(i) Printed Pages : 4] Roll No. .....

(ii) Questions : 9] **Sub. Code :** 0 9 7 5

Exam. Code : 0 0 3 5

B.Sc. (Hon's.) 3rd Semester Examination

1127

BIOTECHNOLOGY

(Plant Tissue Culture)

Paper : BIOT-Sem-III-IV-T

Time : 3 Hours] **[Max. Marks : 67**

Note :– Attempt *five* questions in all by selecting one question from each Unit. Section A is compulsory.

Section–A

1. (i) What is added as the carbon source in PTC media and what concentration ? 2

   (ii) Cybrids and somatic Hybrids 2

   (iii) Dedifferentiation and Redifferentiation 2

   (iv) PEG mediated fusion of protoplast 2

   (v) What is Aseptic Culture ? 2

(vi) Shoot tip culture 2

(vii) Two difference between secondary metabolite and primary metabolite 2

(viii) What is 'Pomato' ? 1

Unit–I

2. (a) Define micropropagation and discuss the various stages of micropropagation.

   (b) What are the various sterilization techniques to sterilize PTC medium and growth regulators ? 7,6

3. (a) Discuss the role of major chemical elements and growth regulators provided in any PTC medium.

   (b) Discuss cellular totipotency and plasticity of plants. 7,6

Unit–II

4. (a) What is the genetic basis of somaclonal variation ? How is novel plant selected used for crop improvement from these ?

   (b) Discuss the establishment and advantages of triploid cultures in vitro. 7,6

5. (a) Discuss the physical and chemical factors required for development of somatic embryos in vitro culture.

(b) Explain with diagram how are haploid cultures established and its application. 7,6

Unit–III

6. (a) Give the various methods of protoplast culture in vitro.

(b) Explain the enzymatic method of protoplast isolation. 7,6

7. (a) How will you characterize somatic hybrids from the fusion products ?

(b) Discuss the various applications protoplast hybridization. 7,6

Unit–IV

8. (a) Discuss the various kinds modifications made in the culture conditions (medium and environment) to produce desired secondary metabolites in culture.

(b) Give an account of industrially important secondary metabolites produced by plants in vitro. 7,6

9. (a) Discuss why cryopreservation is considered to be advantageous as long-term preservation technique for plant genetic resources ?

(b) Discuss the various ex-situ conservation methods of plants.