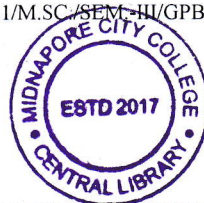


PG (Agriculture)
M.SC. Semester- III Examination, 2023
GENETICS AND PLANT BREEDING
PAPER: PPH 301



(PHYSIOLOGICAL AND MOLECULAR RESPONSES OF PLANTS TO ABIOTIC STRESSES)

Full Marks: 50

Time: 2 Hours

The figures in the right-hand margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

1. Answer any **FIVE** questions from the following: 2×5=10
- Differentiate between Escape and avoidance.
 - Explain Electrical Conductivity (EC) of soil? List the different crops suitable for high EC, moderate EC and low EC condition.
 - What is oxidative stress.
 - Write down the deficiency symptoms of following essential nutrients i. Fe ii. Zn.
 - What are the symptoms of alkali stress in plants?
 - Mention the biochemical indices related with drought resistance.
 - List the transcription factor associated with abiotic stress.
 - What is chlorophyll stability index?

GROUP-B

2. Answer any **FOUR** of the following questions: 5×4=20
- Define temperature stress and give its different types. Mention the scale used for scoring the heat tolerance. 3+2
 - What is heavy metal stress? Explain the various methods to reduce heavy metal stress? 2+3
 - Explain the physiological effects of Heat stress. 5
 - Write the reasons for limited success in abiotic stress breeding in crops. 5
 - Briefly explain about drought hardening. 5
 - Explain the selection criteria for dehydration avoidance. 5

GROUP-C

3. Answer any **TWO** of the following questions: 10×2=20
- Classify different abiotic stresses. Write the reasons for limited success in abiotic stress breeding in crops. Describe the way by which you can test whether a major QTL for drought tolerance effective over a range of environment and cultivars. 2+2+6

P.T.O

- b) Differentiate between saline and sodic soil. Which chromosome of rice carry a major QTL for the salt-tolerance ability and what are the major genes located within that QTL? Describe the traits of an ideal high-yielding salinity tolerant rice variety. 2+4+4
- c) Explain the breeding strategy for improving salinity tolerance in rice. 10
- d) What is drought stress? Explain plant traits affecting drought response. 2+4+4
Write down the plant breeding approaches for drought resistance.

