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D 101196 (Pages : 2) Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2024

(CBCSS)

Chemistry

CHE 4E 05—INDUSTRIAL CATALYSIS

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A

Answer any **eight** *questions.*
Each questions carries a weightage of 1.

1. Why is the process of physisorption reversible whereas chemisorption is not ?
2. What is Freundlich adsorption isotherm ?
3. What is the difference between Adsorption and Absorption ?
4. What is Langmuir Hinshelwood kinetics ?
5. How many causes are responsible for catalyst deactivation ?
6. In which poisoning the catalyst is permanently deactivated and Cannot be regenerated ?
7. What is metal dispersion catalyst ?
8. What are the Types of Catalysis ?
9. What is BET adsorption isotherm ?
10. Explain isothermal and adiabatic heats of adsorption

(8 × 1 = 8 weightage)

Section B

Answer any **six** *questions.*
Each question carries a weightage of 2.

11. What is the difference between Langmuir Hinshelwood and Eley rideal mechanism ?
12. What are the factors for catalysts deactivation ?
13. Explain the application of quarternary salt in Phase transfer catalyst.
14. Write short note on immobolised biocatalyst with suitable example.

Turn over

15. What is enzyme catalysis with example ?
16. Explain the Mobil Process for the conversion of methanol to gasoline hydrocarbons.
17. Describe the electronic factors effecting the semiconductor catalysis.
18. What is phase-transfer catalyst and how does it work ?

(6 × 2 = 12 weig

Section C

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

19. Describe the general synthesis of Zeolites and explain the mechanism of its formation
20. What is cracking explain with suitable examples ?
21. Write a note on surface catalyzed reactions. Explain the potential energy diagram heterogeneous catalyzed reaction A ->Product.
22. What is a Catalytic Converter and What Does It Do ? What are the potential hazards of the substances emitted by a vehicle without a catalytic converter ? Which 3 redox reactions occur three-way catalytic converter ?

(2 × 5 = 10 weigh