Registration No. :

Total number of printed pages – 2

B. Tech

PCCH 4402

Seventh Semester (Back) Examination – 2013
FUNDAMENTALS OF BIOCHEMICAL ENGINEERING

BRANCH : CHEM

QUESTION CODE : 456

Full Marks – 70

Time : 3 Hours

Answer Question No. *1* which is compulsory and any **five** from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2×10

   (a) What is Anabolism ?

   (b) What is a protein ?

   (c) What is the composition of Gobargas ?

   (d) What is biomass yield coefficient ?

   (e) Give two examples of industrial solvents and the sources from which they are produced.

   (f) Explain solid state fermentation.

   (g) What is On-line control in a process? Explain it with a suitable example.

   (h) In the case of anaerobic fermentation, air is detrimental for the process. Why ?

   (i) What is an antibiotic ?

   (j) Write Fick's first law of diffusion.

2. (a) Give an overview of the modern applications of biotechnology.   4

   (b) Explain how surface renewal theory explains the inter-phase diffusion mass transfer in a bio process.   6

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3. Derive an expression for the rate of production of product for reversible non-competitive enzyme inhibition and show how in Line-Weaver Burk plot helps to evaluate the kinetic parameters. 10

4. Write the detail production process of Gobar gas and also explain about its limitations. 10

5. (a) Write the component parts of a fermentation process. 5

   (b) What are the different stages of fermentation ? 5

6. (a) Write the major products of biological processing. 5

   (b) Derive Michaelis–Menten equation. 5

7. (a) Write different effluent treatment techniques for biological processes. 5

   (b) What do you mean by microbial taxonomy ? 5

8. Write short notes on any **two** of the following 5×2

   (a) Microbial nomenclature

   (b) Vaccines

   (c) Fed-batch fermentation

   (d) Bio-chemical and chemical reaction.

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