

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL - 2025**

INDUSTRIAL AUTOMATION AND CONTROL

[Maximum marks: 75]

[Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Name any two types of selective control systems.	M1.04	R
2	Fuel-air ratio of engine is controlled by.....control system.	M1.03	A
3	SCADA stands for.....	M2.05	R
4	Define PLC scan time.	M2.03	U
5	Define fuzzification.	M3.05	U
6	Write any two advantages of LABVIEW.	M3.02	R
7	Define a Virtual instrument.	M3.01	U
8	Define flash point.	M4.01	U
9	Draw P&ID line symbol of pneumatic and hydraulic signal.	M4.05	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Explain split range control system with an example.	M1.05	U
2	Describe an example for compound variable process control.	M1.01	U
3	Construct a ladder diagram program for AND gate and XOR gate.	M2.04	A
4	Write any 3 comparison between Text based programming and graphical programming.	M3.01	U
5	Draw the model of Artificial Neuron.	M3.03	R
6	Explain the use of Virtual instrumentation (VI) for design.	M3.01	U
7	List any 3 features of intelligent control.	M3.07	R
8	Draw the block diagram of fire & gas system (F&G system)	M4.03	R
9	Draw the protection layer model of safety instrumentation system (SIS)	M4.02	R

10	Write any 3 applications of Process Flow Diagrams (PFDs)	M4.05	R
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PART C

Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Explain Cascade control system with block diagram.	M1.03	U
	OR		
IV	Compare Independent variable and Interactive variable process control.	M1.01	U
V	Summarize the advantages of feed forward control system over feedback control system with its block diagram.	M1.02	R
	OR		
VI	Illustrate Inferential control system with block diagram.	M1.04	U
VII	Draw and explain block diagram of PLC.	M2.03	U
	OR		
VIII	Describe DCS with its architecture.	M2.02	U
IX	List and explain any two Learning methods used in ANN.	M3.04	U
	OR		
X	Draw and explain Block Diagram of Fuzzy Logic control System.	M3.06	U
XI	Explain the block diagram of Direct Digital Control.	M2.01	U
	OR		
XII	Develop a ladder logic for the given application: When start button is pressed, a motor will turned ON, When stop button is pressed the motor will turned OFF. ON status of motor is indicated using a green light and OFF status using a red light.	M2.04	A
XIII	List and explain Hazardous area classification as Zones.	M4.01	R
	OR		
XIV	Draw the P&I diagram of a complete heat exchanger unit.	M4.05	U
