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Roll No.

SIXTH SEMESTER

B.E. (PT)

MID SEM EXAMINATION

March 2007

PT-211 PROCESS EQUIPMENT DESIGN

Time: 1 Hour 30 Minutes

Max. Marks : 20

Note : Answer any **FOUR** questions.
All questions carry equal marks.
Assume suitable missing data, if any.

- 1 What are the different types of mechanical drives? Explain the criteria for selection of these with respect to the capital cost, operation and maintenance cost and efficiency.
- 2 What are the essential elements of a flexible shaft? What are the types and applications of flexible shafts?
- 3 Explain why and in which situations bearings are used. How are these classified?
- 4 What are the economic criteria for the selection of type of bearings? Differentiate the sliding and rolling bearings with respect to load, speed, type and quantity of lubrication and the power consumption.
- 5 What are the advantages of gear drives compared to belt drives and chain drives? What are its disadvantages vis-a-vis belt drives and chain drives?

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FOURTH SEMESTER

B.E. (PT)

MID SEM EXAMINATION

March

2007

PT-212 POLYMER TECHNOLOGY

Time: 1 Hour 30 Minutes

Max. Marks : 20

Note : Answer any **FOUR** questions.
All question carry **EQUAL** marks.
Assume suitable missing data, if any.

- 1 Write any one method for the industrial manufacture of high density polyethylene (HDPE). 5
- 2 Give the important properties and industrial applications of polyvinylchloride (PVC) and polystyrene (PS). 5
- 3 How will you synthesize polycarbonates? Write their important engineering applications. 5
- 4 Differentiate between emulsion polymerization and suspension polymerization. How will you prepare polypropylene by the slurry process? 5
- 5 Name the types of commercially important cellulose esters. Explain the manufacturing process of any one cellulose ester. 5
- 6 Why water and juices are stored in PET bottles? Write any one method for the industrial manufacture of polyethylene terephthalate (PET). 5

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FOURTH SEMESTER

B.E. (PT)

MID SEM EXAMINATION

March

2007

PT-213 POLYMER PROCESSING-I

Time: 1 Hour 30 Minutes

Max. Marks : 20

Note : Answer **ALL** questions.

Assume suitable missing data, if any.

- 1[a] What is the utility of flame retarders in plastics industry? Discuss with suitable examples. 2
- [b] How do you select a blender for carrying out mixing and compounding of a particular polymer? 2
- [c] What is cross-linking agent? Justify the importance of cross-linking agents in plastics industry. 2
- [d] Discuss the mechanism of mixing in a compounder-extruder. 2
- [e] Illustrate a schematic relationship showing effect of pro-oxidants, antioxidants and oxidation retarders on the oxygen uptake of a polymer. 2
- 2[a] Explain the working of a continuous kneader with simple functional sketch. 3
- [b] What is compounder-extruder? Explain it with simple sketch. 3
- 3 Write short note on any TWO of the following :
- [a] Hygroscopicity
- [b] Orientation and shrinkage
- [c] Plasticizers 2x2

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FOURTH SEMESTER

B.E. (PT)

MID SEM EXAMINATION

March- 2007

PT-214 POLYMER TESTING & SPECIFICATION

Time: 1 Hour 30 Minutes

Max. Marks : 20

Note : Answer any **FOUR** questions.
All questions carry **EQUAL** marks.
Assume suitable missing data, if any.

- 1 What do you understand by the tensile strength of a polymer. Detail the comparisons of tensile properties with flexural properties of polymers. 5
- 2 Describe and explain the method of measurement of heat deflection temperature of plastics. 5
- 3 How will you experimentally determine the dielectric strength of a polymer film. 5
- 4 Define Melt Flow Index (MFI) of plastics. Draw the diagram of MFI apparatus and explain the method of determination of MFI. 5
- 5 Draw and label an outline diagram for Gas-liquid Chromatography (GLC). How can GLC be used to determine the number of components in a mixture of chemical components? 5
- 6 Differentiate between absorption and emission spectra. Discuss the applications of IR spectroscopy for identification of polymer molecules. 5