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

# OCS 555

## IV Semester M.Sc. Degree Examination, September/October 2022
## (CBCS) (2016 – 17 Syllabus) (Freshers and Repeaters)
## ORGANIC CHEMISTRY
## Separation Techniques and Organometallic Chemistry

Time : 3 Hours Max. Marks : 70

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

PART – A

1. Answer **all** the following sub-divisions : **(9×2=18)**
   a) Why is silica or alumina used in column chromatography ?
   b) Why is thin layer chromatography better than column chromatography ?
   c) What is the significance of $R_f$ value ?
   d) What are the limitations of gas chromatography ?
   e) List the properties of Transition metal hydrides.
   f) What are the criteria for the selection of solvents in HPLC ?
   g) What is meant by oxo process ?
   h) What is the 18-electron rule ? Give an example.
   i) Outline the mechanism of Ziegler – Natta polymerization.

PART – B

Answer **any four** full questions : **(4×13=52)**

2. a) Explain the various types of paper chromatographic techniques.
   b) Explain the various industrial applications of column chromatography. **(7+6)**

3. a) Discuss the applications of paper chromatography technique.
   b) Briefly explain the precautions to be taken in selecting the stationary and mobile phases in thin layer chromatography.
   c) Describe the preparation of a TLC plate. **(4+5+4)**

**P.T.O.**

4. a) Discuss the various factors affecting the separation in gas chromatography.
   b) Discuss the characteristics of liquid chromatography detectors.
   c) Make a comparative study of gas-solid chromatography and gas-liquid chromatography. **(3+5+5)**

5. a) Explain the synthetic applications of transition metal hydrides.
   b) Discuss the general synthesis and reactivity of transition metal carbenes. **(7+6)**

6. a) Explain the preparative methods of transition metal alkene complexes.
   b) By taking examples, discuss the structure and bonding of transition metal alkyne complexes.
   c) Discuss the mechanism of an organic reductive – elimination reaction using organometallic catalysis. **(4+5+4)**

7. a) Explain the Monsanto acetic acid process.
   b) Explain the synthetic applications of organo-copper reagents.
   c) Describe Water-Gas Shift reaction. **(5+5+3)**

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