Exam.Code:0911
Sub. Code: 6723

1128

B.E. (Bio-Technology) Seventh Semester

BIO-703/713: Plant Tissue Culture

Time allowed: 3 Hours **Max. Marks: 50**

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

x-x-x

I. Answer the following briefly:

a) Define compact callus.

b) What is a suspensor?

c) What are hydrated synthetic seeds?

d) Give a well labelled diagram of stamen.

e) Define endosperm.

f) Give functions of Vir D protein.

g) Define vitrification.

h) How will you create a double haploid from haploid plant?

i) Explain biolistic.

j) Define redifferentation. (10x1)

UNIT – I

II. a) Explain protoplast isolation, culture and fusion techniques. 5

b) Elucidate the molecular mechanism governing the regenerative capacity in plant cells. (5,5)

III. a) Describe various developmental stages of somatic embryogenesis. Give applications of somatic embryos.

b) Explain pollen embryogenesis describing the most appropriate stage for androgenic induction. (5,5)

IV. a) Explain the production of different types of synthetic seeds from somatic embryos

b) Describe the organic components of plant tissue culture media. Give their functions. (5,5)

P.T.O.

UNIT – II

V. Explain why plant cell cultures are an attractive substitute to whole plants for the production of secondary metabolites. Explain plant cell culture techniques for product optimization. (2,8)

VI. a) Explain the interaction between stigma and pollen grain. Describe any three in vitro pollination techniques.

b) Explain the various steps involved in the long term storage of the germplasm. (5,5)

VII. Explain techniques for plant transformation using Agrobacterium tumefaciens. Explain the generation of bacteria and virus resistant crops using genetic engineering techniques. (10)