

PROGRAMMABLE LOGIC CONTROLLER

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The main function of a PLC is to _____ (i) Store energy (ii) Control industrial processes (iii) Amplify signals (iv) Measure temperature	K1	CO1
	2	Which part of PLC executes the control program? (i) Input module (ii) Output module (iii) Central Processing Unit (CPU) (iv) Power supply	K2	CO1
2	3	Which programming language is most commonly used in PLC? (i) C language (ii) Ladder diagram (iii) Java (iv) Python	K1	CO2
	4	Which PLC instruction is used to hold an output ON even after the input is removed? (i) Timer (ii) Counter (iii) Latching instruction (iv) Comparator	K2	CO2
3	5	Which timer delays the switching ON of output? (i) Off-delay timer (ii) On-delay timer (iii) Pulse timer (iv) Retentive timer	K1	CO3
	6	Which counter increases its count value for each input pulse? (i) Down counter (ii) Up counter (iii) Ring counter (iv) Retentive counter	K2	CO3
4	7	Which stage involves checking PLC program errors? (i) Programming (ii) Commissioning (iii) Fault finding (iv) System design	K1	CO4
	8	Select the application requires sequential control in PLC? (i) Temperature control (ii) Valve sequencing (iii) Level control (iv) Speed control	K2	CO4
5	9	SCADA stands for _____ (i) System Control and Data Analysis (ii) Supervise Control and Data Acquisition (iii) Smart Control and Digital Automation (iv) Supervisory Circuit and Data Access	K1	CO5
	10	Which component provides graphical interface for operators in SCADA? (i) RTU (ii) PLC (iii) HMI (iv) MTU	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks

(5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Define PLC. Explain its basic components.	K1	CO1
		(OR)		
	11.b.	List various input and output devices used in PLC systems and explain any four.		
2	12.a.	Explain ladder diagram programming with neat example.	K2	CO2
		(OR)		
	12.b.	Describe latching and interlocking in PLC with suitable ladder logic.		
3	13.a.	Develop a ladder program using on-delay timer for motor start delay operation.	K3	CO3
		(OR)		
	13.b.	Design a PLC program for up and down counter operation.		
4	14.a.	Analyze the PLC-based temperature control system with block diagram and ladder logic.	K4	CO4
		(OR)		
	14.b.	Examine the working of conveyor belt control using PLC.		
5	15.a.	Analyze the architecture of SCADA system and explain its components.	K4	CO5
		(OR)		
	15.b.	Examine the role of PLC as RTU in SCADA system.		

SECTION - C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks

(3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Explain PLC architecture with neat block diagram.	K3	CO1
2	17	Compare different PLC programming languages and justify ladder logic usage.	K4	CO2
3	18	Develop a complete PLC program for automatic tank level control system.	K5	CO3
4	19	Analyze the PLC-based valve sequencing control system.	K4	CO4
5	20	Describe SCADA communication protocols and network architecture.	K3	CO5

Z-Z-Z

END