

M.Sc. BOTANY
FOURTH SEMESTER
ADVANCED PLANT PHYSIOLOGY AND BIOCHEMISTRY
MSB-401 B

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

(Objective)

Choose the correct answer from the following:

1 × 20 = 20

- Epimerases comes under which group of enzymes?
 - Hydrolases
 - Isomerases
 - Transferases
 - Lygases
- Which is true about allosteric enzymes?
 - They are a class of regulatory enzymes
 - They function through reversible, noncovalent binding of modulators
 - Most allosteric enzymes are oligomeric
 - They don't obey Michelis Menten kinetics
 - i, ii, iv
 - ii, iii, iv
 - i, ii, iii, iv
 - i, iii, iv
- Which of the following statements about the reversible enzyme inhibition is incorrect?
 - Noncompetitive inhibition occurs when a substrate and as inhibitor binding sites are same
 - Competitive inhibition occurs when a substrate and an inhibitor compete for the same active site on the enzyme
 - Noncompetitive inhibition of an enzyme cannot be overcome by adding large amount of substrate
 - Competitive inhibitors are often similar in chemical structure to the substrate of the inhibited enzyme
- Feature of the competitive inhibition include:
 - V_{max} increases
 - V_{max} decreases
 - V_{max} remains constant
 - None of the above
- Which is not the method for producing immobilized enzymes with multifunctional reagents?
 - Enzymes are adsorbed on the surface active support followed by intermolecular cross linking
 - Functional groups are introduced on the support to react co-valently with enzymes
 - Enzymes are cross linked intermolecularly
 - Enzymes are cross linked intermolecularly
- Swelling of grana, altered structural organization of thylakoids, loss of grana stacking are the response to:
 - Heat stress
 - Chilling stress
 - Flood stress
 - All of the above

7. Which of the following statement is incorrect?
- | | |
|--|--|
| a. ACC synthesis increases in root during flood stress | b. Intercellular freezing occurs when temperature falls suddenly |
| c. Sorbitol accumulation in cells take place during water stress | d. The plants with free -SH group is more resistant to freezing stress |
8. During acclimation tolerance of plants against particular stress is:
- | | |
|--------------|---------------------|
| a. Decreased | b. Not affected |
| c. Increased | d. All of the above |
9. Match the following:
- | | |
|-----------------|----------------------------------|
| a. Flood stress | 1. H ₂ O ₂ |
| b. drought | 2. Heat stress |
| c. Chaperonins | 3. Gibberellin |
| d. Catalase | 4. Sorbitol |
- | | |
|----------------------------|----------------------------|
| a. a - 3 b - 4 c - 2 d - 1 | b. a - 4 b - 3 c - 1 d - 2 |
| c. a - 4 b - 3 c - 2 d - 1 | d. a - 4 b - 2 c - 3 d - 1 |
10. Physiological stress is due to:
- | | |
|--------------------|---------------------|
| a. Water stress | b. High temperature |
| c. Low temperature | d. Salinity |
11. Which is called abiotic stress hormone?
- | | |
|------------------|--------------------|
| a. Ethylene | b. Brassinosteroid |
| c. Strigolactone | d. ABA |
12. Which amino acid chiefly accumulates in cells of water stressed plant?
- | | |
|------------|---------------|
| a. Proline | b. Leucine |
| c. Glycine | d. Methionine |
13. Which of the following is incorrect in biotic stress?
- | | |
|---|---|
| a. Gummosis is very common in stone fruit trees | b. Elicitors are host produced signal molecules |
| c. Chitinases is one group of PR proteins | d. Allelopathy is a type of biotic stress |
14. What is ROI?
- | | |
|--------------------------|--------------------------|
| a. Relative Oxygen Index | b. Reactive Oxygen Index |
| c. Relation Oxygen Index | d. None of these |
15. Biotic stress in plants is caused by:
- | | |
|---------|-----------|
| a. Heat | b. Insect |
| c. Cold | d. Water |
16. Presence of salt glands on leaf surfaces is characteristics of:
- | | |
|------------------------------|-----------------------------|
| a. <i>Suaeda fruticosa</i> | b. <i>Tamarix pentandra</i> |
| c. <i>Atriplex spongiosa</i> | d. None of the above |
17. Which group contains climacteric fruits?
- | | |
|---------------------------|-------------------------------|
| a. Apricot, mango, litchi | b. Orange watermelon, cherry |
| c. Peach, papaya, plum | d. Banana, papaya, watermelon |

18. What is the role of Ethylene in fruit ripening?
- a. Ethylene naturally produced in fruits and it initiates the ripening process
 - b. Ethylene is a gas that slows down ripening process
 - c. Ethylene is a chemical that artificially ripens fruits
 - d. Ethylene has no role in ripening
19. Which is false about ethylene production?
- a. Pomegranate produces high level of ethylene
 - b. Papaya produces high level of ethylene
 - c. Apple produces high level of ethylene
 - d. Sapota produces high level of ethylene
20. Which is true about ripening?
- a. B-carotene degrades during ripening
 - b. Terpenoid level declines during ripening
 - c. Lycopene level drastically declines
 - d. Change in pH causes chlorophyll degradation
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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

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

1. Write the physiological effect of flood stress in plants. 10
2. Write about the physiological effect of high temperature stress in plants. 10
3. Discuss the various process of enzyme immobilization. 10
4. Write short notes on: 2+2+6=10
 - a) PR proteins
 - b) Hypersensitivity reactions
 - c) Enzyme inhibition
5. Give your comments on: 5+5=10
 - a) Why plants adapted to cool temperatures acclimate poorly to high temperatures?
 - b) High temperature reduces membrane stability.
6. What are different types of biotic stress? Discuss about the induced structural defence in plants in response to biotic stress. 3+7=10
7. Discuss the physiological changes takes place during ripening of fruits. 10
8. Write short notes on: 2+2+6=10
 - a) Climacteric fruits
 - b) Nonclimacteric fruits
 - c) Roe of ethylene in ripening of fruits

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