KS-2145

M. Sc. (Sem. III) Examination

November / December - 2017

HN-603(P) : Physical Chemistry : Paper - III

me - 3 Hours] [Total Marks : 70

structions : (1) All questions are compulsory.
(2) Figures to the right indicate Maximum marks
(3) Answer the questions accurately and briefly.

1 (a) Answer any two of the following questions : 10

(1) Explain what is intermolecular bonding and how many types of intermolecular forces are present ?

(2) Explain effect of average molecular weight and molecular weight distribution on the properties of the polymers.

(3) Write a short note on Classification of polymers.

(b) Answer any one of the following questions : 4

(1) What are differences between Fibers, Elastomers and Plastics.

(2) Write a short note on History of polymers.

2 (a) Answer any two of the following questions :

(1) Define active centers. Explain coordination polymerization mechanism considering cosse's monometallic concept.

(2) Write a note on Ziegler Natta catalysts and their actions.

(3) Explain kinetics of anionic chain polymerization.

(b) Answer any one of the following questions :

(1) Write an equation for early kinetic models for Ziegler Natta catalysis.

(2) Derive an equation for degree of polymerization in cationic chain polymerization.

3 (a) Answer any two of the following questions :

(1) Derive WLF equation.

(2) Explain transition and associated property determination, how it is used to differentiate between true polymers from amorphous and crystalline polymers.

(3) Explain glass transition temperature and glassy solids on the basis of state of aggregates.

(b) Answer any one of the following questions :

(1) Discuss methods for determination of glass temperature.

(2) What are differences between primary and secondary glass temperature.

4 (a) Answer any two of the following questions : 10

(1) What is crystallisability. Discuss Factors effecting the crystallisability.

(2) Write a note on Acidolysis and Aminolysis.

(3) What are Photostabilizers? Discuss role of Photostabilizers in polymers.

(b) Answer any one of the following questions : 4

(1) Cross-linking reaction in polymers.

(2) What are antioxidants and what is the role of antioxidants in polymer degradation ?

5 Attempt any seven from the following : 14

(1) What is Degree of polymerization?

(2) What is polydispersity ?

(3) Mechanical Degradation.

(4) Substitution polymer reaction.

(5) Thermal degradation

(6) Hydrolytic degradation.

(7) Addition polymer Reaction.

(8) Why free radical polymerization does usually carried out under a stream of nitrogen gas ?

(9) Role of plasticisers.

(10) Importance of transition temperature.