Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER–V • Examination – WINTER • 2014

Subject Code: 3351704 **Date: 04-12-2014**

Subject Name: PLC Programming

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. List five common types of registers used in PLC
2. List out different types of PLC modules used in industry.
3. State types and instructions of timing functions used in PLC
4. State types and instructions of PLC counter functions.
5. Draw ladder diagram for time delay ON non-retentive timer for 60 second having time base of 1 second.
6. List out different types of arithmetic functions in PLC programming.
7. List out different types of logical functions in PLC programming.
8. List the different types of PID Tuning methods.
9. List four applications of PLC in industry.
10. List out different comparison function in PLC.

Q.2 (a) Draw PLC network in master – slave mode. **03**

OR

(a) Describe holding register for PLC in detail **03**

(b) Develop ladder logic for R-S flip flops in PLC. **03**

OR

(b) Develop ladder logic for ONE SHOT flip flops in PLC. **03**

(c) Explain BIT SET function showing bit pattern in the registers. **04**

OR

(c) Explain BIT CLEAR function showing bit pattern in the registers. **04**

(d) How shift register can be used to move digital bits through registers by using function? **04**

OR

(d) Derive square root by using PLC square root functions with suitable example. **04**

Q.3	(a)	State the trouble shooting procedure for PLC system	**03**
		OR	
	(a)	Explain FIFO function for PLC with example.	**03**
	(b)	Explain Register MOVE data transfer function for PLC	**03**
		OR	
	(b)	Explain SWEEP function for PLC with example.	**03**
	(c)	Discuss PID PLC function with suitable example.	**04**
		OR	
	(c)	How shift register can be used to move digital bits within registers by using function?	**04**
	(d)	Describe PLC auxiliary functions with suitable example.	**04**
		OR	
	(d)	Differentiate between discrete and analog operation of PLC.	**04**
Q.4	(a)	How input signals can be converted to make suitable to input module of PLC	**03**
		OR	
	(a)	Draw neat sketch of PLC applications for level control of the tank.	**03**
	(b)	Draw ladder logic to develop level control of the tank.	**04**
		OR	
	(b)	Describe PLC sequencer with suitable example.	**04**
	(c)	Explain block diagram for PLC based automation system with sketch.	**07**
Q.5	(a)	Describe PID module for PLC with the help of block diagram	**04**
	(b)	Explain MOVE BLOCK PLC function with suitable example	**04**
	(c)	Explain ADD function for PLC programming with example.	**03**
	(d)	Draw neat sketch of PLC applications for temperature control of the tank.	**03**

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