647510 **Msc2CheC0310** **Seat No: _____**

M.Sc.(Chem.) Semester - 2 (CBCS) Examination
March/April- 2018
PHYSICAL CHEMISTRY
(CORE)

Time: 2:30 Hours **Marks: 70**

Instructions:

1. All Questions are compulsory & carries equal 14 marks
2. Draw suitable diagram / Scheme wherever necessary.

Q.1 Answer any **seven** of the following ten questions. (14)

1. Describe curing of epoxy and phenol formaldehyde resins.
2. Give the full forms and repeat unit structures of: CA, and PVC.
3. Discuss the effect of monomer concentration on direction of polycondensation reaction.
4. What is Flory's approach of solubility parameter?
5. Give difference between Symdiotactic and Atactic polymers.
6. What are initiators? Give decomposition of t-butyl hydroperoxide and AIBN.
7. Define functionality and give at least three examples of polyfunctional compounds
8. Define: Copolymer, and Thermoplastics.
9. What are inhibitors? Give names of any five inhibitors.
10. Discuss solid-phase polymerization.

Q.2 Answer any **two** of the following three questions. (14)

1. Describe Reactivity ratios and copolymerization behavior.
2. What is ionic polymerization? Discuss the kinetics of cationic polymerization in detail.
3. Discuss thermodynamics of ring transformation to linear polymers.

Q.3 Answer the following questions. (14)

1. Write a note on molecular weight control in polycondensation.
2. Discuss step-wise polymerization with reference to triisocyanate.

OR

Q.3 Answer the following questions. (14)

1. Describe the factors affecting the rate of polycondensation and molecular weight of the polymer.
2. Discuss gel permeation chromatography method in detail.

Q.4 Answer any **two** of the following three questions. (14)

1. Explain thermodynamics of simple liquid mixtures in detail.
2. Discuss statistics of linear olycondensation.
3. Discuss kinetics of polycondensation reaction.

Q.5 Answer any **two** of the following four questions. (14)

1. Give detailed account on addition and substitution reactions in polymers.
2. Describe fractional precipitation method.
3. Discuss emulsion polymerization.
4. What is degradation? Classify degradation reactions. Explain physical degradation in detail.

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