

2021

M. Sc. (Biotechnology) Third Semester

MBIO-303: Plant Biotechnology

Time allowed: 3 Hours

Max. Marks: 80

**NOTE:** Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

I. Write in brief:-

- a) Role of activated charcoal and growth regulators in media?
- b) What is embryo rescue?
- c) Reporter genes?
- d) What are Thionins?
- e) What are Plantibodies?
- f) What are secondary metabolites?
- g) What are SCARs?
- h) What is elicitation?

(8x2)

### UNIT – I

- II. a) Define organogenesis? Discuss the various types of organogenesis and how are the plants acclimatized and established to soil?
- b) How is shoot tip culture done and virus free plants established through tissue culture? (2x8)
- III. a) Discuss the method of isolation and selection of somatic hybrids carried out?
- b) What is germplasm preservation? Discuss cryopreservation and its advantages over slow growth conservation? (2x8)

### UNIT – II

- IV. a) Discuss why Agrobacterium is known as natural genetic engineer by explaining how it transfers T-DNA into host plant?
- b) How is o-integrate vector designed from Ti Plasmid? (10,6)
- V. a) How are following transgenic plants developed?
  - i) Phosphinothricin resistant
  - ii) Coat protein mediated virus resistant (2x4)
- b) Discuss the male sterility and bar and barnase system? (8)

P.T.O.

(2)

**UNIT – III**

- VI. a) How is Phenyl Propanoid pathway important in production of secondary metabolites and how can we modify this pathway by r-DNA technology to enhance the production of the Secondary Metabolites?
- b) What is biotransformation and how it can be achieved in Plant tissue culture? (9,7)
- VII. a) Explain the various criteria to be considered and required for production of human therapeutic proteins in plants/?
- b) Discuss the Oleosin Partitioning technology of purification of heterologous proteins? (10,6)

**UNIT – IV**

- VIII. a) Discuss the difference between RFLP, RAPD & AFLP?
- b) Mention the various steps involved in Marker assisted breeding? (2x8)
- IX. a) What is QTL and how is it beneficial for MAS?
- b) Write a note on Green house technology? (2x8)

x-x-x