

B.Sc. BOTANY
FIFTH SEMESTER
STRESS BIOLOGY
BSB-503

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

Choose the correct answer from the following:

1 × 20 = 20

1. During acclimation tolerance of plants against particular stress is:
 - a. Xerophytes
 - b. Mesophytes
 - c. Hydrophytes
 - d. Both Mesophytes and Xerophytes
2. During acclimation tolerance of plants against particular stress is:
 - a. Decreased
 - b. Not affected
 - c. Increased
 - d. All of the above
3. Reduced or changed function of the plant in response to stress is called as:
 - a. Physical strain
 - b. Chemical strain
 - c. Biological strain
 - d. All of the above
4. Presence of salt glands on leaf surfaces is characteristics of:
 - a. *Atriplex spongiosa*
 - b. *Tamarix pentandra*
 - c. *Suaeda fruticosa*
 - d. None of the above
5. Which of them are more susceptible to frost injury?
 - a. Tropical plants
 - b. Subtropical plants
 - c. Temperate zone plants
 - d. All of the above
6. During flood:
 - a. Anaerobic respiration increases
 - b. Nutrient absorption increases
 - c. Cytokinin level increases
 - d. Blocking of ethylene biosynthesis
7. Swelling of grana, altered structural organization of thylakoids, loss of grana stacking are the response to:
 - a. Heat stress
 - b. Chilling stress
 - c. Flood stress
 - d. All of the above
8. 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
9. Which of the following does not have cryoprotective functions in plant tissue?
 - a. Antifreeze proteins
 - b. Sugars
 - c. Saturated fatty acids
 - d. None of the above

10. Which of the following statement is wrong?
- | | |
|--|--|
| a. Chilling stress increases cell membrane leakage | b. Unsaturated fatty acid level decrease in cell membrane in chilling stress |
| c. ABA activity increases in drought | d. Proline concentration increases in water stress |
11.refers to heritable modification in structure or function that increases the fitness of the organism in a stressful environment.
- | | |
|---------------|----------------|
| a. Adaptation | b. Acclimation |
| c. Tolerance | d. Resistance |
12. Biotic stress in plants is caused by:
- | | |
|---------|-----------|
| a. Heat | b. Insect |
| c. Cold | d. Water |
13. Which amino acid chiefly accumulates in cells of water stressed plant?
- | | |
|------------|---------------|
| a. Proline | b. Leucine |
| c. Glycine | d. Methionine |
14. Stress condition may be induced by:
- | | |
|---------|-----------------|
| a. Heat | b. Water |
| c. Cold | d. All of these |
15. Which hormone is involved in the formation of adventitious roots, induced by flooding?
- | | |
|----------------|--------------|
| a. Gibberellin | b. Ethylene |
| c. ABA | d. Cytokinin |
16. Formation of aerenchyma in plants induced by which stress?
- | | |
|----------|----------|
| a. Water | b. Flood |
| c. Heat | d. Cold |
17. What is ROI?
- | | |
|--------------------------|--------------------------|
| a. Relative Oxygen Index | b. Reactive Oxygen Index |
| c. Relation Oxygen Index | d. None of these |
18. Select the enzyme which dismutated hydrogen peroxide.
- | | |
|--------------------------|-----------------------|
| a. Ascobate peroxidase | b. Ascobate reductase |
| c. Super oxide dismutase | d. All of these |
19. Which hormone is responsible for internodal elongation of deep water rice?
- | | |
|-------------|----------------|
| a. Auxin | b. Gibberellin |
| c. Ethylene | d. ABA |
20. Identify the resurrection plants.
- | | |
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| a. Bryophyte | b. Algae |
| c. Lichens | d. All of these |

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(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

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

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| 1. Discuss the symptoms and cytological effect of chilling stress in plants. | 5+5=10 |
| 2. Discuss the physiological effect of flood stress in plants. | 10 |
| 3. Write short notes on: | 5+5=10 |
| a) Salt tolerance in plants | |
| b) Pathogenesis related (PR) proteins | |
| 4. Discuss about the induced structural and chemical defense of plants in biotic stress. | 5+5=10 |
| 5. What are the adaptive mechanism of plant to flood stress? | 10 |
| 6. Explain the adaptive mechanism of plant to water stress. | 10 |
| 7. Explain the adaptive mechanism of plant against salt stress. | 10 |
| 8. Describe the oxy free radical induced damage. | 10 |

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