

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

**SET
B**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

(Objective)

Marks: 20

Choose the correct answer from the following:

1×20=20

- During acclimation, tolerance of plants against particular stress is:
 - Decreased
 - Not affected
 - Increased
 - All of the above
- Presence of salt glands on leaf surfaces is characteristics of:
 - Atriplex spongiosa*
 - Tamarix pentandra*
 - Suaeda fruticosa*
 - None of the above
- During flood:
 - Anaerobic respiration increases
 - Nutrient absorption increases
 - Cytokinin level increases
 - Blocking of ethylene biosynthesis
- Which of the following statement is incorrect?
 - ACC synthesis increases in root during flood stress
 - Intercellular freezing occurs when temperature falls suddenly
 - Sorbitol accumulation in cells take place during water stress
 - The plants with free -SH group is more resistant to freezing stress
- Which of the following statement is wrong?
 - Chilling stress increases cell membrane leakage
 - Unsaturated fatty acid level decrease in cell membrane in chilling stress
 - ABA activity increases in drought
 - Proline concentration increases in water stress
- Biotic stress in plants is caused by:
 - Heat
 - Insect
 - Cold
 - Water
- Stress condition may be induced by:
 - Heat
 - Water
 - Cold
 - All of these
- Formation of aerenchyma in plants induced by which stress?
 - Water
 - Flood
 - Heat
 - Cold
- Select the enzyme which dismutated hydrogen peroxide.
 - Ascobate peroxidase
 - Ascobate reductase
 - Super oxide dismutase
 - All of these

10. Identify the resurrection plants.
 - a. Bryophyte
 - b. Algae
 - c. Lichens
 - d. All of these
11. 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
12. 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
13. Which of them are more susceptible to frost injury?
 - a. Tropical plants
 - b. Subtropical plants
 - c. Temperate zone plants
 - d. All of the above
14. 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
15. 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
16.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
17. Which amino acid chiefly accumulates in cells of water stressed plant?
 - a. Proline
 - b. Leucine
 - c. Glycine
 - d. Methionine
18. Which hormone is involved in the formation of adventitious roots, induced by flooding?
 - a. Gibberellin
 - b. Ethylene
 - c. ABA
 - d. Cytokinin
19. What is ROI?
 - a. Relative Oxygen Index
 - b. Reactive Oxygen Index
 - c. Relation Oxygen Index
 - d. None of these
20. Which hormone is responsible for intermodal elongation of deep water rice?
 - a. Auxin
 - b. Gibberellin
 - c. Ethylene
 - d. ABA

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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 about the differences in adaptation strategies and physiology of plants growing in Sundarban areas and in Gobi Desert. | 10 |
| 2. In a hot sunny day one variety of crop plant (A) is dying by dehydration but another crop variety (B) is surviving. Give comments about the survival strategies and osmotic adjustment of crop (B). | 10 |
| 3. Write short notes on:
a) Induced structural defense against biotic stress.
b) Role of phytoalexins in self defense in plants. | 5+5=10 |
| 4. Discuss in short:
a) Water Deficit Increases Resistance to Liquid-Phase Water Flow.
b) Water Deficit Alters Energy Dissipation from Leaves. | 5+5=10 |
| 5. Give your comments on:
a) Why plants adapted to cool temperatures acclimate poorly to high temperatures.
b) High Temperature Reduces Membrane Stability. | 5+5=10 |
| 6. Discuss how the plants development is effected by heat stress. | 10 |
| 7. Explain how accumulation of osmolytes helps in water stress. | 10 |
| 8. Describe the oxy free radical induced damage. | 10 |

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