin
 - (b) abscisic acid
 - (c) cytokinin
 - (d) ethylene
11. Which plant hormone is chemically indole-3-acetic acid (IAA)?
- (a) Absciscic acid
 - (b) Cytokinin
 - (c) Auxin
 - (d) Gibberellin
12. The plant hormone associated with induction of flowering is
- (a) auxin
 - (b) cytokinin
 - (c) gibberellin
 - (d) ethylene
13. The response of plants to the timing of light and darkness is called
- (a) photoperiodism
 - (b) vernalization
 - (c) photomorphogenesis
 - (d) Both (a) and (c)

(5)

14. The site of vernalization is in which part of the plant?
- (a) Leaf
 - (b) Shoot apex
 - (c) Root apex
 - (d) Flower
15. The treatment of seeds at low temperature under moist conditions to overcome the dormancy is called
- (a) impaction
 - (b) scarification
 - (c) stratification
 - (d) Both (b) and (c)

SECTION—II

(Marks : 10)

Write short notes on any *five* of the following :

2×5=10

1. Symplast
2. Root pressure
3. Micronutrients
4. Active absorption
5. Symport and antiport
6. Auxin
7. Cytochrome

(6)

(PART : B—DESCRIPTIVE)

(Marks : 50)

1. (a) Define transpiration. Explain the various factors affecting transpiration.

2+8=10

Or

- (b) Write notes on any *two* of the following :

5×2=10

- (i) Water potential
- (ii) Cohesion-tension theory
- (iii) Antitranspirants

2. (a) What are macronutrients? Explain the role of two macronutrients and their deficiency symptoms.

2+8=10

Or

- (b) Write notes on the following :

5×2=10

- (i) Method of study and use of nutrient solution
- (ii) Deficiency symptoms of two micronutrients

3. (a) Explain in detail the process of phloem loading and unloading.

10

(7)

Or

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

- (i) Facilitated diffusion
- (ii) Soil as a nutrient reservoir
- (iii) Proton ATPase pump

4. (a) Explain the physiological role of ethylene. 10

Or

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

- (i) Gibberellins
- (ii) Seed dormancy

5. (a) What do you understand by phytochrome? Write a note on the physicochemical nature of phytochrome. 5+5=10

Or

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

- (i) Electrochemical gradient
- (ii) Photoperiodism

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