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

I B.TECH I Sem Supplementary Examination, October 2022
Basic Electrical Engineering
(CSE, IT)

Time: 3 Hours.   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.
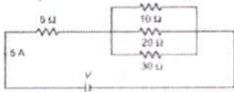Each question carries 10 marks and may have a, b as sub questions.

PART- A
(10*2 Marks = 20 Marks)

1.	a)	State Thevenin's theorem.	2M	CO1	BL1
	b)	List any three types of circuit elements.	2M	CO1	BL1
	c)	Define the RMS value of an alternating quantity.	2M	CO2	BL1
	d)	What is the significance of 'j' notation in alternating quantities?	2M	CO2	BL2
	e)	Draw the no-load phasor diagram of a transformer.	2M	CO3	BL2
	f)	What is the condition for maximum efficiency of a transformer?	2M	CO3	BL1
	g)	List out the various speed control methods of an induction motor.	2M	CO4	BL1
	h)	What are the main components of a synchronous motor?	2M	CO4	BL1
	i)	What is the necessity of battery backup?	2M	CO5	BL1
	j)	What is the full form of ELCB?	2M	CO5	BL1

PART- B
(10*5 Marks = 50 Marks)

2	a)	State Kirchhoff's current and voltage laws with neat a figure.	5M	CO1	BL1
	b)	State and explain the Superposition theorem.	5M	CO1	BL1

OR

3	a)	Derive the expression for current i(t) in series R-C circuit without source	5M	CO1	BL3
	b)		5M	CO1	BL2

Calculate the equivalent resistance of the circuit.

4	a)	Derive the condition for the series RLC resonance circuit.	5M	CO2	BL3
	b)	Define power factor, active power, and reactive power.	5M	CO2	BL1

OR

5	a)	Derive the relation between phase and line voltages in a 3-phase star-connected system.	5M	CO2	BL3
	b)	A coil having a resistance of 10 kΩ and inductance of 50 mH is connected to a 10 volts, 10 kHz power supply. Calculate the impedance.	5M	CO2	BL2

6	a)	Draw the equivalent circuit of a single-phase transformer.	5M	CO3	BL2
	b)	Discuss the autotransformer with a neat sketch.	5M	CO3	BL2

OR

7	a)	With a neat fig., explain the constructional details of a transformer.	5M	CO3	BL2
	b)	Define the efficiency and regulation of a transformer.	5M	CO3	BL1

8	a)	Discuss various starting methods of an induction motor.	5M	CO4	BL3
	b)	What are the various losses present in an induction motor?	5M	CO4	BL2

OR

9	a)	How does the rotor of an induction motor will rotate?	5M	CO4	BL1
	b)	Draw the torque-slip characteristic of an induction motor.	5M	CO4	BL2

10	a)	Explain any three components of an LT switch gear.	5M	CO5	BL1
	b)	Define earthing and discuss the necessity of earthing.	5M	CO5	BL1

OR

11	a)	List the different types of batteries and explain any one type.	5M	CO5	BL1
	b)	Discuss power factor improvement methods.	5M	CO5	BL2

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CO: Course Outcome   **BL - Blooms Taxonomy Levels**