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Paper Code: OE-045	**Roll No.**										

B. TECH.
(SEM IV) EVEN SEMESTER EXAMINATION, 2015-16
POLYMER SCIENCE & TECHNOLOGY

[Time: 3 Hours] **[Total Marks: 100]**

Note: Attempt ***ALL*** questions. Assume suitable data, if required. All question carry equal marks.

1. Attempt any ***TWO*** parts of the following: - **[10x2=20]**

(a) Describe kinetics of Condensation polymerization. Also give the mechanism with suitable examples.
(b) Discuss the preparation, properties and applications of poly vinyl chloride (PVC) with suitable examples. Also distinguish between thermoplastic & thermosetting plastic.
(c) What is meant by Plasticizers? Discuss its function & uses with suitable examples.

2. Attempt any ***TWO*** parts of the following:- **[10x2=20]**

(a) Classify different types of polymers. Describe kinetics of Emulsion polymerization. Also give the mechanism with suitable examples.

(b) What do you mean by *average mol. weight*? Discuss the characteristics of polymers. Butadiene (0.216 kg) is copolymerized with 104 gm of styrene. What is the molecular formula of the copolymer?

(c) Why monomers used in step growth polymerization, yield long chain polymers? What will be the resulting polymer, when terephthalic acid reacts with ethylene glycol? Discuss the applications of this resulting polymer.

3. Attempt any ***TWO*** parts of the following: - **[10x2=20]**

(a) Define *Silicones*. Discuss the utility of copolymerization and the effect of copolymerization on the properties of polymer with suitable example.
(b) Discuss the basic difference between HDPE & LDPE. Also describe the application of polymers in *'Aerospace' & 'Automobile*' industry.
(c) Explain Injection moulding process. Discuss the effect of temperature and pressure on the kinetics of polymerization. Explain with suitable examples.

4. Attempt any ***TWO*** parts of the following: - **[10x2=20]**

(a) Describe the preparation, properties and applications of polystyrene with suitable examples. Also distinguish between thermoplastic & thermosetting plastic.
(b) Discuss about the thermal properties of polymers. Describe Suspension Polymerization with their kinetics, explain with suitable example.
(c) What do you mean by high performance polymers? Write down the properties and applications of phenol formaldehyde resin.

5. Write short notes on any ***FOUR*** parts of the following: - **[5x4=20]**

(a) Buna-N & Buna-S
(b) Vulcanization
(c) Natural Rubber
(d) Atactic & Elastomers
(e) Degree of Polymerization
(f) PMMA