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Namennamanaman

Reg. Nommananamanan

# FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2023

(CBCSS)

Chemistry

CHE 4E 05-INDUSTRIAL CATALYSIS

(2019 Admission onwards)

Time: Three Hours

Maximum: 30 Weightage

### Section A

Answer any eight questions.

Each question carries a weightage of 1.

- 1. How is adsorption dependent on temperature?
- 2. Distinguish between Physical adsorption and chemical adsorption.
- 3. Describe absolute rate theory of chemical adsorption.
- 4. How surface area and porosity of a material is measured?
- 5. Comment on the structure of Zeolite A and X type.
- 6. Breifly explain the process of regeneration of catalyst
- 7. Explain the Co-ordination polymerization using Ziegler Natta Catalyst.
- 8. What are the drawbacks of Langmuir adsorption isotherm?
- 9. Write short note on catalytic cracking.
- 10. How is catalyst deactivation is different from catalyst poisoning?

 $(8 \times 1 = 8 \text{ weightage})$ 

#### Section B

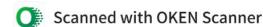
Answer any six questions.

Each question carries a weightage of 2.

- 11. Sketch different type of adsorption isotherm and explain.
- 12. Explain the thermodynamics of adsorption

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- 13. What is the difference between physisorption and chemisorption?
- 14. What is a catalyst? Establish the difference between homogeneous and heterogeneous  $\mathsf{cataly}_{\mathsf{2d}_{3}}$ .
- 15. Distinguish between catalytic promoters and inhibitors
- 16. Explain the influence of substrate concentration on enzyme catalysis.
- 17. Explain single and bi-substrate enzyme catalyzed reactions.
- 18. What are the uses of Biocatalysts in green chemistry?

 $(6 \times 2 = 12 \text{ weightage})$ 

#### Section C

## Answer any **two** questions. Each question carries a weightage of 5.

- Write short note on the following: (a) Fischer Tropsch process; and (b) Hydroformylation of oliefiens.
- Discuss about enzyme catalysis. Explain how substrate concentration, pH and temperature affectives.
- 21. Compare the theories of homogenous and heterogeneous catalysis.
- 22. Explain Phase transfer catalyst reaction with their uses.

 $(2 \times 5 = 10 \text{ weightage})$