

CBCS SCHEME

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BEE714C

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2026 Programmable Logic Controllers

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
Q.1	a.	Explain the internal architecture of PLC with neat block diagram. Distinguish open and closed PLC architecture.	10	L2	CO1
	b.	Explain any five special I/O modules of PLC.	10	L2	CO1
OR					
Q.2	a.	With a neat diagram, explain PLC processor module and three modes of operation.	10	L2	CO1
	b.	Explain relay type instructions with ladder diagram and truth table.	10	L2	CO3
Module – 2					
Q.3	a.	Discuss about ultrasonic sensors, strain sensor, temperature sensor and flow sensor.	10	L2	CO1
	b.	Write a PLC ladder program for control of water level in the storage tank and comments on each rung.	10	L3	CO2
OR					
Q.4	a.	Draw the symbol and explain the operation of an delay and off delay timer contacts of mechanical timing relay.	10	L2	CO3
	b.	Write a PLC ladder program for switching three motor off at 10 second interval and comment on each rung.	10	L3	CO2
Module – 3					
Q.5	a.	At which situation, cascade counters are preferred. Explain in details with examples.	10	L3	CO3
	b.	Write a PLC ladder program to illustrate 24 hour clock, measuring time in hours, minutes and seconds and explain the operation.	10	L3	CO3
OR					
Q.6	a.	Describe the operation of jump instruction and subroutine function with suitable example.	10	L2	CO3
	b.	Explain Master Control Reset (MCR) instruction with ladder logic program.	10	L3	CO3

Module – 4					
Q.7	a.	Discuss about data compare instructions.	10	L3	CO1
	b.	Write a PLC program using MOV instruction used to change the preset Time of Timer and explain the operation.	10	L3	CO4
OR					
Q.8	a.	Explain the FAL instruction with its parameters.	10	L3	CO4
	b.	Write a PLC program using MUL (multiplication) instruction used as a part of temperature control program.	10	L3	CO4
Module – 5					
Q.9	a.	Describe the sequencer instructions and commands used in PLC.	10	L2	CO5
	b.	Explain the PLC control of a PID loop process in controlling the pressure.	10	L2	CO5
OR					
Q.10	a.	Explain the major components of a process control system involved in the structure of control system.	10	L2	CO5
	b.	What is SCADA? Discuss in details how PLC is performing in SCADA.	10	L2	CO5
