

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.

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**
