Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING – SEMESTER – V-EXAMINATION – WINTER 2015

Subject Code: 3351704 **Date: 10/12/2015**
Subject Name: PLC programming
Time: 10:30 AM TO 1:00 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.	List different registers used in PLC.	
	2.	List out different type instruction of timer function.	
	3.	Explain PLC ADD instruction of arithmetic function.	
	4.	Enlist different types of PLC interface modules in industry.	
	5.	List out different type instruction of logical functions.	
	6.	List out different type instruction of comparison functions.	
	7.	Explain retentive timer.	
	8.	Develop ladder logic for time delay on non-retentive timer for 30 seconds having time base of 5 second	
	9.	List out different type instruction of PLC counter functions.	
	10.	List out different types of PID tuning method.	
Q.2	(a)	Draw PLC network in master – slave mode.	**03**
		OR	
	(a)	Describe output group register scheme.	**03**
	(b)	Develop ladder logic for R-S flip flops for PLC.	**03**
		OR	
	(b)	Develop ladder logic for D flip flops for PLC.	**03**
	(c)	Explain BIT SET function showing bit pattern in the registers.	**04**
		OR	
	(c)	Explain BIT FOOLOW function showing bit pattern in the registers.	**04**
	(d)	Explain square root function used for PLC programming.	**04**
		OR	
	(d)	Explain SHIFT REGISTER function which move digital bits within register.	**04**
Q.3	(a)	List out steps for PLC trouble shooting.	**03**
		OR	
	(a)	Explain SKIP function for PLC programming.	**03**
	(b)	Explain FIFO function for PLC with example.	**03**

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(b)	Explain FAL (File Arithmetic and Logic) function for PLC.		**03**
(c)	Explain SHIFT REGISTER function which move digital bits through register.		**04**

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(c)	Explain SWEEP function for PLC programming.		**04**
(d)	Explain PLC monitor mode auxiliary functions with example.		**04**

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(d)	Explain PLC force mode auxiliary functions with example.		**04**
Q.4	(a)	Sketch temperature control scheme for water tank using heater and temperature switch.	**03**

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	(a)	Explain communication module with neat sketch.	**03**
	(b)	Describe PLC sequencer with suitable example.	**04**

<div align="center">OR</div>

	(b)	Write a short note on "PLC based automation system".	**04**
	(c)	Sketch level control scheme for water tank using water pump and high and low level switch and develop ladder logic for the same.	**07**
Q.5	(a)	Draw block diagram of PID module for PLC interface.	**04**
	(b)	Explain MOVE function using ladder logic block format.	**04**
	(c)	Explain subtract function with example.	**03**
	(d)	List out applications of PLC in industry.	**03**

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