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ICH 502

**III Semester M.Sc. Degree Examination,
November/December 2019**

INDUSTRIAL CHEMISTRY

Catalysis & Polymers

Time : 3 Hours]

[Max. Marks : 70

PART – A

Answer **any five** questions :**(5 × 2 = 10)**

1. (a) What are promoters in catalysis and how do they function?
- (b) Differentiate between catalyst poisoning and fouling.
- (c) What are metal hydrides? Mention any two applications of hydrides.
- (d) Give the principle of Wacker process.
- (e) Define addition and condensation polymers.
- (f) What are elastomers? Give examples.
- (g) Give the principle of electrodialysis.
- (h) What is biodegradation of polymers?

PART – B

Answer **any five** full questions :**(5 × 12 = 60)**

2. (a) How catalysts are selected for any reactions? Give an account on the preparation and evolution of catalyst.
- (b) What are carriers and stabilizers? Explain their functions with suitable examples. **(6 + 6)**
3. (a) Discuss the preparation and structure of zeolites and silica-alumina supports.
- (b) Define micellisation and CMC. What are the factors affecting the CMC of a surfactant? **(6 + 6)**



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4. (a) Discuss the preparation, structure and reactivity of Pd and Ni complexes.
- (b) What is a reductive elimination reaction? How is it different from an insertion reaction? **(8 + 4)**
5. (a) State and explain 16- and 18-electron rules.
- (b) Discuss the mechanism of olefin metathesis.
- (c) What is heterogenisation of homogeneous catalyst? Explain with example. **(4 + 4 + 4)**
6. (a) Differentiate the following with examples :
- (i) Natural and synthetic polymers
- (ii) Thermo and thermosetting polymers.
- (b) State Vant-Hoff's law of osmotic pressure. How the molecular weight of a polymer is determined by osmotic pressure method? **(6 + 6)**
7. (a) What are commercial and engineering polymers? List their structural factors and properties.
- (b) List the various processing techniques of polymers and explain any two of them. **(6 + 6)**
8. (a) Give an account of :
- (i) Electrodialysis and
- (ii) Ultra-filtration.
- (b) Differentiate between polymer blends and composites. Mention their properties and applications. **(6 + 6)**
9. (a) Discuss the design of transdermal and targeted drug delivery systems.
- (b) Write a brief note on the following :
- (i) Polymer waste management techniques
- (ii) Applications of polymer composites in food industry. **(6 + 6)**