Reg. No. | | | | | | | | | |

**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)**



**P.T.O.**

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)**

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