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T 3097

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Fourth Semester

Biotechnology

BT 1251 — BASIC INDUSTRIAL BIOTECHNOLOGY

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name and discuss any one of the advantages and disadvantages in using whey as an industrial raw material.
2. Define 'idiophase' of a bioprocess.
3. Name any two significant milestones in the history of biotechnology.
4. Name two products resulting from recombinant DNA technology.
5. Name any two organisms used in lactic acid fermentation.
6. How monoclonal antibodies are useful?
7. Give two examples of biopesticide.
8. What are the advantages of animal cell culture products?
9. What is 'invert syrup'? What are the raw materials and process used for its manufacture?
10. Draw the general structure of a beta-lactam antibiotic, and the acyl group of penicillin-G.

PART B — (5 × 16 = 80 marks)

11. (a) From the commercial perspective what is the key cost contributor to ethanol production? Describe the manufacturing process.

Or

- (b) (i) In a bioprocess industry, identify operations where steam is used.
(ii) Distinguish between enrichment and screening techniques for obtaining industrially useful microorganisms. Give suitable examples.

12. (a) Name three acids produced by *Aspergillus* growing on glucose. How would you exploit this observation for commercial production?

Or

- (b) Using sketches show how ingredient interaction is facilitated in bioreactors. Show three principles with two examples each.

13. (a) There are three conventionally practiced processes for the manufacture of 6-aminopenicillanic acid. Describe any two.

Or

- (b) Give one example each of microbial conversion processes involving
(i) oxidation
(ii) reduction
(iii) hydrolysis and
(iv) condensation.

14. (a) Describe giving details any two industrial products produced using enzymes.

Or

- (b) Describe the method of production of any two of the industrial enzymes. penicillin acylase, lipase, protease.

15. (a) Describe any three methods for the production of vaccines.

Or

- (b) What are biopharmaceuticals? Describe any two biopharmaceuticals of commercial importance, and the markets of which they have been developed.