

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV (NEW) EXAMINATION – SUMMER 2024****Subject Code:3142309****Date:20-07-2024****Subject Name: Thermoplastic Materials****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Compare the characteristics of Thermoplastics with Thermosets. **03**
 (b) Draw the structure of PMMA and list its applications **04**
 (c) With a neat sketch explain the high pressure process to manufacture LDPE and list its applications of LDPE. **07**
- Q.2** (a) Draw the structures of the following 1) PS 2) PVC 3) HDPE. **03**
 (b) Discuss the properties of PVC and list its applications. **04**
 (c) Explain the Mass polymerization technique (Tower process) to manufacture Polystyrene with a neat sketch and list its applications. **07**
- OR**
- (c) Explain the manufacturing of PP from Ziegler type catalyst with a neat flow diagram. **07**
- Q.3** (a) Explain the preparation of Styrene from Ethyl benzene? **03**
 (b) List properties and applications of Nylon. **04**
 (c) Explain the bulk polymerization technique to manufacture PMMA sheet **07**
- OR**
- Q.3** (a) Explain the preparation of Methyl methacrylate monomer. **03**
 (b) Draw the structures and list the properties and applications of i) EVA ii) EVOH **04**
 (c) State the reaction for preparation of Nylon 66 from Hexamethylene diamine and Adipic acid. Explain the manufacturing of Nylon 66 with a neat flow diagram. **07**
- Q.4** (a) List the properties and applications of HDPE. **03**
 (b) Draw the structure and list the properties and applications of ABS **04**
 (c) Explain the UNIPOL process to manufacture LLDPE and list the applications of LLDPE. **07**
- OR**
- Q.4** (a) List the properties and applications of Polyacetal. **03**
 (b) List properties and applications of PP. **04**
 (c) Draw the structure and list the properties and applications of PET. **07**
- Q.5** (a) Draw the Isotactic, Syndiotactic and Atactic structures of PP. **03**
 (b) Draw the structure and list the properties of Polycarbonate **04**
 (c) Explain the manufacturing of HDPE with a diagram. **07**
- OR**
- Q.5** (a) List the properties of the following i) PMMA ii) LLDPE **03**
 (b) List the applications of the following i) PAN ii) HIPS **04**
 (c) Explain briefly the manufacturing of Polycarbonate by Phosgenation process and list its applications. **07**
