

Your answers should be specific to the questions asked  
Draw neat labeled diagrams wherever necessary

**LONG ESSAY (Answer any FOUR)****4 X 25 = 100 Marks**

1.
  - a) Describe the morphology and physiology of Bacteria
  - b) Discuss the nutritional requirements for the growth of Bacteria
2.
  - a) Describe the replication of virus? Add a note on importance of virus in fermentation Industry
  - b) Write on batch and continuous culture
3.
  - a) Explain the applications of plant cell culture
  - b) Describe the microbiological; assay of vitamin B<sub>12</sub>
4.
  - a) Discuss in detail the fermentative process technology production of streptomycin with flow sheet
  - b) Write on uses of yeast & yeast products
5.
  - a) Describe microbial Biotransformation of alkaloids
  - b) What are primary and secondary metabolites? Explain the importance of secondary metabolites in fermentation Industry
6. Write short notes on:
  - a) Plasmids
  - b) Production of Glutamic acid
  - c) Industrial effluents & treatment
  - d) Patents
  - e) Riboflavin

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