

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV(NEW) EXAMINATION – SUMMER 2023

Subject Code:3142309**Date:13-07-2023****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.

MARKS

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|------------|---|-----------|
| Q.1 | (a) Describe the characteristics of thermoplastic materials. | 03 |
| | (b) Draw the structures of the following 1) PMMA 2) EVA 3) PVC 4) PS | 04 |
| | (c) With a neat sketch explain the high pressure process to manufacture LDPE and list the applications of LDPE. | 07 |
| Q.2 | (a) Draw the structures of Isotactic, Syndiotactic and Atactic PP. | 03 |
| | (b) List the properties and applications of EVA. | 04 |
| | (c) Compare the properties of HDPE, LDPE and LLDPE. | 07 |
| OR | | |
| | (c) Explain the manufacturing process of PP by Ziegler type catalyst with a neat flow diagram. | 07 |
| Q.3 | (a) List the applications of PMMA. | 03 |
| | (b) State the preparation of the following monomers i) Styrene ii) Vinyl chloride | 04 |
| | (c) Describe Nylon as an engineering material. | 07 |
| OR | | |
| Q.3 | (a) List the applications of EVOH | 03 |
| | (b) Discuss the unique properties of PVC and list its applications. | 04 |
| | (c) Draw the structure and list the properties and applications of ABS. | 07 |
| Q.4 | (a) List the properties and applications of HIPS | 03 |
| | (b) Discuss about Polyethylene Terephthalate material. | 04 |
| | (c) Explain the Mass polymerization technique (Tower Process) to manufacture Polystyrene with a neat sketch | 07 |
| OR | | |
| Q.4 | (a) Discuss why Polyacetal is used widely for engineering applications. | 03 |
| | (b) Describe the properties and applications of PP. | 04 |
| | (c) Explain briefly the manufacturing of PC by Phosgenation process and list its properties and applications | 07 |
| Q.5 | (a) Discuss about PAN material | 03 |
| | (b) List the properties & applications of HDPE | 04 |

- (c) Explain the bulk polymerization technique to manufacture PMMA sheet and list the properties of PMMA. **07**

OR

- Q.5** (a) List the properties and applications of Polystyrene **03**
(b) State the preparation of Methyl methacrylate and Bisphenol-A monomers **04**
(c) Explain the manufacturing process of Nylon 66 with a flow diagram. **07**
