Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2024

Subject Code:3151109 **Date:25-11-2024**

Subject Name: Industrial Automation

Time:10:30 AM TO 01:00 PM **Total Marks:70**

Instructions:

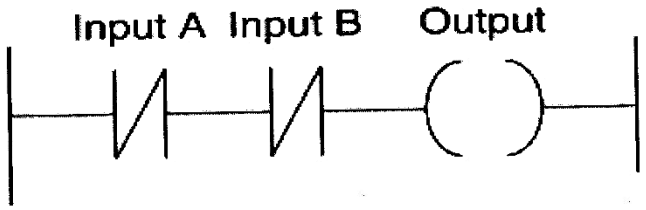
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	(a)	What is industrial automation? Explain different type of automation systems.	03
	(b)	Compare MODBUS & PROFIBUS ?	04
	(c)	What is DCS ? With a neat sketch, explain the construction and working of a DCS used in industry.	07
Q.2	(a)	Enlist temperature sensors used in industry. Write technical specification of its parameters useful for industrial application	03
	(b)	Enlist any three types of transducers used for the measurement of Displacement. With example state its application.	04
	(c)	Draw and Explain Architecture and block diagram of PLC.	07
		OR	
	(c)	What are sensor and actuator? Explain use of Solenoid as an electrical actuator.	07
Q.3	(a)	What is PH? How PH measurement done with sensor?	03
	(b)	Explain use of solenoid as an electrical actuator.	04
	(c)	What is PLC? & List the selection criteria for PLC. State the advantages of PLC in Industrial automation	07
		OR	
Q.3	(a)	Give justification with example that how power electronics devices are useful as automation component in industrial application.?	03
	(b)	Short note : DCS integration with PLC and Computers	04
	(c)	Explain SCADA architecture in details.	07

Q.4	**(a)**	Enlist any three applications of PLC to process control industries .	**03**
	(b)	Short note on temperature sensor PT-100	**04**
	(c)	What is ladder diagram? How is a ladder diagram read ? explain ladder diagram with any one application.	**07**

OR

Q.4	**(a)**	Give overview of DCS . How it is differ from PLC ?	**03**
	(b)	Write short note on AC & DC drive.	**04**
	(c)	What are the different types of flow sensor? Give their type and explain how flow sensor works?	**07**

Q.5	**(a)**	Give Basic construction and configuration of robot	**03**
	(b)	 State which logic gate has been made using above ladder diagram ? justify.	**04**
	(c)	Explain Internet of things (IoT) for plant automation.	**07**

OR

Q.5	**(a)**	Short note : welding robot	**03**
	(b)	What do you mean by pick and place robot? With the help of simple block diagram explain its parts and working	**04**
	(c)	List & draw symbol of the power electronics component. Differentiate Power MOSFET & IGBT.	**07**