

M.Sc. BOTANY
FOURTH SEMESTER
BIOCHEMISTRY AND PLANT PHYSIOLOGY
MSB-403 B

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

[PART-A : Objective]

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1x20=20

- To make DPD equal to OP the cell should be placed in:
 - Hypotonic solution
 - Hypertonic solution
 - Isotonic solution
 - Water
- Amount of water held as thin film around soil particle due to strong force of attraction is known as:
 - Hygroscopic water
 - Capillary water
 - Gravitational water
 - Soil water
- In which form of sugar the symplastic loading takes place?
 - Glucose
 - Sucrose
 - Maltose
 - Arabinose
- In banana, natural parthenocarpy occurs due to mre concentration of _____
 - Auxin
 - Cytokinin
 - GA
 - Ethelene
- Which of the following is a germination stimulatory substance?
 - Thiourea
 - Ferulic acid
 - Prasorbic acid
 - ABA
- Dark period is critical for:
 - Long day plants
 - Short day plants
 - Day neutral plant
 - Both a and b
- Which of the following is known as assimilatory power of dark reaction?
 - Water and oxygen
 - NADH
 - ATP and NADPH
 - Carbon dioxide
- Mg porphyrin head is:
 - Hydrophilic
 - Lipophilic
 - Hydro phobic
 - Lipophobic
- Photo oxidation of water in photosynthesis is in association of
 - Photosystem I
 - Photosystem II
 - Plastocyanin
 - Cytochrome B6
- The process of seed germination starts with:
 - Imbibition
 - Diffusion
 - Osmosis
 - Both a and b

11. Respiration is:
 a. A catabolic process
 b. An anabolic process
 c. A chemical process
 d. All of the above
12. The ability of sink to mobilize photosynthesis or assimilates toward it is known as:
 a. Sink size
 b. Sink strength
 c. Sink activity
 d. Sink load
13. The main effect of growth retardant is to reduce:
 a. Stem elongation
 b. Plants are shorter and more compact
 c. Darker green foliage
 d. All of the above
14. Which of the following is the common oxidation pathway for carbohydrate, protein and fat metabolism?
 a. Glycolysis
 b. Link reaction
 c. Krebs cycle
 d. All of the above
15. Among the following which ion can diffuse both outward and inward through channels across the plasma membrane of plants?
 a. K⁺
 b. Ca⁺⁺
 c. Both
 d. Na⁺
16. Dimorphic chloroplasts are found in leaves of:
 a. C₄ plants
 b. C₃ plants
 c. CAM plants
 d. All plants
17. Which of the following hormone replaces the low temperature requirement in certain plants?
 a. Auxin
 b. Gibberellins
 c. Cytokinins
 d. Ethylene
18. Elements involved in stomatal regulation is:
 a. Zinc
 b. Sodium
 c. Potassium
 d. Iron
19. In plants, transpiration plays an important role in:
 a. Translocation of mineral salts
 b. Regulation of temperature
 c. Ascent of sap
 d. All of the above
20. The bulk fixation of carbon through photosynthesis takes places in
 a. Crop plants
 b. Tropical rain forest and crop plants
 c. Tropical rain forest
 d. Ocean

(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

- | | |
|---|----------|
| 1. What is water and chemical potential? Describe the physico-chemical properties of water. | 2+2+6=10 |
| 2. Write the differences between chl a and chl b. Describe the structure of chlorophyll molecule. | 6+4=10 |
| 3. What is red drop? Describe the regeneration of RUBP in Calvin Cycle. | 3+7=10 |
| 4. Write the bioassay and mechanism of action of gibberellins. | 5+5=10 |
| 5. What is vernalization and devernialization? Describe the mechanism of vernalization. | 2+8=10 |
| 6. What is secondary metabolite? Why secondary metabolites are important and what are those? | 1+5+4=10 |
| 7. Write the differences between C ₃ , C ₄ and CAM pathways of carbon fixation. | 10 |
| 8. What is the significance of transpiration? Describe the mechanism of stomatal transpiration. | 3+7=10 |

== *** ==