

TED (10) -3004
(Revision -2010)

A21-02396

Reg.No.....
Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE – APRIL -2021.

BASIC ELECTRICAL ENGINEERING

(Maximum Marks : 100)

[Time : 3 hours]

PART-A

(Maximum marks: 10)

Marks

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

1. Define temperature coefficient of resistance.
2. State electric field.
3. Define permeability.
4. State Lenz's Law.
5. Define apparent power.

(5x2=10)

PART - B

(Maximum Marks : 30)

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

1. State maximum power transfer theorem and reciprocity theorem.
2. Explain the effect of temperature on resistance with examples.
3. State and explain laws of electrostatics.
4. Compare magnetic and electric circuit.
5. State and explain faraday's laws of electromagnetic induction.
6. Derive the expression for energy stored in a magnetic circuit.
7. Explain RC series circuit with phasor diagram.

(5x6 =30)

PART - C

(Maximum marks : 60)

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

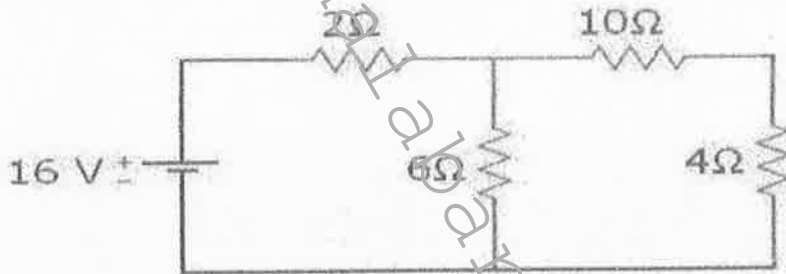
UNIT I

III (a) Derive an equation for equivalent resistance of three resistors which are connected in Series and parallel. (8)

(b) State and explain Kirchoff's Laws. (7)

OR

IV (a) Find the current through $4\ \Omega$ resistor in the circuit using Thevenin's Theorem. (8)



(b) State and explain superposition theorem. (7)

UNIT- II

V (a) Three capacitors of capacitances 10, 25 and $50\mu\text{F}$. Find total capacitance and charge on each capacitors when they are connected in series and parallel. Supply voltage is 250 V DC. (8)

(b) Derive the expression for capacitance of a parallel plate capacitor in an uniform dielectric medium. (7)

OR

VI (a) Derive the expression for potential at a point in the air. (8)

(b) Draw B-H curve and identify different regions. (7)

UNIT- III

- VII** (a) Differentiate between self induced emf and mutually induced emf with expressions. (8)
- (b) Explain self inductance and mutual inductance with expressions. (7)

OR

- VIII** (a) Define (i) cycle (ii) frequency (iii) RMS Value (iv) Average value. (8)
- (b) Derive the equation for alternating voltage with necessary figure. (7)

UNIT – IV

- IX** (a) A resistance of 20Ω , an inductance of 0.2 H and a capacitance of $100\mu\text{F}$ are connected in series and 220V , 50Hz supply is given the circuit. Find (i) Impedance (ii) Current (iii) power factor (iv) Power. (8)
- (b) Explain RLC series circuit with phasor diagram. (7)

OR

- X** (a) A resistance of 20Ω , an inductance of 31.8 mH are connected in parallel across 230V , 50 Hz supply. Find (i) Line Current (ii) power factor (iii) phase angle (iv) Power consumed. (8)
- (b) Explain resonance in RLC series circuits and derive the equation for resonant frequency. (7)
