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

ICH 502

III Semester M.Sc. Degree Examination, April/May 2022
(CBCS)
INDUSTRIAL CHEMISTRY
Industrial Catalysis and Green Chemistry

Time : 3 Hours Max. Marks : 70

Instructions : *1) Answer Part – **A**, and **any five** questions from Part – **B**.*
*2) Figures to the **right** indicate marks.*

PART – A

1. Answer **any five** of the following : **(5×2=10)**

   a) What is the purpose of adding amphiphilic reagents in phase transfer catalyst ?

   b) Write the oxidative addition and reductive elimination reactions involved in acetic acid synthesis by Monsanto process.

   c) Give the process of sintering process.

   d) What are factors affecting critical micellar concentration of surfactants ?

   e) What are promoters and carriers ? Give examples.

   f) Define the following terms involved in catalysis

      a) Selectivity

      b) Temperature response.

   g) Write the preparation and structure of zeolites.

   h) What are catalytic poising sintering and fouling ?

PART – B

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

2. a) Discuss the preparation and behavior of catalyst.

   b) Explain the mechanism of polymerization of olefin by Zeigler Natta Catalyst.

   c) What are the types of adsorption isotherm ? Draw and explain. **(4+4+4)**

P.T.O.

3. a) Describe the applications of organometallic catalysts.
   b) Give an account for the synthesis of scavenger resins.
   c) Explain the heterogensation of homogeneous catalysts using polymer supports. **(4+4+4)**

4. a) What are nanophotocatalysis ? Describe the catalysis of gold nano crystals.
   b) Explain the mechanism involved in degradation of dye.
   c) Give a brief note on hydrogen generation by organic synthesis. **(4+4+4)**

5. a) Write a note on the principles of green synthesis.
   b) Discuss briefly about the sonochemical esterification.
   c) What is atom efficiency and write the atom efficiency of Diels Alder reaction. **(4+4+4)**

6. a) Discuss the role of supports, preparation and structure with a suitable example.
   b) Write a brief note on Wacker process.
   c) Describe the catalysis of gold Nano crystals. **(4+4+4)**

7. a) Explain the role of Ag/SiO_2 composite Nano catalysts.
   b) Write the catalyst and oxidation state involved in Wilkinson's catalyst.
   c) Explain the role of ionic liquids in the organic synthesis with a suitable example. **(4+4+4)**

8. a) What are solventless synthesis ? Explain with examples.
   b) Explain the types of sonochemical esterification and coupling reactions.
   c) Describe the advantages and limitations of green synthesis. **(4+4+4)**

9. a) Explain the mechanism of phase transfer catalysis.
   b) Write a note on microwave induced organic synthesis.
   c) Describe the various reactions of active methylene compounds. **(4+4+4)**