



PART B — (5 × 16 = 80 marks)

11. (a) What is a chemostat and explain the microbial kinetics in a chemostat with reference to Monod's model.

Or

- (b) How important is transport phenomena in metabolic engineering and explains its relevance to bioprocess industry.

12. (a) Explain about mutasynthesis and feed back inhibition their relevance to over production of metabolites.

Or

- (b) Describe about auxotrophic and prototrophic mutants and describe in details on over production of a primary intermediate in a unifunctional and branched biochemical pathway with one specific example.

13. (a) Outline the following principle metabolic pathways with a diagrammatic representation of the relationship between them.

- (i) glycolysis
- (ii) carboxylic acid cycle
- (iii) pentose phosphate pathway
- (iv) fatty acid biosynthesis

Or

- (b) Describe with detailed example how isotope labeling and NMR spectroscopy may be used to elucidate biosynthetic pathway.

14. (a) Give an over view of co-metabolism with specific examples with special emphasis on biological degradation of pollutants

Or

- (b) Describe different stages at which enzyme synthesis is regulated and what are the factors affecting enzyme activity?

15. (a) Describe with flow sheet on the industrial production of any enzyme used in detergent industry starting from strain selection.

Or

- (b) 'Proteomics and metabolomics' would revolutionize biotech discovery program' - Discuss.