

**Shree Manibhai Virani and Smt. Navalben Virani Science College (Autonomous)**  
Affiliated to Saurashtra University, Rajkot

**SEMESTER END EXAMINATION APRIL – 2017**

**M.Sc. Biotechnology / M.Sc. Microbiology**

**16PBTDC05 / 16PMBDC05 – CELL CULTURE TECHNOLOGY**

*Duration of Exam – 3 hrs*

*Semester – II*

*Max. Marks – 70*

**Part A (5x2= 10 marks)**

Answer **ALL** questions

1. In which pathway of micropropagation, there is least chances of maintaining genetic truthfulness ?
2. Define karyoplast.
3. Define 'Established Cell Line' in reference to animal cell culture.
4. What concentration of CO<sub>2</sub> is generally considered to be best for growth of animal cells during culture conditions
5. Define somaclonal variations with example.

**Part B (5X5 = 25 marks)**

Answer **ALL** questions

- 6a. Write about the contribution of the following in development of plant tissue culture  
i) P. R. White                      ii) E. C. Cocking

**OR**

- 6b. What is chemo-sterilization? Write a detailed account of four chemicals used for sterilization.

- 7a. How protoplast isolation can be done through enzymatic methods?

**OR**

- 7b. Discuss any three strategies based on complementation which can be used to select the true hybrid after fusion experiment.

- 8a. Describe process of electroporation for transformation in plant cell with suitable diagram.

**OR**

- 8b. What is vitrification? What are the different methods applied to plant germplasm to promote vitrification?

- 9a. Write short note on Balanced Salt Solution.

**OR**

- 9b. Write three advantage and three disadvantage of serum in animal cell culture medium.

10a. Write the three difference between diploid and continuous cell line. Enlist the name of three continuous cell line along with their origin.

**OR**

10b. Write the morphological and enzymatic basis for characterization of cell line.

***Part C (5X7 = 35 marks)***

Answer **ALL** questions

11a. Write an essay on role of auxins and cytokinin during tissue culture in plants.

**OR**

11b. Give a description of different stages of micropropagation.

12a. Differentiate between symmetric and asymmetric hybrids. Write applications of hybrids in agricultures with suitable examples.

**OR**

12b. Write about the chemical and physical methods of protoplast fusion.

13a. Give a detailed note on transgenic animals and its application

**OR**

13b. Draw the labeled diagram of Ti plasmid of *Agrobacterium* and mention the main steps of infection of bacteria to dicot plant.

14a. Write short notes (in reference to animal cell culture) on any two of the following:

- i) Trypsinization                      ii) MTT assay                      iii) Growth Factors

**OR**

14b. Enumerate seven important applications of animal cell culture in modern science.

15a. What is cell viability? Write the principle and application of cell viability.

**OR**

15b. Write short notes on

- i) Karyotyping for characterization of cell line  
ii) Survival assay in animal cell culture

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