Course Code-21EE33

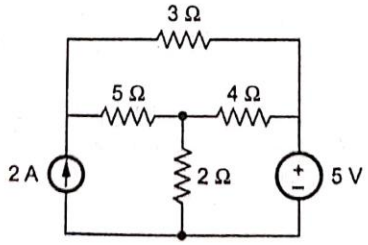
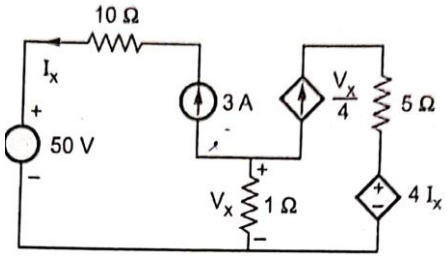
Model Question Paper (CBCS Scheme)

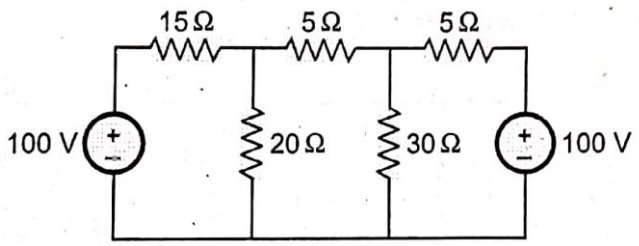
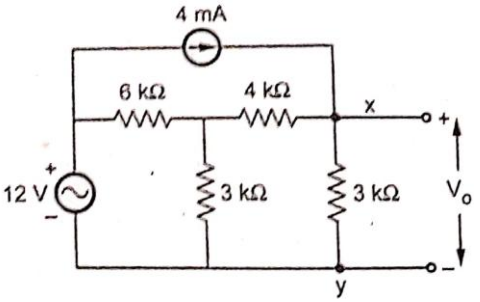
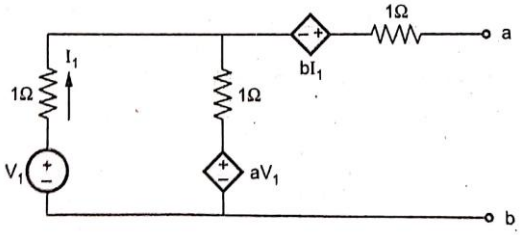
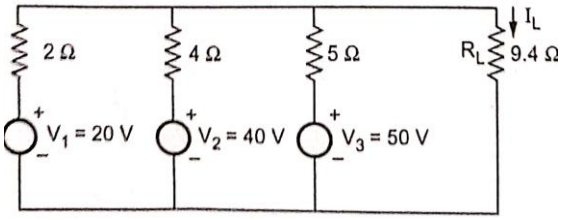
USN										

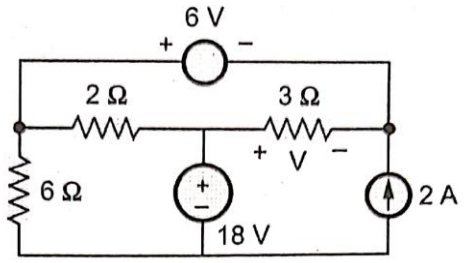
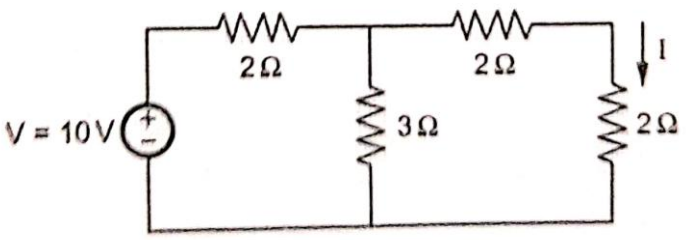
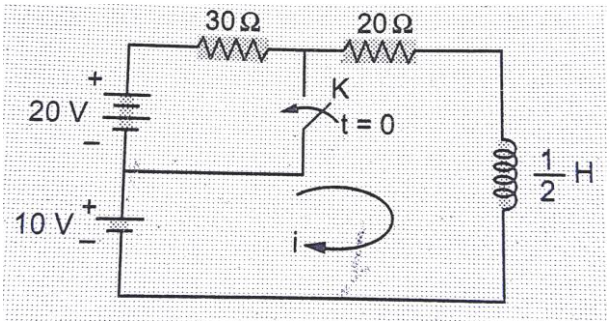
Third Semester BE Degree Examination
Course Title–Electric Circuit Analysis

