

6/BOT-352(Th) Syllabus-2023

2026

(May-June)

FYUP : 6th Semester Examination

BOTANY

(Plant Stress Biology)

(BOT-352)

(Theory)

Marks : 56

Time : 3 hours

*The figures in the margin indicate full marks
for the questions.*

Answer Question No. **1** which is compulsory
and **four** from the rest, selecting **one** from
each Section.

1. Answer all the questions : 4×4=16

- (a) Define abiotic stress. Briefly explain
any two plant responses to drought
stress.
- (b) Describe the role of Heat Shock
Proteins (HSPs) in temperature stress
tolerance.

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(Turn Over)

- (c) Explain calcium modulation as a stress sensing mechanism in plants.
- (d) Distinguish between Systemic Acquired Resistance (SAR) and Hypersensitive Response (HR).

SECTION—I

2. Write notes on the following : 5+5=10

- (a) Physiological and biochemical responses of salt stress on plants
- (b) Mechanisms of heavy metal stress tolerance in plants

3. Discuss the mechanisms of temperature stress tolerance in plants under—

- (a) high temperature;
- (b) chilling stress. 5+5=10

SECTION—II

4. Write notes on the following : 5+5=10

- (a) Zigzag model of plant pathogen interaction with the help of suitable diagrams
- (b) Role of Pathogenesis-related (PR) proteins in plant defence responses

5. Comment on the following : 6+4=10

- (a) Production and scavenging of Reactive Oxygen Species (ROS) under stress
- (b) Significance of phospholipid signalling in stress response

SECTION—III

6. Discuss the role of Absciscic Acid (ABA) and Jasmonic Acid (JA) in plant stress response. 5+5=10
7. Describe the role of antioxidant enzymes SOD and CAT in protecting plants against oxidative stress. 5+5=10

SECTION—IV

8. Explain the interaction between biotic and abiotic stresses in plants. Discuss how signalling pathways overlap under combined stress conditions. 5+5=10
9. Comment on the following : 4+6=10
- (a) Basic principles of crop improvement programmes aimed at developing stress tolerant varieties
 - (b) Conventional and molecular approaches in developing stress tolerant varieties

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