

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024

Subject Code:3162421

Date:05-12-2024

Subject Name: Industrial Automation

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.

- Q.1** (a) State the benefits of automation. **03**
(b) Discuss localized processes and distributed processes with suitable example. **04**
(c) Draw the layout of PLC system. Explain the function of each block. **07**
- Q.2** (a) State any six advantages of PLC. **03**
(b) Explain the power supply for PLC with neat sketch. **04**
(c) Write technical note on: PLC arithmetic functions. **07**
- OR**
- (c) Explain ON delay, OFF delay and Retentive timer functions of PLC with timing diagram. **07**
- Q.3** (a) Explain table-to-register move function of PLC. **03**
(b) Discuss holding registers of PLC. **04**
(c) Explain the process scanning considerations in PLC with necessary diagram. **07**
- OR**
- Q.3** (a) Explain register-to-table move function of PLC. **03**
(b) Discuss input registers of PLC. **04**
(c) Explain input module and output module of PLC with its layout. **07**
- Q.4** (a) Explain automation steps with the help of block diagram. **03**
(b) State the advantages of SCADA. **04**
(c) Explain remote terminal unit for SCADA with necessary diagram. **07**
- OR**
- Q.4** (a) Explain automated water heating process with neat sketch. **03**
(b) State key features of SCADA. **04**
(c) Write technical note on: SCADA protocols. **07**
- Q.5** (a) Explain standby schemes in DCS. **03**
(b) Discuss in brief the application of DCS in steel plant. **04**
(c) Explain availability analysis in network control system. **07**
- OR**
- Q.5** (a) State the advantages of DCS. **03**
(b) Discuss in brief the application of DCS in power plant. **04**
(c) Write technical note on: Common Configurations of DCS. **07**
