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Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2023

ELECTRICAL & ELECTRONICS ENGINEERING

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

PART-A

[Maximum Marks: **10**]

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

1. What is the power factor of pure Resistive and inductive circuit for AC?
2. Name any two sources of Electrical energy.
3. Define turns ratio of Transformer.
4. Why damping torque is required in indicating instruments?
5. Define Barrier potential of a Diode. (5 x 2 = 10)

PART-B

[Maximum Marks: **30**]

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

1. Compare star and delta connection.
2. Describe the method of charging and discharging of Lead acid cell.
3. Discuss Back emf and necessity for a starter in DC motor.
4. Describe the working principle of Autotransformer.
5. Explain the constructional details of moving coil instruments.
6. Explain active and passive components with example.
7. Illustrate open and closed loop control systems with the help of block diagrams.

(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. Describe the constructional details of DC generator. (9)

b. Explain (i) RMS value (ii) Average value (iii) Form factor. (6)

OR

IV. a. Three loads each of resistance 50Ω are connected in star to 1 KW 3-phase supply. Determine (i) system phase voltage, (ii) line current and (iii) power consumed. (9)

b. Discuss Faraday's law of electromagnetic induction and Fleming's right hand rule. (6)

UNIT – II

V. a. Classify the DC motor based on field connection. (9)

b. List the applications of DC series and 3-phase induction motors. (6)

OR

VI. a. Describe the methods to produce starting torque in Single phase induction motors. (9)

b. Explain the working of 3-phase induction motor. (6)

UNIT- III

VII. a. Explain the 3-phase power measurement using two wattmeter methods. (9)

b. Explain Electrical heating and list its three applications. (6)

OR

VIII. a. Compare attraction type and repulsion type moving iron instruments. (9)

b. Explain the working of Induction furnace. (6)

UNIT - IV

IX. a. Explain the working of Silicon Controlled Rectifier. (9)

b. Draw and explain the working of full wave rectifier using two and four Diodes. (6)

OR

X. a. Draw the symbol and truth table of universal gates and write its four advantages. (9)

b. Describe automation and the needs of automation. (6)

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