

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022****Subject Code:3170925****Date:05-01-2023****Subject Name:Industrial Automation****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

- Q.1**
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|-----|--|-----------|
| (a) | What is Industrial Automation? Why Industrial Automation is required. | 03 |
| (b) | Explain the Automation Process with different components used in Automation Process. | 04 |
| (c) | Explain the role of PLC in Industrial Automation and also explain different components of PLC. | 07 |

- Q.2**
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|-----|--|-----------|
| (a) | List Out the different types of Automation Process. | 03 |
| (b) | List different Pressure and Temperature Sensor used in Automation. | 04 |
| (c) | Draw the Architecture of Industrial Automation system and explain functions of all the blocks. | 07 |

OR

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|-----|---|-----------|
| (c) | Explain the role of PLC and SCADA in Industrial Automation Process. | 07 |
|-----|---|-----------|

- Q.3**
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|-----|---|-----------|
| (a) | Draw the Block Diagram and Explain the working of PLC. | 03 |
| (b) | Give the comparison of FBD and Ladder Language for PLC Programming. | 04 |
| (c) | Explain the Difference of Industrial bus systems: Mod bus & Profit bus. | 07 |

OR

- Q.3**
- | | | |
|-----|---|-----------|
| (a) | Give Comparison of terms SCADA, DCS and PLC. | 03 |
| (b) | Give brief review about PLC communication and Networking system in Industrial Automation Process. | 04 |
| (c) | Explain the role of Power Electronics Devices in Automation including DIAC & TRIAC. | 07 |

- Q.4**
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|-----|--|-----------|
| (a) | Explain the Applications of PLC. | 03 |
| (b) | Explain the working of DC and AC servo drives for motion control. | 04 |
| (c) | Explain the factors affecting for the PLC selection, PLC Installation. | 07 |

OR

- Q.4**
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|-----|--|-----------|
| (a) | Explain the basic construction and configuration of robot for industrial applications. | 03 |
| (b) | What is Industry4.0 revolution? | 04 |
| (c) | Draw the block diagram of DCS along with its features and advantages. | 07 |

- Q.5** (a) Explain the Communication Configuration of DCS. **03**
(b) Discuss about software configuration of DCS. **04**
(c) Explain the working principle of pick and place robot. **07**
- OR**
- Q.5** (a) Explain the DCS integration with PLC and Computers. **03**
(b) Explain the working of welding robot. **04**
(c) Draw and explain the major components of Internet of things in industrial automation. Also list out its application. **07**
