ACE Engineering College
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An AUTONOMOUS Institution

Question Paper Code: EE103ES

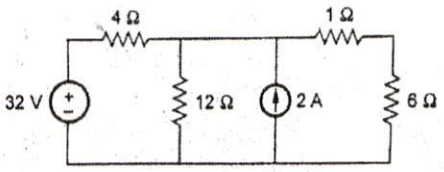
ACE-R20

Supplementary Examination
I B. Tech- I Semester- November 2021
BASIC ELECTRICAL ENGINEERING
(Common To EEE,CSE,IT,CSD)

Time: 3 Hours **Max. Marks: 70**

H. T. No										

Answer any five full questions from the following. All Questions carry equal marks.
M=Marks; CO=Course Outcomes; PO= Program Outcomes

Q.No	Question	M	CO	PO
1. a)	State and Explain Superposition Theorem.	7	1	1,2
b)	Find current Through 6 Ω Resistor using Superposition Theorem? 	7	1	1,4
2. a)	Explain with neat diagrams Ideal Voltage source and Practical Voltage source.	7	1	2
b)	State and Explain Thevenin's Theorem with appropriate circuit.	7	1	1,2
3. a)	Sketch the Sinusoidal alternating waveform and Define: (i) Instantaneous value (ii) Waveform (iii) Cycle (iv) Frequency. (v)Time Period (vi) Amplitude.	7	2	1,2
b)	Derive the expression for root mean square value of an alternating sinusoidal current wave form $I = I_m \sin\theta$	7	2	1,4
4. a)	(a)Sketch and Explain the phasor diagram of RLC series circuit for i) $X_C > X_L$ (ii) $X_C < X_L$,(iii) $X_C = X_L$.	7	2	1,4
b)	A reactor having negligible resistance and an inductance of 0.1 H is connected in series with a resistor of 15 Ohms. The circuit is connected across a 230 V, 50 Hz, Single phase AC supply. Find i) Current flowing through the circuit ii) Power factor of the circuit iii) Voltage across the reactor.	7	2	1,4
5. a)	Prove that the Efficiency of a Transformer is Maximum when Variable losses equal to constant losses.	7	3	1,2
b)	Explain the Principle of Transformer and losses that occur in a Transformer.	7	3	1,2
6. a)	Explain the Working principle of a D.C Generator with a neat sketch.	7	4	1,2

b)	A 6 pole, Lap Wound armature has 840 conductors and flux per pole of 0.018 Wb. Calculate the emf generated, When the machine is running at 600 rpm.	7	4	1,2
7. a)	Explain with the help of diagrams , How a rotating magnetic field is produced in a 3 phase Induction Motor?	7	4	1,2
b)	Explain the working of a Synchronous motor. Give the constructional features of a Synchronous motor.	7	4	
8. a)	Explain the following terms i) Switch fuse unit ii) MCB iii) MCCB iv) ELCB	7	5	1,3
b)	Compare Between Primary and Secondary Batteries.	7	5	1,3