



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

PAPER ID : 187401

Roll No.

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B. Tech.

(SEM. IV) THEORY EXAMINATION, 2014-15
INDUSTRIAL CHEMISTRY

Time : 3 Hours]

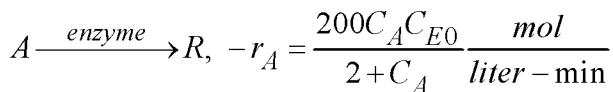
[Total Marks : 100

- 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 formaldehyde 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 :



If we introduce enzyme ($C_{E0} = 0.001$ mol/liter) and reactant ($C_{A0} = 10$ 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.
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