Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER–IV • EXAMINATION – SUMMER • 2015

Subject Code: 3341702   **Date: 04-05-2015**

Subject Name: Programmable Logic Controller and Distributed Control System

Time: 10:30 am - 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. **English version is considered to be Authentic.**

Q.1	Answer any seven out of ten.	**14**

1. Define the term : Scan cycle

2. List the steps to configure the PLC.

3. List out PLC applications in industries and automation systems.

4. State advantages of PLC.

5. List out peripherals for PLC

6. List out different types of PLC Programming languages.

7. Develop ladder logic to realize AND logic.

8. List out different switching devices used for PLC.

9. List different network topology used for DCS.

10. List different display of DCS.

Q.2	(a)	Develop AND logic circuit using two relays.	**03**
		OR	
	(a)	Develop OR logic circuit using two relays.	**03**
	(b)	Develop ladder logic to realize EX-OR logic.	**03**
		OR	
	(b)	Develop ladder logic to realize EX-NOR logic.	**03**
	(c)	Describe selection criteria for PLC.	**04**
		OR	
	(c)	Write a short note on data logger.	**04**
	(d)	Describe discrete-state process control techniques with the help of sketch.	**04**
		OR	
	(d)	Describe Continuous process control techniques with the help of sketch.	**04**

Q.3	(a)	Describe function of level 3 in DCS.	**03**

	(a)	Develop Ladder logic for holding contact.	**03**

	(b)	Explain star topology for DCS.	**03**

OR

	(b)	Explain ring topology for DCS.	**03**

	(c)	Write a short note on SCADA.	**04**

OR

	(c)	List out different isolation technique and explain any one in detail.	**04**

	(d)	Explain isolated input wiring to PLC with sketch.	**04**

OR

	(d)	Explain direct digital control with neat sketch.	**04**

Q.4	(a)	Draw Hierarchy of DCS.	**03**

OR

	(a)	Draw trend and mimic display for DCS.	**03**

	(b)	Justify need of automation in industry.	**04**

OR

	(b)	Develop ladder logic for ON- OFF temperature control using timer and limit switches.	**04**

	(c)	Draw and explain PLC architecture.	**07**

Q.5	(a)	Develop ladder logic for expression $Y=A+(B.C)'$.	**04**

	(b)	Describe analog Input module with help of neat sketch.	**04**

	(c)	Draw PLC symbol for (i) NO temperature switch (ii) NC pressure switch	**03**

	(d)	State Strengths and limitations of DCS.	**03**

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