

Enrolment No./Seat No \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3170925

Date:21-05-2025

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.

		MARKS
Q.1	(a) Draw and explain block diagram of a Programmable Logic Controller (PLC).	03
	(b) Draw and explain the Architecture of Industrial Automation system.	04
	(c) List out the various programming language used for PLC. Explain any two graphical languages of them in detail.	07
Q.2	(a) Define terms: Transducer, Sensor, Transmitter. Write any two examples of each.	03
	(b) Write a short note on SCADA used in Industrial Automation system.	04
	(c) Explain RTD and thermocouple along with temperature transmitter.	07
	OR	
	(c) Explain usage of various power electronics devices in industrial automation.	07
Q.3	(a) Explain difference between fixed PLC and modular PLC.	03
	(b) List different sensors used for pressure, force, flow and level in Automation.	04
	(c) Explain about PLC communication with field devices and SCADA using various networking protocols.	07
	OR	
Q.3	(a) Write a short note on Profibus.	03
	(b) Explain the function of Actuators in process industries with suitable example.	04
	(c) Develop a ladder diagram for star-delta starter to start an electric motor.	07
Q.4	(a) State any five applications of DCS.	03
	(b) Explain the working of DC and AC servo drives for motion control.	04
	(c) Draw and explain the block diagram of DCS. Explain its features and advantages	07
	OR	
Q.4	(a) List out the various programming language used for DCS.	03

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|------------|-----|---|-----------|
|            | (b) | Explain about software configuration of DCS.  | <b>04</b> |
|            | (c) | Explain in detail about DCS Communication and networking in Industrial Automation.                          | <b>07</b> |
| <b>Q.5</b> | (a) | Write the difference between PLC & DCS.   | <b>03</b> |
|            | (b) | Explain in brief about Industry 4.0 revolution.   | <b>04</b> |
|            | (c) | Explain the significance and application of pick and place and welding robots for industrial applications.  | <b>07</b> |
|            |     | <b>OR</b>   |           |
| <b>Q.5</b> | (a) | How robots can help achieve better performance in industrial automation?                                    | <b>03</b> |
|            | (b) | Explain the basic construction and configuration of robot for industrial applications.                      | <b>04</b> |
|            | (c) | Explain in detail about usage of Internet of things in industrial automation with any one suitable example. | <b>07</b> |

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