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10BT72

**Seventh Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Upstream Process Technology**

Time: 3 hrs.

Max. Marks:100

**Note:** Answer any FIVE full questions, selecting atleast TWO questions from each part.

**PART – A**

- 1 a. Explain the various phases of somatic embryogenesis and the factors affecting it. (10 Marks)  
b. Write briefly on cellular totipotency and the factors affecting it. (10 Marks)
- 2 a. Differentiate between androgenesis and gynogenesis. (10 Marks)  
b. Explain various techniques for production of haploids and add a note on applications of endosperm culture. (10 Marks)
- 3 a. What are the strategies for the optimization of product yield and the culture conditions for secondary metabolites in plant tissue culture? (10 Marks)  
b. Write short notes on : i) Hairy root culture ii) Biotransformation. (10 Marks)
- 4 a. Write a note on Natural media for culturing animal cells and explain the process of trypsinization. (12 Marks)  
b. Explain the fibroblast cultures from chick embryo. (08 Marks)

**PART – B**

- 5 a. Explain hybridoma technology and its advantages. (08 Marks)  
b. Explain stem cells and their isolation. (06 Marks)  
c. Write a note on Cryopreservation of cell/embryo. (06 Marks)
- 6 a. Write a note on the isolation of pure colonies. (06 Marks)  
b. Discuss the different phases of bacterial growth, with a neatly labeled diagram. (08 Marks)  
c. Write a short note on antibiotic sensitivity. (06 Marks)
- 7 a. Explain the different types of fermentation – submerged and solid state fermentation. (06 Marks)  
b. Highlight the significance of agitation and aeration in fermentation process. (06 Marks)  
c. Write short note on distilled and non distilled beverages, with examples. (08 Marks)
- 8 a. Explain the use of microbes in metal mining and effluent treatment. (10 Marks)  
b. What is Nutrient cycling? Elaborate on carbon and phosphorous cycles. (10 Marks)

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