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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 2024

INDUSTRIAL AUTOMATION AND CONTROL

[Maximum Marks : 75] [Time : 3 hours]

PART–A

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

(9x1=9 marks)

		Module Outcome	Cognitive level
1	List the two single variable process control strategies.	M1.01	U
2	Which control system have an inner loop controller and an outer loop controller?	M1.03	U
3	The acquisition of real time data is performed by a system known as……	M2.01	U
4	Write the expansion for PLC.	M2.04	R
5	Define the term fuzzification.	M3.05	U
6	Define the term virtual instrument.	M3.01	U
7	List any two Learning methods used in ANN (Artificial Neural Network)	M3.04	U
8	Write the expansion for PFD.	M4.05	R
9	Write the expansion for SIS.	M4.04	R

PART B

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

(8x3=24 marks)

		Module Outcome	Cognitive level
1	Draw an example for Interactive Single Variable process-control.	M1.01	U
2	Draw the generalized mechanism of an adaptive control system.	M1.03	U
3	Write a ladder program to realize the OR & NAND logic gates.	M2.04	A
4	Compare DDC (Direct Digital Control) and Supervisory control systems.	M2.01	U
5	List the advantages of LabVIEW.	M3.02	U
6	List any three properties of fuzzy set.	M3.05	U
7	Draw the general model of ANN (Artificial Neural Network).	M3.03	U
8	Describe Hazardous area classification.	M4.01	U
9	List any three types of flammable gas detectors.	M4.03	U
10	List any three types of engineering documents generated by an instrumentation engineer.	M4.05	U

PART C

Answer **all** questions from the following. Each question carries 7 marks.

(6x7=42marks)

		Module Outcome	Cognitive level
III	Describe Split Range Control system with an example.	M1.04	U
	OR		
IV	Explain compound variable process control system with an example.	M1.01	U
V	Explain Feedback control system with a block diagram.	M1.02	U
	OR		
VI	Explain Cascade control with an example.	M1.03	U
VII	With a block diagram, explain the Data logging system.	M2.01	U
	OR		
VIII	Describe DCS (Distributed Control System) with block diagram.	M2.02	U
IX	With a block diagram, explain the Supervisory Control & Data Acquisition System.	M2.05	U
	OR		
X	Write a ladder program to switch ON and OFF a pump. The pump has to automatically shut off when the pump's oil pressure is low and vibration is high.	M2.04	A
XI	Compare Virtual instrument and traditional Instrument.	M3.02	U
	OR		
XII	Illustrate the block diagram of the Fuzzy logic control.	M3.06	U
XIII	Explain Fire and Gas system with block diagram.	M4.03	U
	OR		
XIV	Draw the P&ID symbols of the following (a) Pneumatic line (b) Electrical signal (c) Hydraulic signal (d) Capillary line (e) Level gauge/glass (f) Guided electromagnetic signal (g) Motor operated valve	M4.05	U

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