Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Seventh Semester B.Tech Degree Examination (Regular and Supplementary), December 2020

Course Code: AE401
Course Name: LOGIC & DISTRIBUTED CONTROL SYSTEM

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.   Marks

1	a)	Explain the Math instruction and Sequencer with an example.	(10)
	b)	Briefly explain the use of PC as PLC.	(5)
2	a)	Explain the general PLC programming procedures?	(8)
	b)	Explain the different types of registers in PLC?	(7)

3 a) Write a PLC ladder program to operate 3 motors M1, M2, M3 according to the   (10)
following conditions of switches S1, S2 and S3.
   - i) When any one of the switches is ON, M1 is ON.
   - ii) When any two of the switches are ON, M2 is ON.
   - iii) When all the three switches are ON, M3 is ON. Any only one motor should work at a time.

   (b) Draw the Ladder diagram for start- stop seal circuit.   (5)

PART B
Answer any two full questions, each carries 15 marks.

4	a)	Describe the software and hardware architectures of SCADA.	(15)
5	a)	Give the role of Enterprise Resources Planning in Distributed Control system.	(8)
	b)	What do you mean by supervisory controls? What are its advantages?	(7)
6	a)	Explain data acquisition system with an example?	(8)
	b)	Enumerate the communication facilities available in DCS.	(7)

PART C
Answer any two full questions, each carries 20 marks.

7	a)	Explain the various types of operator displays in DCS?	(15)
	b)	What are the design considerations for displays used with high level operator interfaces in DCS?	(5)
8	a)	What is meant by Safety Integrity Level?	(8)
	b)	What is the need of process safety in industries?	(6)
	c)	Describe the functions of safety instrumented system.	(6)
9	a)	Explain the functions of protection layers used in process industries.	(10)
	b)	What isIEC61511 standard for Functional safety?	(5)
	c)	How do alarm management systems fit into process operating situations?	(5)

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