Reg. No.												

Question Paper Code	12595

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Seventh Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

20ICPC701 - LOGIC AND DISTRIBUTED CONTROL SYSTEM

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Mention any two advantages and disadvantages of PLC.	2	K1	CO1
2.	List out the programming languages used in PLC.	2	K1	CO1
3.	Draw the basic elements of a Functional Block Diagram.	2	K2	CO2
4.	Enumerate the significance of Instruction List programming language.	2	K2	CO2
5.	Write down the benefits of Digital control in industries.	2	K1	CO3
6.	List the needs of remote terminal units.	2	K1	CO3
7.	Illustrate the importance of distributed architecture over centralized architecture.	2	K2	CO4
8.	Describe the functions of Local Control Unit.	2	K2	CO4
9.	Mention the significance of Network Control System (NCS).	2	K1	CO5
10.	State the scope of Plant wide control.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a) i)	With a neat diagram explain the architecture of Programmable Logic Controller.	9	K2	CO1
	ii)	What are field devices? List out any two input and output field devices used in PLC.	4	K2	CO1
		OR			
	b)	Write a ladder logic program to implement two way traffic using Timer instruction.	13	K2	CO1
12.	a)	Describe the functions of various blocks used in Function Block Diagram Programming Language with an industrial application.	13	K2	CO2
		OR			
	b)	Discuss in detail about the functions of Logical and Arithmetic instructions used in Instruction List with an example.	13	K2	CO2

13. a) Explain the functions of various blocks of a Data Acquisition system. *13 K2 CO3*

OR

b) What is SCADA? Explain in detail the various functional blocks of SCADA with a neat diagram. *13 K2 CO3*

14. a) Define Distributed Control System. Explain in detail about the evolution of DCS along with its architecture diagram. *13 K2 CO4*

OR

b) With neat diagram explain the Low Level Operator Interface and High Level Operator Interface of a Distributed Control System in detail. *13 K2 CO4*

15. a) Discuss in detail about the cloud based automation with typical application. *13 K2 CO5*

OR

b) Describe in detail about Internet of things (IoT) with neat sketch. And also summarize the various applications of Internet of things (IoT). *13 K2 CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Give an overview of the communication facility of a DCS. Explain in detail the concept of interfacing between field device and DCS using HART and Foundation fieldbus protocol. *15 K2 CO4*

OR

b) With neat diagram explain the automation of any one industrial plant using Distributed control system. *15 K2 CO5*