GUJARAT TECHNOLOGICAL UNIVERSITY
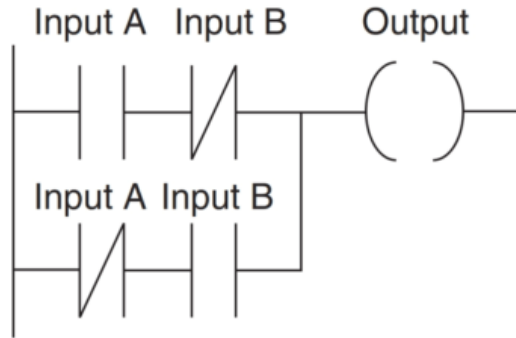## BE - SEMESTER–V (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3151109   **Date:16-05-2024**

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)**	What is industrial automation? Explain different type of automation systems. List its advantages and disadvantages.	**03**
	(b)	State the difference between MODBUS & PROFIBUS ?	**04**
	(c)	Explain Architecture and block diagram of PLC	**07**
Q.2	**(a)**	Enlist any three types of transducers for the measurement of Temperature. Explain one of it in detail suitable for industry.	**03**
	(b)	State working principle of Displacement sensors used in industrial application. Explain one of displacement sensor with example	**04**
	(c)	Explain I/O bus isolation in PLC. By using opto coupler how it is achieved in input and output modules of PLC ?	**07**
		OR	
	(c)	With a neat sketch, explain the construction and working of a DCS used in industry.	**07**
Q.3	**(a)**	Explain PH measurement principle and its sensor in brief	**03**
	(b)	With the help of block diagram explain basic elements of computer aided measurement and control system.	**04**
	(c)	" Power electronics devices are useful as automation component in industrial application." Justify your answer with any suitable example	**07**
		OR	
Q.3	**(a)**	State the advantages of using PLC for Industrial automation	**03**
	(b)	Explain use of solenoid as an electrical actuator.	**04**
	(c)	State the full form of SCADA. Draw and explain SCADA architecture in details.	**07**
Q.4	**(a)**	What are the things to be analyzed for selection of PLC ?	**03**
	(b)	How DCS integrates with PLC and computes?	**04**
	(c)	What do you mean by man-machine interface (MMI)? How it helps integration of DCS with PLC?	**07**
		OR	
Q.4	**(a)**	What is IOT? List advantage of IOT in industry	**03**
	(b)	What is ladder diagram? State symbols with their description used in ladder diagram	**04**
	(c)	What is sensor & Actuator? List various types of sensor & Explain construction and operation of Resistance thermometer.	**07**

Q.5 **(a)** State basic parts used to build industrial robot. **03**

(b) **04**

This above ladder diagram is for which logic gate ? justify.

(c) Explain in detail : Internet of things for plant automation. **07**

OR

Q.5 **(a)** Short note : overview of Industry 4.0 **03**

(b) State and explain any one practical application of PLC in industry **04**

(c) What do you mean by pick and place robot? With the help of simple block diagram explain its parts and working in brief **07**

****