Exam.Code:0437
Sub. Code: 3481

2123

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. Briefly comment on any four of the following:-

a) Biotransformation

b) Embryo Rescue

c) DNA Banks

d) Transformation in monocots

e) Elicitation (4x4)

UNIT - I

II. a) Describe the various media components required for Plant Tissue Culture.

b) What is cryopreservation? Discuss the various steps involved in cryopreservation.

c) Discuss the significance of haploids and the different methods of their production. (5,5,6)

III. Give a brief account of the following:

a) Protoplast isolation techniques

b) Initiation and maintenance of callus cultures

c) Production of virus-free plants (5,5,6)

UNIT - II

IV. a) Discuss briefly the mechanism of *Agrobacterium* mediated gene transfer.

b) Describe the various methods of direct DNA transfer in plants.

c) Give briefly the applications of viral vectors. (5,5,6)

V. Give an account of the following:

a) Gene silencing in plants

b) Bar and Barnase systems

c) Reporter genes and their examples (5,5,6)

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UNIT - III

VI. a) Explain the various methods of chloroplast transformation in plants giving their advantages and limitations.

b) Give the various strategies for producing plant secondary metabolites in vitro.

c) Discuss the role of Bioreactors in scaling up the production of secondary metabolites. (5,5,6)

VII. Give an account of the following:

a) Biodegradable plastics

b) Oleosin partitioning technology

c) Edible vaccines (5,5,6)

UNIT - IV

VIII. a) Discuss briefly the molecular marker assisted selection in plant breeding with suitable examples,

b) Discuss the conditions under which plants can be grown in a Green house? Give the advantages and limitations of growing plants in a Green house?

c) What are RFLP maps? Give their applications in crop improvement. (5,5,6)

IX. Give an account of the following:

a) RAPD markers

b) SCAR

c) QTLs (5,5,6)

x-x-x