REV-01
MSB/54/59

2024/05

**SET B**

# M.Sc. BOTANY
## SECOND SEMESTER
## PLANT PHYSIOLOGY AND BIOCHEMISTRY
## MSB-202

[USE OMR SHEET FOR OBJECTIVE PART]

**Duration: 3 hrs.** **Full Marks: 70**

**Objective**

**Time: 30 mins.** **Marks: 20**

***Choose the correct answer from the following:*** ***1×20=20***

1. In early embryogenesis which of the following hormones will be abundant?
   a. Gibberellins and Ethylene
   b. Auxin and Gibberellins
   c. ABA and cytokinin
   d. Cytokinin and Ethylene

2. The process of seed germination is the critical stage in plants life cycle and therefore plants have evolved precise mechanism for its regulation. Therefore there are few statements regarding this. Select the incorrect statement/statements.
   I) Gibberellic acid (GA) and ABA are the main phytohormones that participate in the regulation of seed germination process.
   II) GA and cytokinin are the main phytohormones that participate in the regulation of seed germination process.
   III) The increase of GA during seed germination is associated with a decrease in ABA because GA functionally destabilizes ABA.
   IV) Increase of GA in seed germination is associated with decrease in ABA due to presence of Cytochrome P-450 which helps in ABA catabolism.
   a. I only
   b. II only
   c. I and IV
   d. II and III

3. Which of the following is the component of nitrogenase ?
   a. Fe-Mo protien
   b. Mo Protien
   c. Fe- Protien
   d. Mn Potien

4. Nitrate is reduced and ultimately produces $N_2$ through a series of intermediate gaseous nitrogen oxide products is called as:
   a. Nitrogen fixation
   b. Nitrification
   c. Denitrification
   d. Nitrogen assimilation

5. Which of the hormone regulates cell division and differentiation?
   a. Gibberellin
   b. Auxin
   c. Ethylene
   d. Cytokinin

6. The quantum yield in photosythesis is:
   a. 8%
   b. 12%
   c. 25%
   d. 50%

7. Which of the following is the common germination inhibitor?
   a. Coumarin
   b. Ferulic acid
   c. ABA
   d. All of these

8. The process of seed germination starts with:
   a. Imbibation
   b. Diffusion
   c. Osmosis
   d. None

9. Total ATP output after complete oxidation of glucose molecule through ETS:
   a. 32
   b. 34
   c. 38
   d. 12

10. Warburg effect is related to:
   a. Carbon dioxide
   b. Light
   c. Oxygen
   d. Water

11. Which of the following does not have sulphuric acid groups?
   a. Heparin
   b. Kerato sulfate
   c. Hyaluronic acid
   d. Chondroitin sulfate

12. Which of the following has reducing properties?
   a. Gluconic acid
   b. Glucuronic acid
   c. Glucaric acid
   d. Mucic acid

13. Pulses are deficient in:
   a. Lysine
   b. Threonine
   c. Methionine
   d. Tryptophan

14. Thermal denaturation of protein involves:
   a. Conformational change in the protein
   b. Covalent modification of certain amino acids
   c. Random cleavage of the peptide bonds
   d. Increase in its isoelectric point

15. When you boil an egg, you convert the albumin into a white solid mass. In chemical terms you would say that:
   a. The protein was dehydrated by heat
   b. The protein was cross-linked by heat
   c. The protein was denatured by heat
   d. The protein was degraded by heat

16. Magnesium deficiency causes .....chlorosis of the leaves.
   a. Interveinal
   b. Marginal
   c. Vienal
   d. Both a and b

17. Calcium is an important component of.....
   a. Secondary cell wall
   b. Primary cell wall
   c. Middle lamella
   d. All of the above

18. Element essential for the photolysis of water is:
   a. Chlorine
   b. Carbon
   c. Oxygen
   d. Manganese

19. The immediate precursor of chlorophyll a is:
   a. Protochlorophyll
   b. Protoporphyrin
   c. Chlorophyllide a
   d. None

20. The main limiting factor which limits the rate of photosynthesis on a clear day is:
   a. Light
   b. Carbon dioxide
   c. Chlorophyll
   d. None

-- --- --

## Descriptive

Time : 2 hr. 30 mins. Marks : 50

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

1. Write short notes on: 6+2+2=10
   a) Classification of enzyme with proper example.
   b) Active site of enzyme
   c) Phospholipid
2. Discuss about various water soluble vitamins as coenzymes. 10
3. Write the production of ATP in respiration of plant. 10
4. Write the difference between C3 and C4 plants. 10
5. Physiological effect of Auxin and its mechanism of action. 6+4=10
6. Discuss about the physiological process of symbiotic Nitrogen fixation in leguminous plants. Discuss the role of Nitrogenous enzymes in Nitrogen fixation. 6+4=10
7. a) Justify that photorespiration is essentially abscent in C4 plants. 2.5×4=10
   b) Justify that Plants when exposed to monochomatic light photosynthesis decreased.
   c) Write the Physiological role of calcium or Magnesium.
   d) Write the deficiency sympton of nitrogen or phosphorus.
8. What is seed dormancy?Write the causes the of seed dormancy. 2+8=10

= = *** = =