



M.Sc. II Semester Degree Examination, Sept./Oct. - 2024

BIOTECHNOLOGY

DSC - 7 : Bioprocess Engineering and Technology

(NEP)

Time : 3 Hours

Maximum Marks : 70

Note : (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) | Elucidate on general material balance equation for steady state. | 8 |
| | (b) | Give details on difference in approaches by biologist and engineer in bioprocess. | 6 |
| 2. | | Write in detail about industrial utilization of mixed microbial cultures in biological wastewater treatment. | 14 |
| 3. | (a) | Give details on mammalian cell culture. | 8 |
| | (b) | Illustrate about aerobic and anaerobic fermentation process and their application in Industry. | 6 |
| 4. | (a) | Describe on operation and control of bioreactor system. | 8 |
| | (b) | Explain about solid state and submerged state fermentation. | 6 |
| 5. | (a) | Write in detail about recovery of biological products by distillation. | 8 |
| | (b) | Elucidate about the liquid-liquid, aqueous two-phase and supercritical fluid extraction method. | 6 |
| 6. | (a) | Write about plant cell culture. | 8 |
| | (b) | Write in detail about microbial participation in the natural cycles of matter. | 6 |
| 7. | (a) | Elucidate about the electrophoresis. | 8 |
| | (b) | Explain in detail about batch bioreactor design with neat labelled diagram. | 6 |
| 8. | (a) | Describe about the components of bioreactors and importance. | 5 |
| | (b) | Write about generalized bioprocess flow sheets for ethanol production. | 5 |
| | (c) | What is role of pH, temperature and aeration in bioprocess ? | 4 |

