Printed Pages : 3

ECY401

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 187401

Roll No. | | | | | | | | | | |

B. Tech.

(SEM. IV) THEORY EXAMINATION, 2014-15

INDUSTRIAL CHEMISTRY

Time : **3** Hours] [Total Marks : **100**

Note : (1) Attempt ALL questions.
(2) Assume suitable data, if required.
(3) All question carry equal marks.

1 Attempt any FOUR parts of the following : **5x4**

(a) What do you mean by activation energy? Explain with suitable example.

(b) What are lypophobic sols? Give its importance in surface chemistry.

(c) What are Consecutive reactions? Itemise the various distillation methods.

(d) Establish a correlation between molecular weight and boiling points of compounds with suitable examples.

(e) How will you perform the confirmation analysis of ethane and cyclohexane?

(f) Write a short note on 'Geometrical isomerism'.

2 Attempt any TWO parts of the following : **10x2**

(a) Describe the mechanism & synthesis of the production of phenol formuldehyde with its applications.

(b) Explain Arrhenius Law with suitable examples. At 827°C temperature, compound A thermally cracks (breaks down into smaller molecules) 20 times as rapidly as at 727°C. Find the activation energy for this decomposition.

(c) Enzyme E catalyzes the transformation of reactant A to product R as follows :

$$A \xrightarrow{enzyme} R, \quad -r_A = \frac{200 C_A C_{E0}}{2 + C_A} \frac{mol}{liter - \min}$$

If we introduce enzyme (C_{EO} = 0.001 mol/liter) and reactant (C_{AO} = 10 mol/liter) into a batch reactor and let the reaction proceed, find the time needed for the concentration of reactant to drop to 0.025 mol/liter. Note that the concentration of enzyme remains unchanged during the reaction.

3 Attempt any TWO parts of the following: **10x2**

(a) Explain the mechanism & synthesis of the production of Ethanol with complete reaction steps.

(b) Define 'halides' with suitable examples. Also discuss the formation of acetone to acetic acid, with complete reactions and operating conditions.

(c) What do you mean by heterogeneous reactions? Classify the types of catalysis with suitable examples.

4 Attempt any TWO parts of the following: - **10x2**

(a) Explain the method of preparation of Pyridine. Also differentiate between mono & disaccharides with suitable examples.

(b) Define the term 'surface tension'. Also explain the method for the determination of 'Surface tension of liquid solution' in detail with suitable example.

(c) Derive the general expression for the Langmuir adsorption isotherm with complete assumptions & suitable examples.

5 Write short notes on any FOUR parts of the following : **5x4**

(a) Amino compounds

(b) Di-azo compounds

(c) Heterocyclic compounds

(d) Hydrophilic sols

(e) Proteins

(f) Aromatic compounds.
