

II B.Tech II Semester Regular Examinations, Apr/May 2006

BASIC INDUSTRIAL BIOTECHNOLOGY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. Briefly write a historical overview of industrial fermentation process. [16]
2. Describe and discuss the characteristics of an ideal production medium? [4+12]
3. Write different processes involved in microbial conversion of ethanol to acetic acid? [16]
4. Discuss in detail the downstream processing methods used in the production of aromatic compounds? [16]
5. Enumerate the role of isomerases in production of pharmaceutically important compounds? [16]
6. (a) Discuss the principles of microbial growth.
(b) Describe the growth characteristics of a microorganism in a batch culture. [8+8]
7. Write short notes indicating their importance in biotechnology on:
(a) Gibberilla fugicora.
(b) Downstream process of hormone production.
(c) Vegetable oils. [6+5+5]
8. Write the importance of biological system in steroid transformations with respect to chemical transformations? [16]

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1. Describe the role of following in modern industrial biotechnology:
 - (a) Production of chemicals.
 - (b) Pollution control.
 - (c) Human health care. [5+5+6]
2. Describe the following:
 - (a) Working stock culture.
 - (b) Primary stock cultures.
 - (c) Lyophilized cultures. [6+5+5]
3. Describe the recovery process of gluconic acid from fermentation broth with the help of flow sheet? [16]
4. Enumerate the role of precursors and inducers in secondary metabolite production? [16]
5. Describe the downstream processing for endocellular enzyme purification? [16]
6. Write short notes on the following with relating to mutant development:
 - (a) NTG (nitrosoguanidine).
 - (b) UV irradiation.
 - (c) Ethylene di amine. [6+5+5]
7. Discuss the importance of plant growth hormones in transgenic plant development? [16]
8. Give the importance of recombinant DNA technology in viral vaccine development? [16]

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1. Enumerate the importance of traditional technologies in modern biotechnology development. [16]
2. What are the important criteria to select the agricultural waste materials as raw materials for fermentation? [16]
3. Write short notes on production of :
 - (a) Lactic acid.
 - (b) Lysine.
 - (c) Ethanol. [6+5+5]
4. Enumerate the function of penicillin as antibiotic compounds? [16]
5. Write the importance of enzymes in economizing the industrial development? [16]
6. Describe the role of mutations in development of industrially important organisms and give examples? [12+4]
7. Give detailed account of polyhydroxybutarate production by microbial system starting from glucose as carbon source? [16]
8. (a) What are semi synthetic penicillins.
(b) Give their importance over penicillins in disease control. [8+8]

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1. Describe the connective links for production of following:
 - (a) Glycolysis – acetic acid production
 - (b) TCA cycle – amino acid production
 - (c) Pyruvic acid – lactic acid production [6+5+5]
2. Describe the necessity of inoculum development in fermentation process? [16]
3. Briefly describe fermentation processes involved in the production of :
 - (a) Aspartic acid
 - (b) Gluconic acid
 - (c) Ethanol [5+5+6]
4. Discuss in detail the downstream processing methods used in the production of aromatic compounds? [16]
5. Describe the various steps involved in insulin production by recombinant microbial species? [16]
6. Describe the importance of the following with relation to industrial microbiology:
 - (a) Resistant mutants.
 - (b) Revertant mutants.
 - (c) Heterologous proteins. [5+5+6]
7. Write an overview of importance of specially agricultural products in different sectors of industrial biotechnology? [16]
8. Describe briefly:
 - (a) Influenza vaccine.
 - (b) Hepatitis B vaccine.
 - (c) Polio vaccine.
 - (d) Diphtheria vaccine. [4x4]
