TED (21) – 5042
(REVISION – 2021)

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Reg.No……
Signature…….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 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	SCR is a semiconductor device which consists of ……PN junctions.	M1.01	R
2	……is a device which converts input power at one frequency to output power at a different frequency.	M2.03	R
3	List any two merits of induction heating.	M3.03	R
4	PLC stands for……..	M4.01	R
5	The time that elapses between electrode pressure first applied on the work and the initial application of current in resistance welding is called…….	M3.03	U
6	The maximum firing angle for R triggering is…….	M1.03	R
7	Write any two applications of AC Voltage Controllers.	M2.01	R
8	An electric motor together with its control equipment and energy transmitting device forms……	M3.01	U
9	List any two advantages of PLC	M4.02	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	Define Latching current and Holding current.	M1.01	R
2	Draw the circuit diagram of half wave controlled rectifier with R load.	M2.01	R
3	List any three differences between induction heating and dielectric heating.	M3.03	R
4	Develop a ladder program for the logic gates AND, OR and NOT.	M4.04	A
5	Differentiate between natural and forced commutation.	M1.04	U
6	Explain the working of half bridge inverter.	M2.02	U

7	State the principle of Electric Resistance welding. Also list the types of resistance welding schemes.	M3.03	R
8	Develop the ladder program for a half adder circuit.	M4.04	A
9	With neat sketch, explain the structure of IGBT	M1.01	U
10	Draw the circuit diagram of dual converter.	M2.02	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.	Explain the triggering methods of SCR	M1.03	U
	OR		
IV.	Draw the circuit diagram and explain Resistance firing.	M1.03	U
V.	With neat sketch, explain the structure and working of Power MOSFET.	M1.01	U
	OR		
VI.	Explain the working of Class C commutation with neat sketch.	M1.04	U
VII.	Explain the working of bridge converter with RL load.	M2.01	U
	OR		
VIII.	Explain the working of AC power control circuit using Triac.	M2.01	U
IX.a	What is meant by step up and step down cycloconverters.	M2.03	R
IX.b	Draw the circuit diagram, input & output waveforms of Step down cycloconverter.	M2.03	U
	OR		
X.	Explain the working of parallel inverter with neat sketch.	M2.02	U
XI.	Explain the block diagram of ON-LINE UPS.	M3.04	U
	OR		
XII.	Explain Stator voltage control method for the speed control of induction motor.	M3.02	U
XIII.	With suitable block diagram, explain the hardware of PLC	M4.01	U
	OR		
XIV.	Explain the Compare instructions of PLC	M4.03	U

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