

M.Sc.(Biotechnology) (CBCS Pattern) Semester - II
PSBIT-108 - Paper-IV : Industrial Biotechnology

P. Pages : 1

Time : Three Hours



GUG/S/23/11194

Max. Marks : 80

Notes : 1. All questions are compulsory and carries equal marks.

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| 1. | Define fermentation? Explain in detail concept of industrial fermentation & types of fermentation. | 16 |
| OR | | |
| | a) Write in brief about batch and continuous fermenter. | 8 |
| | b) Outline general layout of fermentation unit. | 8 |
| 2. | Explain in detail about up-stream processes. | 16 |
| OR | | |
| | a) Write in brief about scale up process. | 8 |
| | b) Write down the types of antifoaming agents used in bioreactor. | 8 |
| 3. | Discuss in detail chromatographic techniques used for downstream Processing. | 16 |
| OR | | |
| | a) Write in brief about Membrane filtration and Centrifugation methods used for downstream processing. | 8 |
| | b) Explain quality control testing process of antibiotics. | 8 |
| 4. | Explain how vitamin B12 & Gibberellin is produced industrially. | 16 |
| OR | | |
| | a) Explain in brief about immobilization process. | 8 |
| | b) Write in brief about biosensor. | 8 |
| 5. | Write short note on – | |
| | a) Fed batch reactors. | 4 |
| | b) Medium composition of fermentation. | 4 |
| | c) Solvent extraction process. | 4 |
| | d) Industrial production of amylase. | 4 |
