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M.Sc. II Semester Degree Examination, September/October - 2022 21BTH2C7L - DSC7 : Bioprocess Engineering and Technology

Time : 3 Hours

Maximum Marks : 70

Instructions : (i) Answer **any FIVE** of the following questions with Question No. **1** is **compulsory**, each question carries **equal** marks.

(ii) Draw neat diagrams wherever necessary.

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| 1. | (a) Explain the steps involved in bioprocess development for manufacture of ethanol. | 10 |
| | (b) Write material balance equation in steady state. | 4 |
| 2. | (a) Write in detail about microbial interaction in mixed cultures. | 10 |
| | (b) Discuss on quantification of cell concentration. | 4 |
| 3. | Explain in detail about aerobic and anaerobic fermentation process and their industrial importance. | 14 |
| 4. | Explain in detail about Solid state and Submerged state fermentation. | 14 |
| 5. | (a) Write a note on high performance liquid chromatography. | 8 |
| | (b) Explain about Ion exchange chromatography. | 6 |
| 6. | (a) Describe various components of bioreactors and their importance. | 8 |
| | (b) Brief on growth model for filamentous microorganisms. | 6 |
| 7. | Write about the following : | |
| | (a) Fluidized bioreactor | 5 |
| | (b) Operation and control of bioreactor system | 5 |
| | (c) Crystallization | 4 |
| 8. | (a) Discuss on heat generation by microbial growth. | 5 |
| | (b) Describe mammalian cell culture and its applications. | 5 |
| | (c) Explain about Ultra-filtration process in Biotechnology. | 4 |

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