

ANURAG Engineering College
(An Autonomous Institution)

I B. Tech II Semester Supplementary Examinations, January – 2025
BASIC ELECTRICAL ENGINEERING
(COMMON TO ECE & IT)

Time: 3 Hours

Max. Marks: 60

Section – A (Short Answer type questions)

(10 Marks)

Answer All Questions

1. State Ohm's law.
2. State KCL.
3. Define "Peak factor".
4. Define "Real power".
5. Mention the various losses which occur in a transformer.
6. Define Efficiency of transformer.
7. State Flemming's Left-Hand rule.
8. Define "Slip".
9. What are the types of Batteries?
10. What is the necessity of Earthing?

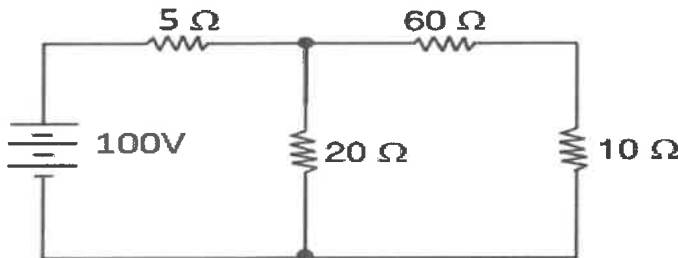
Course Outcome	B.T Level	Marks
CO1	L1	1M
CO1	L1	1M
CO2	L1	1M
CO2	L1	1M
CO3	L1	1M
CO3	L1	1M
CO4	L1	1M
CO4	L1	1M
CO5	L1	1M
CO5	L1	1M

Section B (Essay Questions)

Answer all questions, each question carries equal marks.

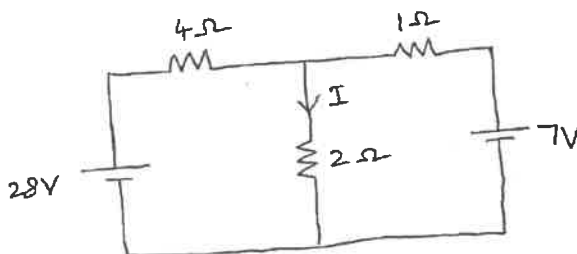
(5 X 10M = 50M)

11. A) Find the current flowing through the $10\ \Omega$ resistor using Thevenin's theorem, CO1 L3 10M



OR

- B) Find the current I in the circuit using Superposition theorem CO1 L3 10M



12. A) i) Explain the analysis of series RL circuit excited by sinusoidal input and derive the expression for impedance, current and power factor. CO2 L2 5M
- ii) A coil having a resistance of $7\ \Omega$ and an inductance of $31.8\ \text{mH}$ is connected to $230\ \text{V}$, $50\ \text{Hz}$ supply. Calculate a) impedance b) circuit current c) power factor. CO2 L2 5M
- OR**
- B) What are three phase balanced circuits, derive voltage and current relations in delta connections. CO2 L3 10M
13. A) Distinguish between Ideal and Practical transformer and draw the equivalent circuits of ideal and practical transformers. CO3 L3 10M
- OR**
- B) A $40\ \text{kVA}$ transformer has iron loss of $450\ \text{W}$ and full-load copper loss of $850\ \text{W}$. If the power factor of the load is 0.8 lagging, Determine the i) full-load efficiency ii) the maximum efficiency. CO3 L3 10M
14. A) Draw the performance characteristics of dc motors CO4 L2 10M
- OR**
- B) With a neat sketch, explain about the constructional details of a dc machine. CO4 L2 10M
15. A) Explain the operation of MCB in detail with neat diagram. CO5 L2 10M
- OR**
- B) What do you understand by power factor? Explain the necessity of improving power factor? CO5 L2 10M