Course Code: 2030201 Roll No: **MLRS- R20**

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Supply End Examination, July-2022

Basic Electrical Engineering

(ECE)

Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
Each question carries 10 marks and may have a, b as sub questions.

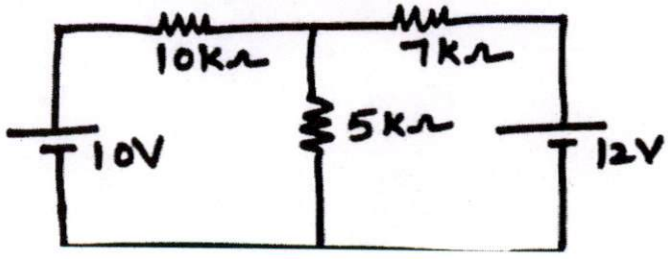
PART- A

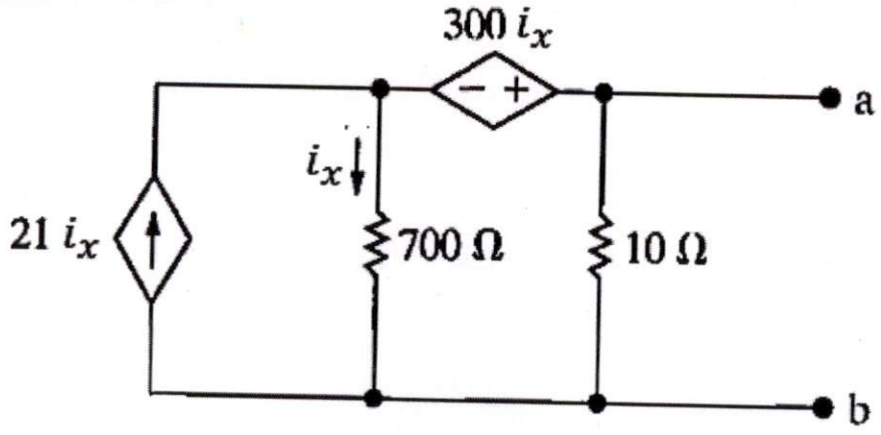
(10*2 Marks = 20 Marks)

1	a)	Write the VI relationship for R, L, C elements.	2M	CO1	BL1
	b)	Distinguish between ideal and practical voltage source?	2M	CO1	BL2
	c)	What is resonance in electric circuits?	2M	CO2	BL1
	d)	Draw the wave forms for voltage, current of pure inductor when excited by a sinusoidal voltage.	2M	CO2	BL1
	e)	Write the EMF equation of a transformer.	2M	CO3	BL1
	f)	A transformer supplies a load of 32 A at 415 Volts. If the primary voltage is 3320 volts, find the primary current, primary volt-ampere and secondary volt-ampere.	2M	CO3	BL3
	g)	Why the synchronous motor is called as constant speed motor?	2M	CO4	BL1
	h)	What is the main necessity of using starter in the motor circuit?	2M	CO4	BL1
	i)	What are the characteristics of batteries for longer life?	2M	CO5	BL1
	j)	What are the different types of wires and cables?	2M	CO5	BL1

PART- B

(10*5 Marks = 50 Marks)

2	a)	Using method of superposition, determine the current through the 5kΩ resistors for the circuit in figure below 	5M	CO1	BL3
	b)	An inductance of 0.5H, a resistance of 5 ohms, and a capacitance of 8 μF are in series across a 220V, 50Hz AC supply. Find the voltage across each element and total current supplied by the supply and draw the phasor diagram for the circuit.	5M	CO1	BL3
		OR			
3		Find the Norton equivalent circuit of the following given circuit shown in figure with respect to the terminals 'a-b'?	10M	CO1	BL3



4		Explain resonance in R-L-C series circuit, derive expression for resonance frequency and also use graphical method to explain resonance.	10M	CO2	BL3
		OR			
5		Balanced Y-connected load of 10 kW at 0.8 power factor lagging supplied by a 50-Hz, 300-V, three-phase system. Find the line current delivered by the source. Draw the phasor diagram.	10M	CO2	BL3
6	a)	A 50Hz single phase transformer has 6600V/400V. Having e.m.f per turn is 10V and the maximum flux density in the core is 1.6 Tesla. Find the: i) Suitable number of primary and secondary turns ii) Cross sectional area of the core.	5M	CO3	BL3
	b)	Describe the operation of auto transformer? How does the current flow in different parts of its winding?	5M	CO3	BL2
		OR			
7		Discuss the various three phase transformer groups and their significance. A 50 kVA, 1000/10000 V, 50Hz single phase transformer has iron loss of 1200W. The copper loss with 5 A in the high voltage winding is 500 W. Calculate the efficiency at i) 25 %, ii) 50 % iii) 100 % of normal load at power factor of 0.8	10M	CO3	BL2
8		Describe briefly the construction and working of a single phase induction motor.	10M	CO4	BL3
		OR			
9		Explain the constructional details of a D.C. Generator with neat sketches.	10M	CO4	BL4
10	a)	What is the difference between MCB and MCCB, describe their schematic diagrams?	5M	CO5	BL2
	b)	Describe the PVC cables of different types and their sizes which are used for low voltage ratings?	5M	CO5	BL2
		OR			
11		Calculate total energy consumed per day by the use of following loads: i) 5 number of 40 W lights operated 5 hours per day ii) 1 h.p. motor is operated 2 hours per day iii) 1 k.W heater is operated 1 hour per day iv) 1 computer is used for 6 hours per day with printer about 30 minutes.	10M	CO5	BL3

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