

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 3170925****Date: 28/06/2023****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. Explain need and advantages of Automation system.	03
	(b) What do you mean by (i) MODBUS (ii) PROFI-BUS.	04
	(c) Draw and explain the generalized block diagram of Industrial Instrumentation system.	07
Q.2	(a) Differentiate power MOSFET and IGBT.	03
	(b) List out the various sensors used for pressure measurement.	04
	(c) Discuss the construction, working principle and application of LVDT.	07
	OR	
	(c) Develop a ladder diagram to start a motor using DOL starter with following point. Also Draw its control circuit diagram.	07
	1. When Start push button (PB1) is pressed, Motor (M1) has to start.	
	2. If Start push button (PB1) is released and Stop pushbutton (PB2) is not pressed, Motor (M1) should remain on.	
	3. When Stop push button (PB2) is pressed, Motor (M1) has to stop.	
	4. If stop push button is released and start is not pressed (released) motor should remain off.	
Q.3	(a) Explain elements of ladder diagram and its application.	03
	(b) Explain construction and operation of magnetic flow meter with diagram.	04
	(c) Explain the function of Actuators in process industries with suitable example.	07
	OR	
Q.3	(a) Explain the function RTD.	03
	(b) How pH measurement is done? Explain it in brief.	04
	(c) Develop a ladder diagram to make AND logic and OR logic with Boolean expression and circuit diagram.	07
Q.4	(a) Describe the different components and applications of PLC.	03
	(b) Give brief overview idea about PLC Communication and networking in Industrial Automation.	04
	(c) Draw the architecture of PLC and explain each block in in detail.	07
	OR	
Q.4	(a) Write the difference between PLC & DCS.	03
	(b) Explain in detail the input-output module used in PLC.	04
	(c) What do you mean by SCADA system? Discuss basic architecture and typical features of SCADA.	07
Q.5	(a) What do you mean by IoT? How it is useful in industrial automation?	03
	(b) Explain features and advantages of DCS systems.	04
	(c) Explain Pick and place robot in brief.	07
	OR	
Q.5	(a) Explain the major configurations of Industrial Robots.	03
	(b) What is Industry4.0 revolution?	04
	(c) Explain Welding robot in brief.	07
