Printed Pages: 01 **Sub Code: ROE035**

Paper Id: 199306 **Roll No.** | | | | | | | | | | |

B TECH

(SEM-III) THEORY EXAMINATION 2018-19

POLYMER SCIENCE AND TECHNOLOGY

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

- **a.** Functionality degree of polymerization.
- **b.** Polydispersity Index.
- **c.** Fibers.
- **d.** Elastomers.
- **e.** Natural Polymers.
- **f.** Polymer Composite.
- **g.** Zieglar Natta Catalyst.

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

- **a.** Differentiate between thermosetting and thermoplastics.
- **b.** Free radical mechanism of polymerization.
- **c.** Explain the term tacticity. Classify the polymers on the basis of tacticity.
- **d.** What do you mean by polymer degradation? Describe thermal and photo degradation in detail.
- **e.** Explain number average and weight average molecular weights of a polymer.

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

- **a.** Classify polymers on the basis of several considerations. Describe homopolymers and copolymers in detail.
- **b.** Calculate the contour length (L) of a polymer when its degree of polymerization (n) = 800 and C – C bond length (l) = 1.65Å.

4. Attempt any *one* part of the following: 7 x 1 = 7

- **a.** Differentiate between addition and condensation polymerization.
- **b.** What are various polymerization techniques? Explain any one technique in detail.

5. Attempt any *one* part of the following: 7 x 1 = 7

- **a.** Writ applications of polymers in the field of agriculture, automobile and medical.
- **b.** Define high polymer and oligopolymers.

6. Attempt any *one* part of the following: 7 x 1 = 7

- **a.** In a polymer there are 100 molecules of molecular weight 100, 200 molecules of molecular weight 1,000 and 300 molecules of molecular weight 10,000. Calculate its number average weight and rate average molecular weight.
- **b.** Discuss size of polymer molecule. Describe into end to end distance model.

7. Attempt any *one* part of the following: 7 x 1 = 7

- **a.** Write the methods of preparations, properties and uses of Buna – S and Buna -N.
- **b.** Write the methods of preparation’s, properties and uses of PVC and Polystyrene.