

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2021**

ELECTRICAL TECHNOLOGY

[Maximum Marks: 75]

[Time: 2.15 Hours]

PART-A

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

- I. 1. Define form factor.
2. List the different losses in a transformer.
3. List the various effect of armature reaction in DC generator.
4. Which starter is most suitable for starting DC shunt motor.
5. Define slip. (3 x 2 = 6)

PART-B

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

- II. 1. Define (a) Inductive reactance (b) Capacitive reactance (c) Power factor.
2. A coil has resistance of 15 ohm and inductance of 0.5 H are connected in series with the supply of 230V, 50Hz. Calculate impedance and current.
3. Derive the EMF equation of transformer.
4. List the advantages and uses of auto - transformer.
5. What are the different parts of a DC generator?
6. Explain the significance of back EMF in DC motor.
7. State the advantages of stationery armature in a alternator. (4 x 6 = 24)

PART-C

(Answer *any of the three units* from the following. Each full question carries 15 marks)

UNIT – I

- III. (a) Describe the effect through a RLC circuit. (8)
(b) Explain the necessity of earthing in equipment and installation. (7)

OR

- IV. (a) Explain the neat sketch of pipe earthing. (8)
(b) A resistance of 50 ohm connected in series with a capacitance of 43.7 micro fared are fed by 250V, 50Hz supply. Find 1) Impedance 2) Current 3) Power absorbed (7)

UNIT – II

- V. (a) Illustrate the elementary theory of an idle transformer. (8)
(b) State and prove super position theorem. (7)

OR

- VI. (a) A 50 KVA single phase transformer having the number of primary and secondary windings are 834 and 58 respectively. The primary is connected to a 3300V, 50Hz supply find
1) Transformation ratio 2) Secondary Induced EMF 3) Primary and secondary current. When the transformer is fully loaded. Neglect the losses. (8)
(b) State and prove Thevenin's Theorem. (7)

UNIT- III

- VII. (a) Explain the principle of operating of a DC generator. (8)
(b) Explain the necessity of starter in a DC motor starting. (7)

OR

- VIII. (a) Describe the characteristics of DC shunt motor. (8)
(b) Calculate the EMF generated by a 4 pole wave wound armature having 45 slots with 18 conductors per slots. When driven at 1200 rpm. The flux per pole is 0.016wb. (7)

UNIT - IV

- IX. (a) Explain the working principle of alternator. (8)
(b) Compare squirrel cage and slip-ring induction motor. (7)

OR

- X. (a) Explain the construction and working of a capacitor start induction run motor. (8)
(b) Derive the EMF equation of a alternator. (7)
