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Signature

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

INDUSTRIAL ELECTRONICS AND PLC

[Time: 3 hours

(Maximum marks: 100)

PART — A

(Maximum marks: 10)

Marks

- I Answer all questions in one or two sentences. Each question carries 2 marks.
 - 1. Define the term holding current of an SCR.
 - 2. Define the term commutation in thyristors.
 - 3. List any two applications of cyclo converter.
 - 4. List any two applications of induction heating.
 - 5. Write any two MATH instructions in PLC.

 $(5 \times 2 = 10)$

PART — B

(Maximum marks: 30)

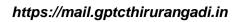
- II Answer any *five* of the following questions. Each question carries 6 marks.
 - 1. Describe two transistor analogy of SCR.
 - 2. Draw and explain the Resistive gate triggering method of SCR.
 - 3. Draw and explain the circuit of single phase half wave converter with RL load.
 - 4. Draw and explain full wave ac voltage controller using SCR.
 - 5. List important applications of dielectric heating.
 - 6. List advantages of induction heating.
 - 7. Implement ladder diagram for the following logical expression.

(a) Y=(A+B)C

(b) Y=AB+CD

(c) Y=(A+B)(C+D)

 $(5 \times 6 = 30)$







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(Maximum marks: 60)

(Answer one full question from each unit. Each full question carries 15 marks.)

	(1	Answer one full question from each unit. Each full question carries 15 marks.)	
		Unit — I	
III	(a)	With basic structure describe the working of an IGBT.	8
	(b) ₁	Draw and explain the gate triggering circuit of thyristor using UJT.	7
		OR	
IV	(a)	Draw and explain the circuit of class C commutation (complimentary).	8
	(b)	Describe the working of SCR with schematic diagram.	7
		Unit - II	
V	(a)	Draw the circuit of full wave midpoint converter with R load and explain.	8
	(b)	With diagram explain the working of basic series inverter.	7
		OR	
VI	(a)	Explain the working of a step - up cyclo converter with circuit.	. 8
	(b)	Explain the working of basic DC chopper with diagram.	7
		Unit — III	
VII	(a)	Describe the principle of Induction heating.	8
	(b)	Describe the working of the ON-line UPS.	7
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VIII	(a)	Describe Spot welding and Butt welding.	8
	(b)	Explain the speed control of Induction motor using variable voltage variable frequency method.	7
		Unit — IV	
IX	(a)	Describe Timer and Counter instruction set used in ladder diagram.	8
	(b)	Implement basic gates using ladder diagram and illustrate with its truth table.	7
		OR	
X	(a)	Describe the architecture of PLC.	8
	(h)	List the applications of PLC (Any seven points)	7