GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3170925   **Date:07-12-2024**

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 terms SCADA, DCS and PLC.	**03**
	(b)	Explain Automation Process with different components used in Automation Process.	**04**
	(c)	Explain the difference of Industrial bus systems: Mod bus & Profi bus.	**07**
Q.2	**(a)**	Explain function of Actuators in process industries with suitable example.	**03**
	(b)	Discuss the difference between AC Servo Motor and DC Servo Motor.	**04**
	(c)	How pH measurement is done? Explain it in brief.	**07**

OR

	(c)	List the different types of speed-measuring devices. Explain any one with neat sketches, the construction and operation of it.	**07**
Q.3	**(a)**	Explain elements of ladder diagram and its application.	**03**
	(b)	What are the basic differences between PLC On delay timer and Off delay timer?	**04**
	(c)	Draw and explain the PLC ladder diagram for Star delta Starter.	**07**

OR

Q.3	**(a)**	Develop a ladder diagram to make AND logic and OR logic with Boolean expression and circuit diagram.	**03**
	(b)	How the PLC Off Delay Timer Works.	**04**
	(c)	Draw and explain the PLC ladder diagram for DOL Starter.	**07**
Q.4	**(a)**	Explain features of DCS and advantages of DCS.	**03**
	(b)	Explain SCADA systems in details for industry.	**04**
	(c)	Draw and explain the ladder diagram & module wiring for water level controller.	**07**

OR

Q.4	**(a)**	Define term DCS. List out different applications of DCS.	**03**
	(b)	Explain Analog digital input and output modules used in PLC.	**04**
	(c)	Draw and explain the PLC ladder diagram for automatic Traffic Control Lights.	**07**
Q.5	**(a)**	What is Industry 4.0 revolution?	**03**
	(b)	What do you mean by IoT? How it is useful in industrial automation?	**04**
	(c)	Draw and explain the PLC ladder diagram for automatic bottle filling plant.	**07**

OR

Q.5	**(a)**	List out various programming languages used in PLC.	**03**
	(b)	Discuss the significance and application of pick and place and welding Robot.	**04**
	(c)	Explain the major configurations of Industrial Robots.	**07**

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