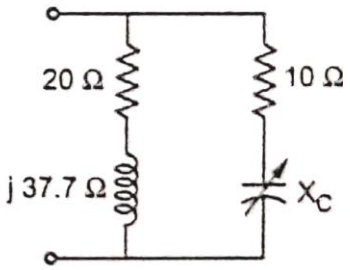
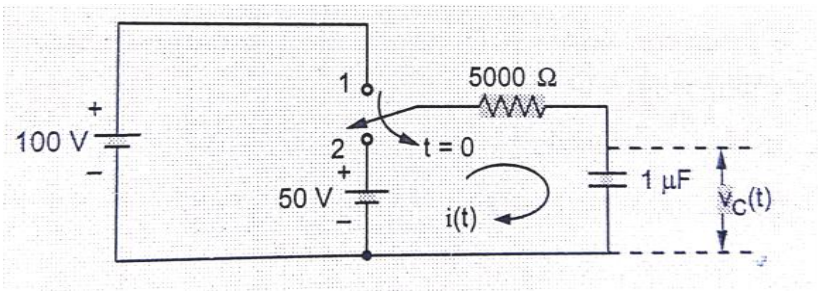
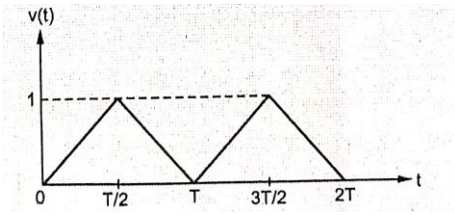
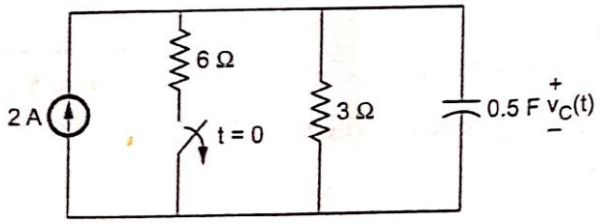
TIME:03Hours **Max.Marks:100**

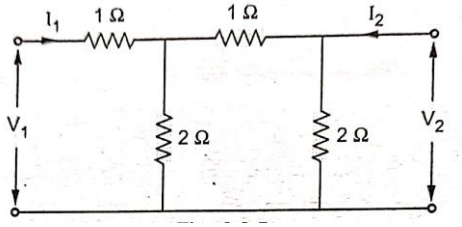
Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Q.No.		Module1	Marks
Q1	a	Define the following networks with example a) Lumped and Distributed Network b) Bilateral and Unilateral Network c) Active and Passive network	06
	b	Using source transformation and source shifting techniques, find voltage across 2-ohm resistor. 	07
	c	DetermineIx and Vx for the circuit shown below using mesh analysis. 	07
OR			
	a	Obtain expressions to convert Delta connected impedances into equivalent star connected impedances.	06
	b	Explain the concept of super node using network and also mention steps to apply nodal analysis.	07

Q2	c	For the circuit shown below, find the current through 30ohm resistor using mesh analysis 	07
Module 2			
Q3	a	Obtain Thevenin's equivalent network shown in fig below, between terminals x and y also find V_0. 	06
	b	For the network shown below determine that Norton's equivalent at terminals a-b. 	07
	c	Using Milliman's theorem, find I_L through R_L for network shown below 	07
OR			
	a	State and explain maximum power transfer theorem using suitable networks and also prove the maximum power transfer theorem.	06

Q4	b	Find the voltage V across 3ohm resistor using superposition theorem for given circuit 	07
	c	Verify reciprocity theorem for voltage V and current I in network shown below 	07
Module 3			
Q5	a	Define the following i) Resonance ii) Q-factor iii) selectivity iv) Bandwidth	06
	b	Explain the behavior of R, L, C elements for transients. Mention their representation at the time of switching.	07
	c	The network shown in fig below is under steady state condition with switch K is closed. Determine expression for i(t) if switch K is opened. 	07
OR			
	a	Show that at half power frequencies f_1 and f_2, the reactive part of impedance of series RLC circuit is equal to resistive part of impedance.	06

Q6	b	For circuit shown in figure below determine two values of capacitor for resonance at f=50hz. 	07
	c	A switch is moved from position 1 to 2 at t=0.Find $V_R(t)$ and $V_c(t)$ for t>0. 	07
Module 4			
Q7	a	Mention advantages and disadvantages of Laplace transform.	06
	b	State and Prove Final value theorem as applied to Laplace transform.	07
	c	Synthesis the waveform shown in fig below and Determine Laplace transform of periodic waveform. 	07
OR			
Q8	a	Obtain Laplace transform of a Unit step function	06
	b	Determine Laplace transform of a following i) $\sin^2 t$ ii) $\cos^2 t$	07
	c	Calculate the voltage Vc(t) for t>= 0 for the circuit shown below using laplace transform method. In the circuit, switch is opened at t=0. 	07

Module 5			
Q9	a	Define port of network and write assumptions to be made to find network and also obtain y-parameter.	10
	b	An unbalanced 3 phase load is supplied by symmetrical 3 phase, 440V, 3 wire system. The star connected load branch are Z_R=5 30, Zy=10 45, Z_B=10 60. Determine line currents.	10
OR			
Q10	a	Discuss the method of analyzing 3-phase star connected unbalanced load using Milliman's Theorem and mesh method.	10
	b	Determine z-parameter of network shown below & give its equivalent circuit. 	10