

Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3170925

Date:26-11-2025

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	(a) Define Industrial Automation. State the need of industrial Automation.	03
	(b) Enlist the non-contact Temperature sensors and state the advantages of anyone of them.	04
	(c) Explain the Resistance Strain Gauge.	07
Q.2	(a) Enlist the different types of speed measurement methods.	03
	(b) Write a note on Resistance Temperature Detector.	04
	(c) Explain the role of power Electronics device in automation including DIAC and TRIAC.	07
	OR	
	(c) Describe the hierarchical structure of Industrial Automation System.	07
Q.3	(a) Give the classification of PLC language in PLCs.	03
	(b) Justify the role and application of PLCs as compared to different types of controllers for a particular application and surrounding environmental conditions.	04
	(c) Explain the Industrial Actuator System with necessary block diagram.	07
	OR	
Q.3	(a) List the different Pressure and Temperature sensors used in Industrial Automation.	03
	(b) Explain the role of SCADA in Industrial Automation Process.	04
	(c) Discuss the construction, working principle and application of LVDT.	07
Q.4	(a) Enlist the different features of DCS.	03
	(b) Write a note on DCS Supervisory computer tasks.	04
	(c) A process blower (p) is to run when following conditions are met: 1. Input A is off. 2. Input B is on or input C is on or both input B and C are on. 3. Input D and E are both on. 4. One or more inputs F, G and H are on. Draw the digital gate circuit and ladder diagram for it.	07

OR

- Q.4** (a) Enlist the Industrial application of PLC. **03**
(b) Give comparison of MODBUS, PROFI-BUS and FIP-BUS Protocol. **04**
(c) Draw and explain the PLC ladder diagram for forward reverse application of three phase motors. **07**

- Q.5** (a) Differentiate between Traditional Industry and Industry 4.0. **03**
(b) Enlist the different welding robot. Explain one of them in detail. **04**
(c) Write a note on IoT based home automation system. **07**

OR

- Q.5** (a) State the advantages of distributed Control System. **03**
(b) Explain the pick and place robot used in modern manufacturing environment. **04**
(c) Write a note on Industry 4.0 revolution. **07**
