B. TECH.

(SEM. VI) EXAMINATION, 2006-07

FERMENTATION BIOTECHNOLOGY - II

Time : 3 Hours] [Total Marks : 100

Note : (1) Attempt all questions.
(2) All questions carry equal marks.
(3) Draw figures and diagram for explaining your answers.

1 Attempt any four of the following : 4×5

(a) Explain various methods of maintenance and preservation of industrially important microorganisms.

(b) Discuss the operation and technological considerations of large scale aerobic and anaerobic operations.

(c) Describe the steps and conditions of Penicillin G recovery from the fermented broth.

(d) What are the semi-synthetic penicillins? Also mention the mode of inhibitory action of penicillin.

(e) What are the precursors? How are they affecting the production of antibiotic ?

(f) Discuss the fermentation conditions and mechanism of synthesis of any one tetracycline.

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2 Attempt any **four** of the following: 4×5
(a) Discuss the various reaction types for steroids transformation.
(b) What are vaccines? Explain initial application of the vaccine.
(c) Describe the application of recombinant DNA for production of HbSAg.
(d) Establish a comparison between formation of bacterial vaccine and a viral vaccine.
(e) Discuss the process variables and operating conditions in fermentation process for biotransformation.
(f) Explain with examples the Batch, fed Batch and continuous fermentation processes.

3 Attempt any **two** of the following: 2×10
(a) Discuss the advantages of a biopolymer over a chemical polymer. Explain the microbial production process and recovery of PHB.
(b) What do you understand by biosurfactant? Explain the conversion of substrate into product as surfactant by the bacterial strain.
(c) What are the technological barriers encountered during production of Xanthan. Suggest the measures to minimize these problems. Also elucidate the mechanism of synthesis of any one polymer of bacterial origin.

4 Attempt any **two** of the following: 2×10
(a) Discuss the strategic steps involved in genetic modification of E.coli through r-DNA technology. Explain the methods of selection and identification of a recombinant strain.

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(b) Illustrate the molecular structure and function of insulin. Also explain with flow diagram the conditions and process of insulin production by recombinant strain.

(c) Explain the interaction of interferon with tumor cells. Also mention the isolation and purification of this functional protein.

5 Attempt any two of the following: 2×10

(a) Describe the various approaches to synthesise a molecule as drug from the animal cell. Also mention the process of patenting the product.

(b) “Human being can not be used experimental tool for any research”. Explain this statement in detail.

(c) Discuss the present status of protection of intellectual property. Suggest the measures to utilize the rights to make India a developed nation by 2020 AD.