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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI EXAMINATION – SUMMER 2020

Subject Code: 2161709 Date:29/10/2020

Subject Name: Programmable Logic 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.**

			MARKS
Q.1	**(a)**	List 3 companies which manufacture PLC	**03**
	(b)	List out 4 sensors/devices which can be used as digital inputs.	**04**
	(c)	Draw and explain block diagram of PLC	**07**
Q.2	**(a)**	List out 3 parts of PLC scan cycle.	**03**
	(b)	State the full form of ROM, PROM, EPROM and EEPROM	**04**
	(c)	Write a PLC ladder program for level control of tank (i.e. empty and fill the tank) using latch/unlatch instruction and without using latch/unlatch instruction.	**07**
		OR	
	(c)	Three conveyors fed a main conveyor. The count from each feeder conveyor is fed into an input register in PLC. Construct a PLC program to obtain the total count of parts on the main conveyor. Use a timer to update total count every 15 seconds.	**07**
Q.3	**(a)**	Prepare a ladder logic for the following statement: Switch 8 and Switch 11, plus either switch 22 or switch 34, must be on for output 67 to be on.	**03**
	(b)	Draw a neat circuit diagram of PLC input module	**04**
	(c)	Explain in detail timing diagram and application of On delay timer	**07**
		OR	
Q.3	**(a)**	Make a ladder diagram for the following sequence: When SW1 is closed, CR1 goes on. After CR1 goes on, SW2 can turn CR2 on. When CR2 goes on, PL1 goes off.	**03**
	(b)	Draw a neat circuit diagram of PLC output module	**04**
	(c)	Explain in detail timing diagram and application of Off delay timer	**07**
Q.4	**(a)**	Explain how JUMP instructions differs from the SKIP and MCR Functions.	**03**
	(b)	Explain up counter	**04**
	(c)	Write a ladder program to turn light on only if a PLC counter has a value of 45 or 78.	**07**

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OR

Q.4	**(a)**	Write a Ladder program to convert any binary number to BCD.	**03**
	(b)	Explain down counter	**04**
	(c)	Write a ladder program to transfer data in 7 registers starting from IR0100 to other 7 holding register starting from HR0200.	**07**

Q.5	**(a)**	Prepare ladder logic to implement AND, OR and NOT logic gates	**03**
	(b)	Describe various levels of industrial control	**04**
	(c)	Explain in detail application of sequencer function to control Dishwasher	**07**

OR

Q.5	**(a)**	List out 3 languages in which PLC can be programmed.	**03**
	(b)	List 4 things which are done for preventive maintenance of PLC	**04**
	(c)	Draw and explain the block diagram of PID module and explain various PID tuning methods.	**07**

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