

**ANURAG Engineering College**

(An Autonomous Institution)

I B.Tech I Semester Supplementary Examinations, January - 2025

**BASIC ELECTRICAL ENGINEERING**

(COMMON TO ECE &amp; CSE)

Time: 3 Hours

Max. Marks: 75

**Section – A (Short Answer type questions)****(25 Marks)**

Answer All Questions

	Course Outcome	B.T Level	Marks
1. Define Ohm's Law?	CO1	L1	2M
2. State Norton's theorem?	CO1	L1	3M
3. Define average value and RMS value?	CO2	L1	2M
4. Define active power and reactive power	CO2	L1	3M
5. Define dynamically induced emf.	CO3	L1	2M
6. Write Transformation ratio?	CO3	L1	3M
7. What is the necessity of speed control?	CO4	L1	2M
8. What are the types of 1-Ø Induction Motor?	CO4	L1	3M
9. What is a synchronous generator?	CO5	L1	2M
10. Define Switch Gear?	CO5	L1	3M

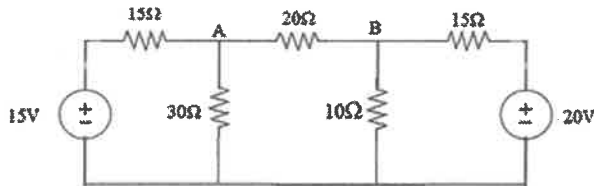
**Section B (Essay Questions)**

Answer all questions, each question carries equal marks.

**(5 X 10M = 50M)**

11. A) Determine the current in branch A-B by using KVL

CO1 L2 10M

**OR**

B) Explain about Types of sources briefly.

CO1 L2 10M

12. A) Derive an expression for the current and impedance for a series RL and RC circuit excited by a Sinusoidally alternating voltage. Draw the phasor diagrams.

CO2 L3 10M

**OR**

B) Derive the voltage and current relations in three phase balanced circuits for star connection

CO2 L3 10M

13. A) Derive the expression for self and mutual inductance of the coil.

CO3 L3 10M

**OR**B) A 50 KVA, 4400/220 V, transformer has  $R_1 = 3.45 \Omega$ ;  $R_2 = 0.009 \Omega$ . The values of reactance's are  $X_1 = 5.2 \Omega$  and  $X_2 = 0.015 \Omega$ . Calculate for the transformer. i) Equivalent resistance referred to primary ii) Equivalent reactance reference to primary iii) Equivalent impedance reference to primary iv) Equivalent resistance, reactance and impedance referred to secondary. It is the measure of mmf which, when applied to the magnetic circuit would reduce its flux density to zero, i.e., it demagnetizes the magnetic circuit

CO3 L3 10M

14. A) Explain about the Working principle of a D.C generator CO4 L2 10M  
OR  
B) Draw and explain torque – slip characteristics of induction motor. CO4 L3 10M
15. A) With the help of a phasor diagram, explain the operation of a synchronous generator under lagging, leading, and unity power factor loads. CO5 L2 10M  
OR  
B) Explain different types of batteries and their characteristics? CO5 L2 10M