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N20 – R01565

Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2020

INDUSTRIAL ELECTRONICS AND PLC

[Maximum Marks: 100] [Time: 3 Hours]

PART-A

[Maximum Marks: 10]

(Answer ***all*** questions in one or two sentences. Each question carries 2 marks)

I. 1. Define Latching current and Holding current.

2. List any two applications of cyclo converter.

3. Name any four method of triggering a thryristor.

4. Mention any two advantage of ac drives over dc drives..

5. Define Ladder diagram. (5 x 2 = 10)

PART-B

[Maximum Marks: 30]

(Answer any ***five*** of the following questions. Each question carries ***6*** marks)

II 1. Explain the working of Silicon Controlled Rectifier.

2. With necessary diagram explain UJT triggering method.

3. Draw the single phase half controlled rectifier with R load and explain.

4. Illustrate the basic working principle of Inverter.

5. Explain the working of On-Line UPS.

6. Briefly explain the Principle of Dielectric Heating.

7. Draw the ladder diagram for the AND and OR gates. (5 x 6 = 30)

PART-C

[Maximum Marks: 60]

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

UNIT – I

III (a) Draw the structure of IGBT and explain its working. (8)

(b) Explain the VI characteristic of DIAC. (7)

OR

IV (a) Mention various commutation techniques and explain auxiliary commutation. (8)

(b) Explain the VI characteristic of TRIAC. (7)

UNIT – II

V (a) Explain the operation of Series Inverter. (8)

(b) Briefly explain Jone's Chopper. (7)

OR

VI (a) Explain Single phase dual converter. (7)

(b) Briefly explain single phase cyclo converter midpoint configuration. (8)

UNIT- III

VII (a) Briefly explain servo controlled voltage stabilizer. (7)

(b) Explain speed control of slip ring induction motor rotor on/off control. (8)

OR

VIII (a) Explain speed control of dc series motor speed control. (8)

(b) Briefly explain principle of induction heating. (7)

UNIT - IV

IX (a) Explain the architecture of PLC. (8)

(b) Explain the application of PLC. (7)

OR

X (a) Draw the ladder diagram for a Half adder circuit and explain. (8)

(b) Explain the benefits of PLC. (7)
