CBCS SCHEME - Make-Up Exam

BMT601

Sixth Semester B.E/B.Tech. Degree Examination, June/July 2025
Programmable Logic Controller and SCADA Technology

Time: 3 hrs.

Max. Marks:100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
1	a.	With a neat block diagram, explain the architecture of PLC.	10	L2	CO1
	b.	Explain the characteristics of PLC and state the advantages of PLC.	10	L2	CO1
		OR			
2	a.	Discuss in detail different types of PLC.	10	L2	CO1
	b.	Explain in detail Input / Output (I/o) section and processor software / executive software.	10	L2	CO1
		Module – 2			
3	a.	Draw the ladder diagram for the following logic gates: i) EX – OR ii) NAND iii) OR	10	L3	CO2
	b.	A railway station has 3 platforms. As B and C. A train is coming into the station. It has to be given entry to platform A is empty. If both A and B are occupied then it has to be given entry to platform C. If all the plat forms are full then the train has to wait. Design the necessary logic diagram.	10	L3	CO2
		OR			
4	a.	Design a 4:1. Multiplexer using ladder logic. Assume the inputs are connected to I : 0/1 and I:0/3 and I : 0/4 control signals are connected to I: 0/5 and I:0/b and the output terminal is 0:0/1.	10	L3	CO2
	b.	A selection committee comprises four members including the chairman. In order for a candidate to be selected, he or she has to have the support of at least two members. The chairman, however, can push any candidate through. If each member is provided with a switch, design a logic that will ring a bell when a candidate is selected.	10	L3	CO2
		Module – 3			
5	a.	Explain the working of Timer On- delay and Timer OFF – delay along with function block.	10	L2	CO3
	b.	Draw a ladder diagram for a two motor system having the following conditions: The start switch starts motor 1 and 10 seconds. Later motor 2 starts. The stop switch stops motor 1 first and 15 seconds later motor 2 stops.	10	L3	CO3

OR

6	a.	Explain the operation of a count up (CTU). Illustrate the format of counter instructions.	10	L2	CO3
	b.	Draw a ladder diagram for a box packaging system having the following conditions. Five boxes are stacked at a time and then bound with a wrapper. The input and output are as follows: i) Box present signal = I :0/1 ii) Wrapper machine relay = 0:0/1 iii) Go to step 1.	10	L3	CO3

Module – 4

7	a.	Explain I/o modules in hazardous environment.	10	L2	CO4
	b.	With a neat block diagram explain types of discrete input modules.	10	L2	CO4

OR

8	a.	Discuss the concept of sourcing and sinking in detail along with the principles.	10	L2	CO4
	b.	Analyze power supply requirement and power supply configuration in detail.	10	L2	CO4

Module – 5

9	a.	Discuss in detail three generations of SCADA architecture.	10	L2	CO5
	b.	What is SCADA? Explain the desirable properties and features of SCADA system.	10	L2	CO5

OR

10		With a neat block diagram, briefly explain the operation of SCADA system in i) Petroleum Refining Profess ii) Water Purification System.	20	L2	CO5

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