Exam.Code:0437
Sub. Code: 3481

1128

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. Attempt the following:-

a) Define biotransformation.

b) Discuss the significance of gelling agents in a medium?

c) List any 4 equipments needed to prepare PTC medium.

d) What is an artificial seed?

e) How are antibiotics added in Plant Tissue Culture media to avoid contamination?

f) What do you mean by in vivo gene banks and in vitro gene banks?

g) Define SCAR.

h) Give the principle of cryoprotection. (8x2)

UNIT – I

II. a) Describe the various techniques of isolation of protoplasts and their culturing.

b) Discuss the technique of Sterilization of plant material and the need for aseptic lab conditions. (8,8)

III. Write brief notes on any four of the following:-

a) Components of the Growth media.

b) Applications of Somatic embryogenesis

c) Embryo Rescue

d) In vitro Androgenesis

e) Germplasm Conservation

UNIT – II

IV. a) Discuss the common strategy to produce transgenic crops with delayed ripening and longer shelf life of fruits.

b) Binary vector systems for plant transformation employ two plasmids. Briefly explain the function of the two types of plasmids in *Agrobacterium-mediated* transformation. (8,8)

P.T.O.

V. a) How can transformation in monocots be facilitated?

b) Differentiate between Microinjection and Agroinfection. (8,8)

UNIT – III

VI. a) Why is chloroplast transformation potentially a useful mechanism for preventing unintended out crossing of transgenic plants with non-transgenic plants? What are the difficulties associated with chloroplast transformation?

b) What are peptide vaccines? Are the peptide vaccines safer than conventional vaccines? (8,8)

VII. a) What is molecular pharming? What are the potential benefits of producing pharmaceutical proteins in plants.

b) Discuss the role of bioreactors in scaling up the production of plant secondary metabolites. (8,8)

UNIT – IV

VIII. a) How Restriction Maps are useful in crop improvement?

b) What are the advantages and limitations in the use of RFLP and RAPD markers? (8,8)

IX. a) What are quantitative trait loci (QTL)? Discuss the basic steps in QTL analysis

b) Discuss the use of Molecular Markers in Breeding Programmes. (8,8)

x-x-x