R22 Regulation *Subject code:4E1AE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech I Semester Regular/Supplementary Examinations, January 2025

ELECTRICAL CIRCUITS

(EEE)

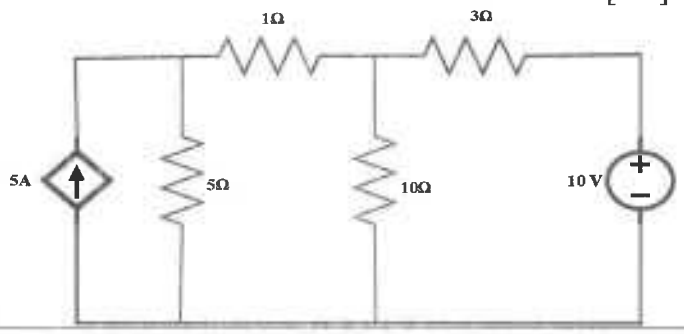
Maximum Marks: 60 Date:31.01.2025 Duration: 3 hours

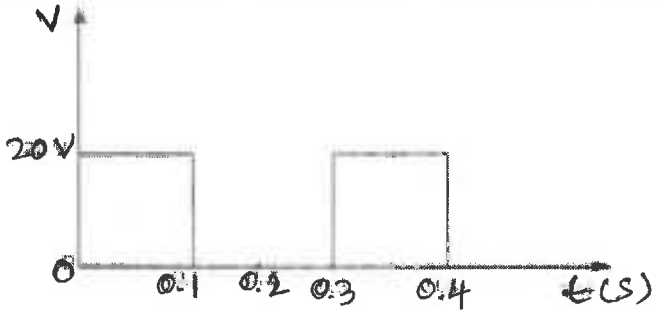
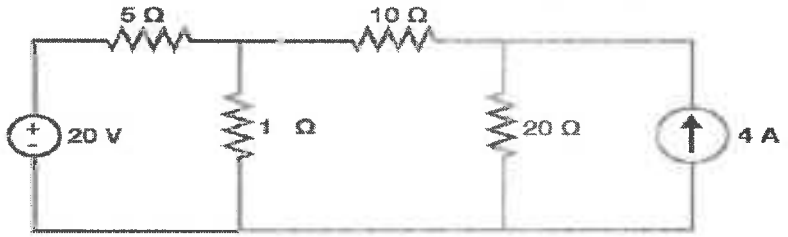
Note:
1. **This question paper contains two parts A and B.**
2. **Part A is compulsory which carries 10 marks. Answer all questions in Part A.**
3. **Part B consists of 5 Units. Answer any one full question from each unit.**
4. **Each question carries 10 marks and may have a, b, c, d as sub questions.**

Part-A

All the following questions carry equal marks (10X1M=10 Marks)			CO No.	Bloom Tx
1.	a	Define Network.	1	1
	b	Define KCL.	1	1
	c	What is average value?	2	1
	d	Define Q Factor.	2	1
	e	State the Super position theorem.	3	1
	f	What is the condition for maximum power transfer theorem?	3	1
	g	List one advantage of balanced 3-phase system.	4	1
	h	Draw the circuit for 3-phase 4 wire system star connected system.	4	1
	i	Define Mutual Inductance.	5	1
	j	What is incident matrix?	5	1

Part-B

Answer All the following questions. (5X10M=50Marks)				
2		A. In detailed explain about active and passive elements with examples. [5M] B. Recall the concept of source transformation and explain briefly. [5M]	1	3 3
		OR		
3		A. What is mesh analysis brief the step-by-step procedure? [5M] B. Determine the current in 10Ω resistor for the following network by using nodal analysis. [5M] 	1	3 3

4	A. Evaluate the average value of square wave form depicted below. [5M]  B. Write short notes on steady state response of RL series circuit. [5M]	2	3 3
	OR		
5	A. Explain about Quality factor and Band-width of Series resonance. [5M] B. Analysis of RC series circuits describe in brief. [5M]	2	3 3
6	Verify superposition Theorem and find current through 10 ohm resistance for the given circuit. [10M]  	3	3
	OR		
7	State Thevenin's theorem and solve with an example and draw its equivalent circuit. [10M]	3	3
8	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]	4	3
	OR		
9	Explain in detailed about the measurement of three-phase power using two watt meter method. [10M]	4	3
10	Derive an expression of self and Mutual inductance for the Magnetically Coupled circuits. [10M]	5	3
	OR		
11	Explain the following with examples (i) Graph (ii) tree (iii) Basic cut set (iv) Basic tie set? [10M]	5	3