

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V EXAMINATION – SUMMER 2025

**Subject Code:3152311**

**Date:13-05-2025**

**Subject Name:Instrumentation, Safety And Maintenance In Plastic Industry**

**Time:02:30 PM TO 05:00 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     |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Q.1</b> | <b>(a)</b> Define Plant Maintenance. Explain concept of Plant Maintenance in brief.                                                        | <b>03</b> |
|            | <b>(b)</b> List & Explain function of Maintenance Department.                                                                              | <b>04</b> |
|            | <b>(c)</b> Define Instrumentation. Explain about functional elements of an Instrument.                                                     | <b>07</b> |
| <b>Q.2</b> | <b>(a)</b> List types of Maintenance.                                                                                                      | <b>03</b> |
|            | <b>(b)</b> List typical causes of equipment break down. Also list disadvantages of break down maintenance.                                 | <b>04</b> |
|            | <b>(c)</b> Define: (i) calibration (ii) Accuracy (iii) Precision (iv) Systematic Errors (v) Drift (vi) Reproducibility (vii) Random Errors | <b>07</b> |
|            | <b>OR</b>                                                                                                                                  |           |
|            | <b>(c)</b> Define and Explain about Preventive Maintenance in Plastic Industry.                                                            | <b>07</b> |
| <b>Q.3</b> | <b>(a)</b> Define Safety. List the steps by which safety can be improved.                                                                  | <b>03</b> |
|            | <b>(b)</b> List types of Safety. List causes and remedial steps of fire in the Plastic Industry.                                           | <b>04</b> |
|            | <b>(c)</b> List function of Lubricant.                                                                                                     | <b>07</b> |
|            | <b>OR</b>                                                                                                                                  |           |
| <b>Q.3</b> | <b>(a)</b> Define Pressure. Explain in brief about different types of Pressure.                                                            | <b>03</b> |
|            | <b>(b)</b> Explain Well-type Manometer with neat sketch.                                                                                   | <b>04</b> |
|            | <b>(c)</b> Give classification of Lubricants. Explain any two in brief.                                                                    | <b>07</b> |
| <b>Q.4</b> | <b>(a)</b> Define Thermocouple. Explain its working principle.                                                                             | <b>03</b> |
|            | <b>(b)</b> Define wear. Explain its types in brief.                                                                                        | <b>04</b> |
|            | <b>(c)</b> List advantages and disadvantages of Thermocouples.                                                                             | <b>07</b> |
|            | <b>OR</b>                                                                                                                                  |           |
| <b>Q.4</b> | <b>(a)</b> Define : (i) Viscosity (ii) Flash Point (iii) Fire point                                                                        | <b>03</b> |
|            | <b>(b)</b> Explain about Flash Point and Fire Point of Lubricants.                                                                         | <b>04</b> |
|            | <b>(c)</b> List the causes of wear between screw and barrel of Plastic Processing Machineries.                                             | <b>07</b> |
| <b>Q.5</b> | <b>(a)</b> Define corrosion. Explain basic mechanism of corrosion.                                                                         | <b>03</b> |
|            | <b>(b)</b> List types of corrosion. Explain any one in brief.                                                                              | <b>04</b> |
|            | <b>(c)</b> Explain principle and working of LVDT.                                                                                          | <b>07</b> |

**OR**

|            |                                                                              |           |
|------------|------------------------------------------------------------------------------|-----------|
| <b>Q.5</b> | <b>(a)</b> Explain about safety Hazards in Plastic Industry.                 | <b>03</b> |
|            | <b>(b)</b> Explain about U-tube manometer in brief with neat sketch.         | <b>04</b> |
|            | <b>(c)</b> Explain in detail about Bimetallic thermometers with neat sketch. | <b>07</b> |

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