

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - V EXAMINATION - WINTER 2025

Subject Code: 3151109

Date: 17-11-2025

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) State the role of computers in measurement and control.	03
(b) Compare PLC and SCADA used in industries	04
(c) Describe the role of power electronics for industrial automation.	07
Q.2 (a) What is sensor? List out sensors used for temperature measurement with technical specification .	03
(b) Discuss the application of process control valve	04
(c) What is communication protocol.? Explain in details about communication protocol used in industrial automation	07

OR

(c) What is an automation? Explain the Industrial automation system with block diagram .	07
Q.3 (a) Draw the ladder diagram for 2-inputs OR gate	03
(b) Describe the use of IGBT in industrial automation system.	04
(c) Draw and explain architecture of PLC for an industrial automation system .	07

OR

(a) Sketch the ladder diagram for 2 input Ex-OR gate	03
(b) Enlist various types of actuators used in industry with their technical specification	04
(c) What is DCS ? Give its functionality .How does a DCS handle complex control loops in large industrial plants.	07
Q.4 (a) Mention the working and operational principle of any one pressure sensor .	03
(b) Enlist in detail about requirement in process of PLC installation.	04
(c) How does the Internet of things enable the automation and what are the components that makes this possible ?	07

OR

- (a) Describe the application of motion sensor in AC servo drive used in industry 03
- (b) Write a short note on : Sequential flow chart 04
- (c) How pick and place robot works for industrial automation system ? 07
- Q.5** (a) Write short note on : Overview of industry 4.0 for automation 03
- (b) How DCS integrates with PLC and computers ? 04
- (c) Explain about ladder diagram used in PLC programming. Mention its advantages and disadvantages 07

OR

- (a) " welding robot is worth investment " justify 03
- (b) Discuss the parameters and fundamentals to chose PLC for industrial application 04
- (c) What is SCADA? Draw and explain the SCADA system used in industrial automation with necessary block diagram 07
