Code No: RR320806 **Set No. 1**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2008
POLYMER ENGINEERING
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is 'Gutta percha'? Explain briefly.
   (b) What is Amber? Write its composition and properties. [8+8]
2. What are the techniques available for polymerization process? Explain each technique briefly. [16]
3. (a) If light scattering and osmotic pressure are measured in the same solvent for the estimation of molecular weight, compare the slopes of the plots of 1/M versus C.
   (b) What type of ultra centrifugation experiments are suitable for the random coil polymers. [8+8]
4. Explain
   (a) Dielectric constant
   (b) dielectric strength
   (c) volume resistivity
   (d) surface resistivity [4×4]
5. (a) Discuss the use of flame-retardants in polymers.
   (b) Name few flame-retardants and their uses. [8+8]
6. (a) Write short notes on the method of production of polypropylene.
   (b) Write various structural forms of polypropylene. [10+6]
7. (a) What are the parameters that are specified to characterize the epoxy resins.
   (b) What are the ingradients that contain urea-formaldehyde molding powder? Explain each preparation steps briefly for making of these powders. [8+8]
8. (a) What is extrusion? What are the different types of extrusions and explain briefly each of them
   (b) Explain calendaring process with suitable example. [8+8]

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Code No: RR320806 **Set No. 2**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2008
POLYMER ENGINEERING
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is casein? Write the chemical composition of casein.
   (b) Discuss briefly extraction and method of application of casein. [8+8]

2. Discuss briefly in step polymerization
   (a) interchange reactions
   (b) Ring versus chain formation
   (c) The advantages of molecular-weight control by added stabilizer
   (d) How to obtain high molecular weights. [4×4]

3. What is light scattering? Explain light scattering for the estimation of molecular weight along with relevant equations. [16]

4. (a) Write short notes on chain end degradation.
   (b) Explain briefly about random degradation.
   (c) In some cases polymer degradation is advantageous. Explain with example. [6+5+5]

5. Write short notes on following:
   (a) Cationic initiators.
   (b) Reinforcing agents.
   (c) Photodegradants.
   (d) Inhibitors. [4×4]

6. Explain the various methods available for the preparation of polystyrene and also write the general properties of polystyrene. [16]

7. (a) Write short notes on alkyd resins.
   (b) Explain in detail about the applications of polyester both in fibre and plastic form. [8+8]

8. Explain briefly compression molding? Give in detail various equipments and auxiliary equipments used in compression molding. [16]

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Code No: RR320806 **Set No. 3**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2008
POLYMER ENGINEERING
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain briefly the classification of polymers based on polymerization mechanisms
   (b) Differentiate between thermoplastic and thermosetting polymers. Give two examples for each. [8+8]
2. Define and describe micelles and discuss their role in emulsion polymerization.[16]
3. Explain briefly various methods used for the measurement of molecular weight and its distribution [16]
4. What is chain scission? How many ways these will occur. Explain briefly. [16]
5. (a) Discuss briefly about the rubbery and fibrous filters.
   (b) Discuss briefly about the necessity of coupling agents in polymers. [8+8]
6. (a) Write the physical structure and major applications of poly vinyl chloride .
   (b) What are the various methods of production of PVC? Explain any one method with neat flow chart. [8+8]
7. (a) What are the different types of polyurethanes that can be obtained? Explain the polymerization reactions.
   (b) Describe the properties and applications of polyethylene terephalate (PET) polymers. [10+6]
8. (a) What is extrusion? What are the different types of extrusions and explain briefly each of them
   (b) Explain calendaring process with suitable example. [8+8]

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Code No: RR320806 **Set No. 4**

III B.Tech II Semester Supplimentary Examinations, Aug/Sep 2008
POLYMER ENGINEERING
(Chemical Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the process of vulcanization of rubber.
   (b) What are the different additives used in compounding of natural rubber. Explain the specific function of each. [8+8]

2. Explain briefly:
   (a) solution polymerization,
   (b) mass polymerization. [8+8]

3. Explain briefly various methods used for the measurement of molecular weight and its distribution [16]

4. Discuss briefly about
   (a) Mechanical properties
   (b) Thermal properties
   (c) Physical properties
   (d) Chemical properties [4×4]

5. (a) Discuss briefly about the rubbery and fibrous filters.
   (b) Discuss briefly about the necessity of coupling agents in polymers. [8+8]

6. Give structural differences of isotactic, syndiotactic and atactic polypropylene. How is isotactic polypropylene is prepared? Compare the important characteristics of the isotactic polypropylene with atactic polypropylene. [16]

7. (a) Write short notes on alkyd resins.
   (b) Explain in detail about the applications of polyester both in fibre and plastic form. [8+8]

8. (a) What type of curing agents are used in molding techniques.
   (b) Which type of plastic product does not require compounding?
   (c) What is the modification of injection molding? What are their advantages? [6+4+6]

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