nrolment No.
]

Subject Code: 2720317

Subject Name: Programmable logic controller

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER II EXAMINATION – SUMMER 2017

Date: 31/05/2017

Tiı	me:0	2:30 PM to 05:00 PM Total Marks:	70
Inst	2.	ons: . Attempt all questions. . Make suitable assumptions wherever necessary. . Figures to the right indicate full marks.	
Q.1	(a)	Draw and explain PLC block diagram in detail.	0'
	(b)	Develop a ladder diagram for 4x1 multiplexer and 2 to 4 decoder.	0'
Q.2	(a)	Enumerate types of PLC modules and explain discrete AC input module with its internal functional block diagram.	0'
	(b)	Explain sourcing and sinking in context with PLC with suitable diagram.	0'
		OR	
	(b)	Develop a ladder diagram for following functions.	0'
		1. $F(A,B,C) = ABC + A'B'C + A'BC + ABC' + A'B'C'$	
		2. $F(x,y,z) = \sum (0,1,3,4,5)$	
Q.3		What is scan time? Explain complete PLC scan cycle with the help of suitable	14
		diagram. Develop a ladder diagram to measure scan cycle of PLC.	
		OR	
Q.3		Explain Ton and Toff timer instructions with timing diagram and suitable example. And design a simple timing circuit that can be used to generate an	14
0.4	()	alternating signal to produce flashing alarm light.	
Q.4	(a)	Write a short note on installation and troubleshooting of PLC.	0'
	(b)	List out data comparison instruction and develop a ladder diagram such that light is to be on if input value is less than 30 or more than 40.	0′
		OR	
Q.4	(a)	Explain various arithmetical instructions with suitable example.	0′
	(b)	Explain SKIP and JUMP instruction of PLC.	0'
Q.5	(a)	List out various factors to consider in selecting a PLC.	0'
	(b)	Design and implement ladder logic for bottle filling system.	0'
		OR	
Q.5	(a)	Develop a ladder diagram for stepper motor speed control.	0'
	(b)	Design and develop ladder logic for traffic control system.	0'
