

C 80681

(Pages : 2)

Name.....

Reg. No.....

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, MARCH 2020

(CUCSS)

Chemistry

CH 4E 05—INDUSTRIAL CATALYSIS

Time : Three Hours

Maximum : 36 Weightage

Section A

Answer all questions.

Each question carries a weightage of 1.

1. Distinguish between activated and non-activated adsorption.
2. Explain capillary condensation.
3. What do you mean by percentage and character of a metal ?
4. Unimolecular gas phase surface catalysed reactions follow first order kinetics at low pressures and zero order kinetics at high pressures. Justify.
5. What is the role of support in catalysis ?
6. Explain with example 'shape selective catalyst'.
7. What is 'cooking' ?
8. Explain with example 'phase transfer catalysis'.
9. What are the methods of immobilization of enzymes ?
10. Name two cracking catalysts. Explain the function of one of them.
11. Transition metals are generally used as hydrogenation catalysts. Why ?
12. What is hydroformylation ? Name the catalyst.

(12 × 1 = 12 weightage)

Section B

Answer any eight questions.

Each question carries a weightage of 2.

13. Draw potential energy curves for physisorption and chemisorption. Discuss.
14. Write BET adsorption isotherm. How would you determine surface area of a solid using BET isotherm ?
15. Briefly discuss geometric factors in catalysis.
16. Discuss electron band theory of catalysis by metals.

Turn over

17. Discuss the role of macrocyclic compounds in phase transfer catalysis.
18. What are the methods of regeneration of catalysts ? Explain.
19. Name two catalysts employed in hydro-desulphurization. Discuss their action.
20. Briefly discuss thermodynamic of enzyme catalysis.
21. How do you classify porosity based on hysteresis loops ? Discuss.
22. Briefly explain the working of a catalytic converter in automobile exhaust.
23. Discuss the role of activated charcoal as a support.
24. Discuss Pd catalysed oxidation of ethylene.

(8 × 2 = 16 marks)

Section C

*Answer any two questions.
Each question carries a weightage of 4.*

25. Discuss Absolute Rate Theory as applied to chemisorption.
26. Write a brief account of diffusion controlled reactions.
27. Write a brief account of structure of zeolites.
28. Briefly discuss Fischer Tropsch process.

(2 × 4 = 8 weightage)