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

ICH 502

III Semester M.Sc. Examination, April 2021
INDUSTRIAL CHEMISTRY
Catalysis and Polymers

Time : 3 Hours | Max. Marks : 70

Instruction : *Answer **any five** questions from Part – **A** and **any five full** questions from Part – **B**.*

PART – A

1. Answer **any five** of the following : **(5×2=10)**
   a) Explain catalyst fouling with suitable examples.
   b) List any two factors affecting the CMC of surfactants.
   c) What is Wacker process ?
   d) State 16 and 18-electron rules for organometallic compounds and their reactions.
   e) Justify that thermosets cannot be recycled.
   f) What are carriers ? Give examples.
   g) What is electrodialysis ?
   h) What are Polymer Blends ? Give examples.

PART – B

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

2. a) Describe the process of selection and evaluation of catalysts.
   b) What are stabilizers ? How do they function ? Explain with suitable examples.
   c) Briefly explain the various performance criteria parameters of catalysts. **(4+3+5=12)**

3. a) Explain the preparation of silica-alumina support.
   b) Describe the pretreatments and sintering of catalysts.
   c) Write briefly on micellisation and hydrophobic interactions. **(4+4+4=12)**

P.T.O.

4. a) Describe the catalysis of olefin hydrogenation by organometallic compounds taking an example.

   b) Explain oxidative addition with suitable example.

   c) Out line the synthesis of acetic acid by Monsanto process. **(3+3+6=12)**

5. a) Explain the heterogenisation of homogeneous catalysts using polymer supports.

   b) Define and explain the mechanism of Olefin metathesis with suitable example.

   c) What is Ziegler-Natta catalyst ? Explain its catalytic mechanism by taking suitable examples. **(3+4+5=12)**

6. a) Describe Emulsion polymerization.

   b) Explain light scattering method of polymer molecular weight determination.

   c) Write a descriptive note on melt spinning. **(4+5+3=12)**

7. a) What are Fibers and Elastomers ? Give examples.

   b) Distinguish between thermoplastics and thermosettings.

   c) Give an account of structure property relationships in polymers. **(3+4+5=12)**

8. a) Write a note on polymer nano-composites.

   b) Describe the applications of polymers in ultra and nano-filtration.

   c) Give an account of waste management techniques. **(4+4+4=12)**

9. a) Describe the preparation, properties and uses of polymer blends and composites.

   b) Discuss the applications of polymers in biotechnology. **(9+3=12)**
