April – 2015

M.Sc Chemistry Examination, SEM-III

Physical Chemistry Paper – X (Code: 3493)
(Characterization of Polymers)

Time: 2.5 hours **Total Marks: 70**

Instructions: All questions carry equal marks

1 (A) Define number average, weight average and viscosity average molecular weight method 06

(B) Write short notes on end group analysis to determine average molecular weight. 08

OR

1 (A) Explain polydispersity and molecular weight distribution in polymer. 07

(B) Write short notes on Vapour Pressure Osmometry. 07

2 (A) Show advantages and disadvantages of membrane osmometry 05

(B) Explain Principle, apparatus and theory of membrane osmometry. 07

(C) Name four types of membrane osmometer. 02

OR

2 Write definition of following terms: 14
i) Relative viscosity, ii) Specific viscosity, iii) Reduced viscosity, iv) Intrinsic viscosity
v) Osmotic pressure, vi) Osmosis and vii) Vapour Pressure Osmometry

3 (A) Write note on determining $\overline{M_W}$ with the help of light scattering method. 08

(B) Draw and explain a typical Zimm plot. 06

OR

3 (A) Write advantages and disadvantages of photometer. 05

(B) Explain scattering light by polymer molecules. 09

4 (A) What is polymer crystallisation? Write detailed importance about it. 06

(B) Explain phenomena and structure of "Spherulites" and "lamellar single crystals". 08

OR

4 (A) What is degree of crystallinity? Give distinguish between crystalline and amorphous polymers. 06

(B) Write various factors affecting Tg and crystallizability of polymers. 08

5 (A) Explain the importance of plastisizer and its applications. 06

(B) Write equation showing relationship between Tg and Tm and also giving detailed information of Tg. 08

OR

5 (A) Give full note on glass transition temperatures giving comparable examples. 07

(B) Write advantages and examples of various plastisizer. 04

(C) Explain: States of matter. 03