

Exam Date & Time: 29-Dec-2022 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

VII Semester B. Tech Chemical Engineering
Make Up Examination - December 2022

INTRODUCTION TO BIOCHEMICAL ENGINEERING [CHE 4064]

Marks: 50

Duration: 180 mins.

Descriptive Questions

Answer all the questions.

Section Duration: 180 mins

- 1) What are the (a) H^+ ion concentration, (b) pH, (c) OH^- ion concentration, and (d) pOH of a 0.002 M solution of HNO_3 ? (2)
 - A)
 - B) Briefly describe the characteristics of viruses. (3)
 - C) Discuss about the various forms of protein structures. (5)
- 2) Mention the importance of activation energy in enzyme catalysed reaction. (2)
 - A)
 - B) What are the advantages of immobilization of enzymes? (3)
 - C) Explain Michaelis – Menten equation for enzyme catalysed reactions. (5)
- 3) An enzyme catalyzed a reaction at a velocity of 35 $\mu\text{moles/liter-min}$ when its substrate concentration was 0.01 M. the K_m for the substrate is 2×10^{-5} M. What would the initial velocity be at substrate concentrations of
 - A)
 - a) 3.5×10^{-3} M
 - b) 4×10^{-4} M (2)
 - c) 2×10^{-4} M
 - d) 2×10^{-6} M
 - B) Discuss about the three different forms of enzyme inhibitions. (3)
 - C) With a neat flow sheet, explain Krebb's or TCA cycle (5)

- 4) Comment on passive transport mechanism across cell membranes. (2)
- A)
- B) What is an ATP? Discuss about the hydrolysis of ATP. (3)
- C) Write short note on Nitrogen fixation process. (5)
- 5) What do you mean by generation time of a cell? (2)
- A)
- B) Brief about the factors affecting growth of microorganisms. (3)
- C) Describe in detail about the penicillin and its production process. (5)

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