Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VII EXAMINATION – SUMMER 2026

Subject Code:3170925 Date:03-06-2026

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 the block diagram of PLC. Discuss different components of PLC.	**03**
	(b)	Define industrial automation and Explain industrial automation architecture with diagram.	**04**
	(c)	What do you mean by SCADA system? Discuss basic architecture and typical features of SCADA.	**07**
Q.2	**(a)**	Write a short note on Human Machine Interface (HMI).	**03**
	(b)	Compare RS-232, RS-422 and RS485 interfaces.	**04**
	(c)	Develop ladder diagram to make different logic gates with Boolean expression and circuit diagram.	**07**
		OR	
	(c)	Develop a PLC ladder diagram for ON-OFF operation of Motor by using START and STOP push buttons. Put motor overload fault contactor which cut power when overload detects.	**07**
Q.3	**(a)**	Write short note on AC & DC drive.	**03**
	(b)	What do you mean by actuators? Explain how power electronics devices work as automation components.	**04**
	(c)	Explain the basic principles of servo systems. Enlist types of DC servo motors with neat diagram.	**07**
		OR	
Q.3	**(a)**	How pH measurement is done? Explain it in brief.	**03**
	(b)	Compare between Modbus and Profibus.	**04**
	(c)	Discuss various sensors used for temperature measurement.	**07**
Q.4	**(a)**	List out about various programming languages used in PLC. .	**03**
	(b)	Explain the basic construction and configuration of robot for industrial applications.	**04**
	(c)	Discuss the construction, working principle and application of LVDT.	**07**
		OR	
Q.4	**(a)**	Explain features and advantages of DCS systems.	**03**
	(b)	What is Internet of Things (IOT)? Enlist advantages of IOT in industry.	**04**
	(c)	Describe the function of On Delay and Off Delay Timers in PLC Programming with suitable example.	**07**
Q.5	**(a)**	What is Industry 4.0 revolution?	**03**
	(b)	Explain the DCS integration with PLC and Computers.	**04**
	(c)	Describe in detail welding robot & Pick & place robot.	**07**
		OR	
Q.5	**(a)**	Enlist Industrial Robotic Applications in Manufacturing.	**03**
	(b)	Explain basic construction and configuration of pick and place robot.	**04**
	(c)	Draw and explain the major components of Internet of things in industrial automation. Also list out its application.	**07**

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