TED (21) - 5042
(REVISION-2021)

2109230087

Reg.No……
Signature…….

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

INDUSTRIAL AUTOMATION

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

PART - A

I. Answer all the following questions in one word or one sentence. Each question carries 'one' marks.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1	…….. is a combination of BJT and MOSFET.	M1.01	R
2	Label the terminals of SCR.	M1.01	R
3	Name the device which is used to obtain a variable dc voltage from a constant dc voltage.	M2.03	R
4	List any two applications of inverter.	M2.01	R
5	…… converts one frequency to another frequency.	M3.03	R
6	List the industrial heating methods.	M3.04	R
7	UPS stands for …….	M3.03	R
8	List the timer instructions used in PLC.	M4.04	A
9	……. is a graphical PLC programming language.	M4.03	U

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	List the applications of TRIAC.	M1.01	R
2	Explain the working principle of Class A commutation technique with necessary circuit diagram.	M1.04	U
3	Draw the structure of IGBT.	M1.01	R

4	Draw the output response of halfwave converter with resistive load.	M2.01	R
5	Illustrate the circuit diagram of Boost converter.	M2.04	U
6	List the applications of cycloconverter.	M2.03	R
7	With necessary diagram, summarize the operation of stator voltage speed control method in induction motor.	M3.02	U
8	Explain the principle of induction heating with a neat sketch.	M3.03	U
9	Develop the ladder diagram for the Boolean expression $Y = A + BC$	M4.04	A
10	List the input instructions in PLC programming and draw the ladder logic symbol of each.	M4.03	R

PART - C

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

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III	With a neat sketch, explain the V-I characteristics of SCR.	M1.01	U
	OR		
IV	Illustrate the structure of MOSFET.	M1.01	U
V	Explain the working of DIAC with necessary characteristics curve.	M1.01	U
	OR		
VI	With necessary diagrams, explain the principle of UJT triggering.	M1.03	U
VII	Illustrate the working principle of Jone's chopper.	M2.04	U
	OR		
VIII	Explain the operation of step-down midpoint cycloconverter with necessary figures.	M2.03	U
IX	With necessary circuit diagram, explain the operation of single phase fully controlled bridge rectifier with resistive load.	M2.01	U
	OR		
X	Illustrate the working principle of series inverter.	M2.02	U
XI	Summarize the working of offline UPS with the help of a block diagram.	M3.04	U
	OR		
XII	Explain the working principle of any three types of resistance welding schemes.	M3.03	U
XIII	With a neat sketch, explain the architecture of PLC.	M4.01	U
	OR		
XIV	Develop the ladder diagram for fluid level control.	M4.04	A

****