



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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