

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL-2022**

ELECTRICAL TECHNOLOGY

[Maximum marks: 100]

(Time: 3 Hours)

PART – A

Maximum marks : 10

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

1. Write down the expressions for capacitive reactance and inductive reactance for a given frequency.
2. State Fleming's left hand rule.
3. What current will flow through a 12 Ohm heater when a voltage of 120 V is applied?
4. List the parts of a DC generator.
5. List the advantages of 3-phase motor over single motors. (5 x 2 = 10)

PART – B

Maximum marks : 30

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

1. Explain how the insulation resistance can be measured by a megger.
2. Derive the emf equation of a transformer.
3. State and explain superposition theorem.
4. Define these terms: (i) Power factor (ii) Reactive power (iii) Idle current.
5. Explain the working of universal motor .
6. Derive the emf equation of a DC generator.
7. Explain the open circuit characteristics of an alternator. (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) A coil having 50 ohm resistance and 0.05 H inductance is connected across 250 V 50 Hz supply. Calculate (i) Impedance (ii) Power factor (iii) Current (iv) Active power. (8)

(b) Explain plate earthing with neat sketches. (7)

OR

IV.(a) Define (i) Time period (ii) Frequency (iii) Phase (iv) RMS value. Write the units also. (8)

(b) Show that a pure capacitive circuit consumes zero power. (7)

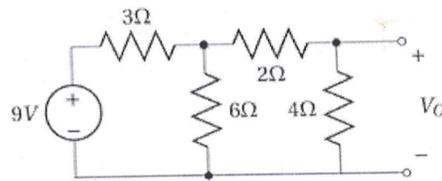
UNIT-II

V. (a) State and prove maximum power transfer theorem. (8)

(b) Briefly explain the construction of a transformer. (7)

OR

VI. (a) State Thevenin's theorem. Find the voltage across the 4Ω resistor using Thevenin's Theorem. (9)



(b) Explain the different losses in a transformer. (6)

UNIT-III

VII. (a) Explain the no-load characteristics of a DC generator. (6)

(b) Explain the need for starters in DC motors. (3)

(c) Explain the working of a 3-point starter. (6)

OR

VIII.(a) Explain the working of DC motor with relevant diagrams. (8)

(b) Explain armature reaction and its effects. (7)

UNIT-IV

IX. (a) Derive the emf equation of an alternator. (8)

(b) Explain the working of stepper motors. List applications. (7)

OR

X. (a) Explain the working of an AC servomotor. List its applications. (8)

(b) Explain the principle of operation of a 3-phase induction motor. (7)
