

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code:3170925****Date:28-05-2024****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 allowedw.

| | | Marks |
|------------|--|-----------|
| Q.1 | (a) Compare MODBUS and PROFIBUS. | 03 |
| | (b) Draw the architecture of PLC and explain each block in detail. | 04 |
| | (c) What do you mean by SCADA system? Discuss basic architecture and typical features of SCADA. | 07 |
| Q.2 | (a) Discuss the construction, working principle of LVDT. | 03 |
| | (b) Enlist various applications of AC/DC servo motor drives as actuators. | 04 |
| | (c) Discuss various sensors used for temperature measurement. | 07 |
| | OR | |
| | (c) Explain different pressure measurement transducers with neat diagram. | 07 |
| Q.3 | (a) List out various programming languages used in PLC. | 03 |
| | (b) Explain the role of DIAC, TRIAC in automation. | 04 |
| | (c) Develop a ladder diagram to make NAND, EX-NOR and NOR logic with symbol and truth table. | 07 |
| | OR | |
| Q.3 | (a) Explain the factors affecting for the PLC selection, PLC Installation. | 03 |
| | (b) Write advantages and features of Sequential flow chart over Ladder diagram. | 04 |
| | (c) Draw and explain the PLC ladder diagram for star delta starter. | 07 |
| Q.4 | (a) Explain features and advantages of DCS systems. | 03 |
| | (b) How PLC communicates with field instruments and SCADA? | 04 |
| | (c) Draw and explain ladder diagram to control high level switch and low level switch for water level control for overhead tank. | 07 |
| | OR | |
| Q.4 | (a) Draw and explain pH measurement transducer. | 03 |
| | (b) Develop a ladder diagram for DOL starter to start an electric motor. | 04 |
| | (c) Draw and explain the major components of Internet of things used in industrial plant automation. List out various applications of IOT. | 07 |
| Q.5 | (a) Explain the Communication configuration of DCS. | 03 |
| | (b) Explain construction and operation of magnetic flow meter with diagram. | 04 |
| | (c) Draw and Explain Welding robot in brief. | 07 |
| | OR | |
| Q.5 | (a) Explain in Industry4.0 revolution in brief. | 03 |
| | (b) Explain different types of timers available in DCS. | 04 |
| | (c) Draw and Explain the working principle of pick and place robot. | 07 |