H.T No

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(An Autonomous Institution)

Regulations: A17

Code No:6AC41 **Date: 17-August-2024 (FN)**

B.Tech II-Year II- Semester External Examination, August - 2024 (Supplementary)

ELEMENTS OF ELECTRICAL ENGINEERING (CSE and IT)

Time: 3 Hours **Max.Marks:75**

Note: *a) No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Bloom's Cognitive Levels of Learning (BCLL)

Remember	L1	Apply	L3	Evaluate	L5
Understand	L2	Analyze	L4	Create	L6

Part - A Max.Marks:25

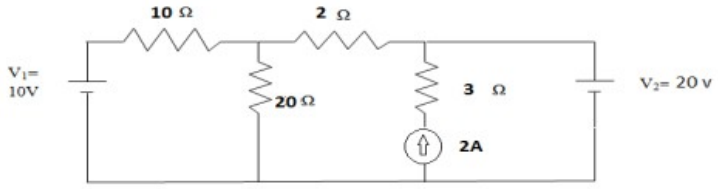
ANSWER ALL QUESTIONS

		BCLL	CO(s)	Marks
1	State and explain Ohm's law?	L1	CO1	[2M]
2	Write the formulae to find out the Root mean square and average value of a waveform	L2	CO2	[2M]
3	State Fleming's Right hand rule	L1	CO3	[2M]
4	Write different types of losses in Transformer?	L1	CO4	[2M]
5	Draw torque slip characteristics of induction motor	L2	CO5	[2M]
6	Write about different types of Measuring Instruments?	L1	CO6	[3M]
7	A sinusoidal voltage is applied to the inductor of 2 mH, the frequency is 3 KHz. Determine the inductive reactance.	L3	CO1	[3M]
8	Write emf equation of transformer	L2	CO3	[3M]
9	Can we use a moving iron instrument for both ac and dc measurements?	L2	CO5	[3M]
10	A 4-pole, 3-phase induction motor is connected to 50 Hz supply. If it is running at 960 rpm, find the slip.	L3	CO6	[3M]

Part – B Max.Marks:50

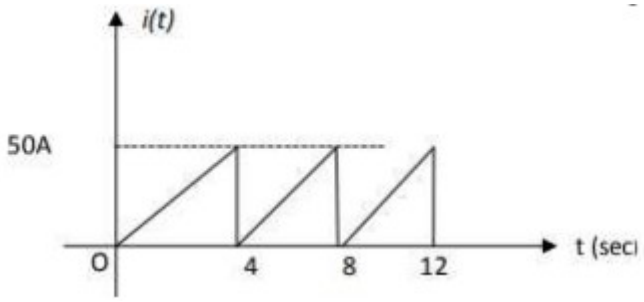
ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

			BCLL	CO(s)	Marks
11.	a)	Explain the method of transforming a star network into delta network. What is the use of star- delta and delta-star transformation in the circuit?	L2	CO1	[5M]
	b)	Find the voltage across 2 ohms resistor by superposition theorem in given circuit.	L3	CO1	[5M]



12.	a)	Derive the expression for Average and RMS values of sinusoidal wave.	L2	CO2	[5M]
	b)	Explain the concept of phase, phase difference and j-notation in A.C. circuits.	L2	CO2	[5M]
13.	a)	Determine developed torque and shaft torque of 220V, 4-pole series motor with 800 conductors wave connected supplying a load of 8.2KW by taking 45A from mains. The flux per pole is 25mWb and its armature circuit resistance is 0.6Ω.	L3	CO3	[5M]
	b)	Draw the different types of DC motors with neat diagram and expressions?	L1	CO3	[5M]

14.	a)	What happened when DC supply is connected to 1-ph Transformer explain clearly?	L1	CO4	[5M]
	b)	A Transformer having 1000 turns is connected to a 250V Ac supply, for a secondary voltage of 500v.Then the number of secondary turns should be?	L3	CO4	[5M]
15.	a)	Explain working of three phase induction motor.	L1	CO5	[5M]
	b)	Explain how the rotating magnetic field is produced in an Induction motor with the necessary phasors.	L1	CO5	[5M]
16.	a)	Explain the function of deflecting torque, control torque and damping torque of a moving coil instrument.	L2	CO6	[5M]
	b)	Explain why the PMMC-type instruments have a linear scale while moving iron instrument have square scale?	L1	CO6	[5M]
17.	a)	Explain the Kirchhoff's laws with suitable example and list out the properties?	L2	CO1	[4M]
	b)	Calculate the form factor for the saw-tooth waveform shown in below figure.	L3	CO2	[3M]



	c)	Explain the principle and operation of DC generator.	L1	CO3	[3M]
18.	a)	Derive the EMF equation of a single-phase transformer	L2	CO4	[4M]
	b)	Write a small note on Relation between the Line and Phase voltages and current in Balanced system?	L2	CO5	[3M]
	c)	Derive the equation of deflecting torque of a PMMC instrument.	L2	CO6	[3M]

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