

23P409

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Name:

Reg.No:

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2025

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE4 E05 - INDUSTRIAL CATALYSIS

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

Section A

Answer any *eight* questions. Each question carries 1 weightage.

1. Explain Activated chemisorption.
2. Explain how pore size and shape affect the diffusion and reaction rate in porous catalysts.
3. Explain the electronic factors in catalysis by metals.
4. How surface area of a catalyst measured?
5. Explain different types of poisoning of a catalyst.
6. What do you mean by regeneration of catalyst?
7. Differentiate between soluble and insoluble PTC.
8. What is shape selective catalyst? Explain with example.
9. Describe the process of catalytic reforming and its importance in improving gasoline quality.
10. Explain Mobil process.
11. What is olefin metathesis?
12. Explain the major three steps involved in the Wacker process.

(8 × 1 = 8 Weightage)

Section B

Answer any *four* questions. Each question carries 3 weightage.

13. Explain in detail the various types of intermolecular interactions and their role in adsorption processes. Provide relevant examples.
14. Describe the kinetics of bimolecular surface reactions.
15. Explain catalyst support with suitable examples.
16. Discuss about various types of deactivation process.
17. Describe the synthesis of PEG's. Explain the importance of PEG's as PTC.

18. Explain the kinetics of enzyme catalysed reactions.
19. Discuss different catalytic processes used for the protection of environment. Give example for each.

(4 × 3 = 12 Weightage)

Section C

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

20. Derive BET adsorption isotherm. How would you determine surface area of a solid using BET adsorption isotherm.
21. Explain the various steps in preparation of a catalyst.
22. What is phase transfer catalyst? Explain the use of tetra-alkyl ammonium salts and crown ethers as phase transfer catalysis.
23. Explain propene polymerization with silica supported metallocene/MAO catalysts.

(2 × 5 = 10 Weightage)
