Karanjia Auto College,Karanjia,Mayurbhanj

DSE-I, CHEMISTRY HONS.

1. Answer all the questions [1×8=8]

i. What is glass transition temperature. ii. Define degree of polymerization. iii. Give an example of an elastomers. iv. Define crystalline melting point. v. What is polydispersity index. vi. Write functionality of adipic acid. vii. Write the monomer of Teflon.

viii. Write the following polymers in increasing order of molecular forces.

Nylon-6,6, Bakelite, Buna-S, PVC

2. Answer any **Eight** the questions [1.5×8=12]

i. Write preparation of polyvinyl acetate.

ii. What is step growth and step up polymerization.

iii. Write the difference between addition and condensation polymerization. iv. Discuss how polyaniline acts as a conductor.

v. Give an example of organic and inorganic polymer.

vi. Classify polymers on the basis of different polymerization process. vii. Write the difference between Mn and Mm.

viii. Give a example of graft polymer and block polymer.

ix. Why osmotic pressure method is the most accurate method for determination of molecular weight of the polymer.

x. Discuss vander-Waals force of attraction between polymer molecules.

3. Answer any **Eight** the questions [2×8=16]

i.What is polydispersity index.

ii. Write preparation and uses of Teflon

iii. Write preparation and uses of Polycarbonates

iv. What is extent of a reaction? How to calculate extent of a reaction

v. Classify following polymers on the basis of their polymerization process

Nylon-6,6, Glyptal, PVC, Buna-S, Terylene, Teflon vi. Write

preparation and uses of polystyrene. vii. Write preparation and uses of

Buna-S..

viii. Equal numbers of molecules with M_1= 10,000 & M_2=100,000, are mixed. Calculate M_N and M_W ix. Write criteria of polymer solubilty. x. Write the monomers of PHBV.

4. Answer any **Four** questions [4×6=24]

i. Derive an expression for determination of molecular mass of the polymer using end group analysis method.

ii. Derive an expression for determination of molecular mass of the polymer using viscometry method.

iii. Derive an expression for determination of molecular mass of the polymer using Osmotic pressure method.

iv. Derive an expression for determination of molecular mass of the polymer using light scattering method.

v. Write short notes on conducting polymer and biodegradable polymers.

vi. Write short notes on Bakelite and polyamides. vii. Write mechanism and kinetics of

step growth polymerization.

viii. Write mechanism and kinetics of both cationic and anionic polymerization.