

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING – SEMESTER –IV• EXAMINATION – SUMMER - 2017

Subject Code: 3341702**Date: 29 -04 - 2017****Subject Name: PROGRAMMABLE LOGIC CONTROLLER AND DISTRIBUTED CONTROL SYSTEM****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. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

- Q.1** Answer any seven out of ten. **14**
1. Draw Continuous Process Control and label each component.
 2. Draw Composite Process Control and label each component.
 3. List out different types of PLC Programming languages.
 4. List the different PLC interfacing modules.
 5. Draw symbol for motor for PLC programme.
 6. Draw Isolated input wiring to PLC.
 7. Draw non-isolated input wiring to PLC.
 8. Draw symbol for NO temperature switch for PLC programme.
 9. List the steps for Programming sequence of PLC.
 10. List the different display of DCS.
- Q.2** (a) Develop relay based AND logic and write truth table for it. **03**
OR
- (a) Develop relay based OR logic and write truth table for it. **03**
(b) Develop ladder diagram for AND logic and write truth table for it. **03**
OR
- (b) Develop ladder diagram for OR logic and write truth table for it. **03**
(c) Develop ladder logic for $Y=(A+B) * C$. **04**
OR
- (c) Develop ladder logic for $Y=(A+B)' + C'$. **04**
(d) Develop ladder logic for ON-OFF temperature control using timer and limit switches. **04**
OR
- (d) Describe star topology for DCS with neat sketch. **04**
- Q.3** (a) Develop relay based Ex-OR logic and write truth table for it. **03**
OR
- (a) Develop relay based NAND logic and write truth table for it. **03**
(b) Develop ladder diagram for Ex-OR logic and write truth table for it. **03**
OR
- (b) Develop ladder diagram for NAND logic and write truth table for it. **03**
(c) Describe ring topology for DCS with neat sketch. **04**
OR
- (c) Describe analog input module. **04**
(d) Justify need of automation in industry. **04**

		OR	
	(d)	List out selection criteria for PLC selection.	04
Q.4	(a)	Draw group display DCS.	03
		OR	
	(a)	Draw trend display DCS.	03
	(b)	State Strengths and limitations of DCS.	04
		OR	
	(b)	List functions of each level of DCS.	04
	(c)	Explain SCADA with neat sketch.	07
Q.5	(a)	Explain working of PLC.	04
	(b)	Draw Hierarchy of DCS.	04
	(c)	Draw Block diagram of PLC.	03
	(d)	List out PLC applications in industries and automation systems.	03
