Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 171702 **Date: 21/11/2016**

Subject Name: Programmable Automation Controller

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.**

Q.1	**(a)**	Discuss industrial automation with its necessities, advantages. With neat sketch, explain basic blocks of PLC. Also Discuss advantages and disadvantages of PLC.	**07**
	(b)	Discuss Various input and output modules of PLC, Explain with suitable examples.	**07**
Q.2	**(a)**	Discuss with suitable example and diagram, scan cycle of PLC.	**07**
	(b)	Explain with timing diagram about ON- Delay timer, OFF Delay timer and Pulse timer instruction. Also give one industrial application of each instruction.	**07**
		OR	
	(b)	Make traffic light controller, where there are two different traffic light signals. Operate them Red for 7 sec, Green for 5 sec and yellow for 2 sec. When the R1 is on at that time G2 and Y2 will simulate in order and vice versa.	**07**
Q.3	**(a)**	List out the rules for proper construction of PLC ladder diagram. Explain with suitable example.	**07**
	(b)	Explain Up-counter and Down-counter with done bit and counting diagram. Also give application of each.	**07**
		OR	
Q.3	**(a)**	Explain SKIP and MCR functions of PLC. Explain necessity of it.	**07**
	(b)	Make Car parking system which is having two separate door of entry and exit, which is operated by motor M1 and M2 in order. The detection of car is being done by proximity sensor P1 and P2 in order. Total capacity of system is 10 Cars. Entry door will be close if parking is full, and exit door will be close if parking is empty. Assume other require I/O.	**07**
Q.4	**(a)**	Explain the Arithmetic functions in PLC.	**07**
	(b)	Develop a PLC program to convert temperature in Celsius to temperature. In Fahrenheit.	**07**
		OR	
Q.4	**(a)**	List out PLC Number Comparison Functions. Explain with suitable example and instruction, also show their use in any of the application.	**07**
	(b)	Discuss PLC FIFO and LIFO function with suitable example. Also enlist one application of each.	**07**
Q.5	**(a)**	Draw Schematic and develop and Explain PLC program for two axis ROBOT for pick and place application.	**07**
	(b)	Explain with suitable example about different PLC programming languages.	**07**
		OR	
Q.5	**(a)**	Discuss the factors to be considered in selecting a PLC.	**07**
	(b)	Draw and Explain block diagram of PID module of PLC. Explain typical PID functions of PLC.	**07**

****