

(i) Printed Pages : 2

Roll No. ....

(ii) Questions : 9

Sub. Code : 

1	3	8	6	4
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Exam. Code : 

5	0	5	4
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**B.Sc. (Hons.) (Bio-Technology) FYUP 4<sup>th</sup> Semester  
(2056)**

**PLANT TISSUE CULTURE [PTC]**

**Paper : BTED404**

**Time Allowed : Three Hours]**

**[Maximum Marks : 68**

**Note :— Attempt FIVE questions in all, selecting ONE question compulsorily from each unit. Q. No. 1 is COMPULSORY.**

1. Compulsory Question:

- (1) Define the term Callus.
- (2) At what pressure and temperature is steam sterilization carried out in an Autoclave?
- (3) What is the significance of the addition of DMSO?
- (4) Define Cybrid.
- (5) What are Synthetic seeds?
- (6) What are Hairy Root cultures?
- (7) What is the importance of adding a Carbon source in Tissue culture medium?
- (8) What is vitrification? How can it be prevented? 8×1.5

**UNIT-I**

2. (a) Discuss the essential components of a Plant Tissue culture medium.
- (b) How does cellular totipotency influence differentiation and redifferentiation in plants? 7,7

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[Turn over



3. (a) What is micropropagation? Describe briefly the various stages of micropropagation.  
(b) Discuss how the various environmental factors like light, temperature, humidity, and pH influence Plant Tissue Cultures. 7,7

### UNIT-II

4. (a) What is Somatic Embryogenesis? How is it induced? Discuss the role of growth regulators in somatic embryogenesis.  
(b) How can triploids be produced through tissue culturing and what are their applications? 7,7
5. (a) What are somaclonal variations? Discuss the various strategies involved in the selection of cell lines for herbicide resistance.  
(b) What are Somaclonal variations? How are they important in the production of pathogen-free plants and disease resistance through tissue culturing. 7,7

### UNIT-III

6. (a) Give the various methods of protoplast fusion in brief.  
(b) What are Somatic Hybrids? Give the different strategies followed for the selection of Symmetric and Asymmetric hybrids. 7,7
7. (a) Describe the methods of isolation, purification, and culturing of protoplasts.  
(b) What is somatic hybridization? Give the applications of the technique in crop improvement. 7,7

### UNIT-IV

8. Write brief notes on the following:  
(a) Production of Secondary metabolites through Plant Tissue culture.  
(b) Conservation of Genetic resources. 7,7
9. (a) Discuss how organ cultures can be useful for biochemical production?  
(b) Explain the process of short-term and long-term conservation of plant cultures. 7,7