

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2023**

**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 ‘one’ mark.**

**(9 x 1 = 9 Marks)**

		Module Outcome	Cognitive level
1.	Define single variable control.	M1.01	R
2.	State the purpose of ratio control.	M1.03	U
3.	Define PLC scan time.	M2.03	U
4.	Name any one programming method of PLC.	M2.03	U
5.	Write the full form of SCADA.	M2.05	R
6.	State any one feature of intelligent control.	M3.07	U
7.	Name any one method for hazardous area classification.	M4.01	R
8.	Draw the P & ID symbol of pneumatic control valve.	M4.05	R
9.	Write the full form of LABVIEW.	M3.02	R

**PART-B**

**II. Answer any *eight* questions from the following. Each question carries ‘three’ marks.**

**(8 x 3 = 24 Marks)**

		Module Outcome	Cognitive level
1.	Explain interactive variable control.	M1.01	U
2.	Draw the block diagram of cascade control loop.	M1.03	U
3.	Write any three general features of DCS.	M2.02	U
4.	Describe the implementation of XOR gate in ladder diagram.	M2.04	A
5.	Write a note on membership function in fuzzy logic set.	M3.05	U
6.	Describe supervised learning method used in ANN.	M3.04	U
7.	Write a brief note on fire and gas system.	M4.03	U
8.	Draw the P& ID symbol of any six flow lines.	M4.04	U
9.	Describe briefly about Auctioneering control.	M1.04	R
10.	Explain intrinsically safe type of instrument protection.	M4.02	R

**PART-C**

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

**(6 x 7 = 42 Marks)**

		<small>Module Outcome</small>	<small>Cognitive level</small>
III.	Compare feedback and feedforward control with figure.  <b>OR</b>	M1.02	U
IV.	Explain split range control with a figure.	M1.04	U
V.	Explain data loggers with block diagram.  <b>OR</b>	M2.01	U
VI.	Implement a ladder diagram program to operate a motor using DOL Starter.	M2.04	A
VII.	Explain Virtual Instrumentation.  <b>OR</b>	M3.01	U
VIII.	Describe the working of a fuzzy logic controller with a block diagram.	M3.06	U
IX.	Explain Safety Instrumentation System.  <b>OR</b>	M4.04	U
X.	Draw the P & I diagram symbol of the following elements a) Hand operated valve                      b) Level Controller c) Flow Recorder                                d) Pressure Transmitter.	M4.05	U
XI.	Describe Adaptive control system with a block diagram.  <b>OR</b>	M1.03	U
XII.	Explain Override control system with a block diagram.	M1.04	U
XIII.	Write a note on hazardous area classification.  <b>OR</b>	M4.01	U
XIV.	Describe Process Flow Diagrams(PFDs).	M4.05	U

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