(b) Fischer Tropsch reaction

(c) Kinetics of enzyme – catalysed reaction

5+5+5=15

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[This question paper contains 4 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **1489** **I**

Unique Paper Code : 2172513503

Name of the Paper : DSC – B5 : Industrial Catalysts

Name of the Course : **B.Sc. Prog. Industrial Chemistry**

Semester : V

Time : 2 Hours ***Maximum Marks : 60***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt any **four** questions in **all**. Each carry equal marks.

1. (a) Calculate the turnover number for a reaction with 0.15 moles of reactant, 0.015 moles of catalyst and 40% product yield ?

(b) What factors determine whether a catalyst can be regenerated or must be replaced ?

P.T.O.

(c) Explain the difference between a promoter and a co – catalyst. 5+5+5=15

2. (a) Name the Wilkinson's catalyst. How does Wilkinson's catalyst facilitate the hydrogenation of alkenes ? Explain the mechanism.

(b) Explain Langmuir – Hinshelwood mechanism for heterogenous process.

(c) Explain the role of photocatalysts in the degradation of organic pollutants. 5+5+5=15

3. (a) What is the chemical composition of aspartame ? Describe its synthesis using a biocatalyst and its commercial availability.

(b) Explain the followings :

(i) Structure of 4 – Hydroxyphenoxy propionic acid and one application.

(ii) Induced fit model.

(c) What is Ziegler – Natta catalysts ? How the modifications of Ziegler – Natta catalysts improving polymerization processes ? 5+5+5=15

4. (a) Write the chemical composition, structure and types of zeolites.

(b) Describe the mechanism of water oxidation facilitated by a photocatalyst.

(c) What is the significance of autocatalysis in biochemical processes ? 5+5+5=15

5. (a) Explain the process of photocatalysts ? Mention any two active components commonly used as photocatalysts.

(b) Define water hardness and explain the methods used to remove both temporary and permanent hardness.

(c) Write two reactions which shows the catalytic properties of zeolite. 5+5+5=15

6. Explain the following terms briefly :

(a) Catalytic poison