

Total page: 01



**PG (Agriculture)**  
**M.SC. Semester- III Examination, 2023**  
**GENETICS AND PLANT BREEDING**  
**PAPER: GPB 516**

**(BREEDING FOR STRESS RESISTANCE & CLIMATE CHANGE)**

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** 2×5=10
- a) What is systemic acquired resistance?
  - b) Differentiate Escape from Avoidance.
  - c) What is meant by Electrical Conductivity (EC) of soil? Mention three crops each suitable for high EC, moderate EC and low EC condition.
  - d) Distinguish between tolerance and resistance.
  - e) Define Hypersensitivity.
  - f) What are the symptoms of alkali stress in plants?
  - g) What do you mean by freezing injury?
  - h) List the transcription factors associated with abiotic stress.

**GROUP-B**

2. Answer any **FOUR** of the following questions: 5×4=20
- a) Briefly Explain about Boom and Bust Cycle.
  - b) Distinguish between vertical and horizontal resistance.
  - c) Explain the importance of ABA hormone in stress breeding.
  - d) Briefly explain about drought hardening.
  - e) Explain the selection criteria for dehydration avoidance.
  - f) Discuss the importance of wild relatives for abiotic stress breeding programme.
  - g) Explain 'Gene for gene hypothesis'.

**GROUP-C**

3. Answer any **TWO** of the following questions: 10×2=20
- a) Classify different abiotic stresses. Explain the procedure of MAS for developing stress resistance in crop plants. 4+6
  - 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 strategies for improving salinity tolerance in rice.
  - d) What is 'Drought stress'? Write down in detail about different types drought resistance.

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