

[B19EE1201]

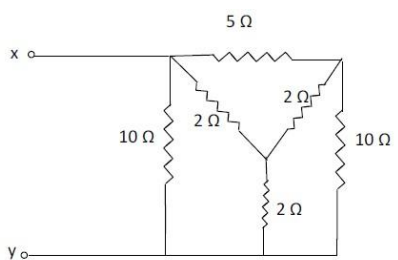
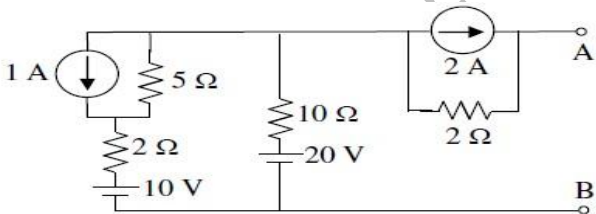
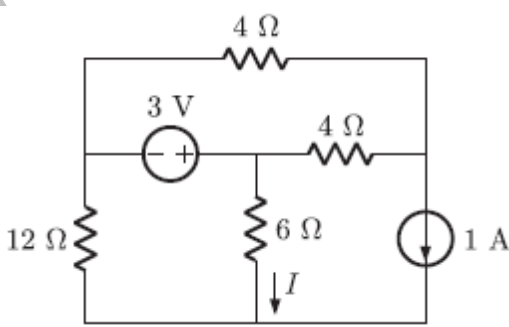
I B. Tech II Semester (R19) Regular Examinations
CIRCUIT THEORY
 (Electrical & Electronics Engineering)
MODEL QUESTION PAPER

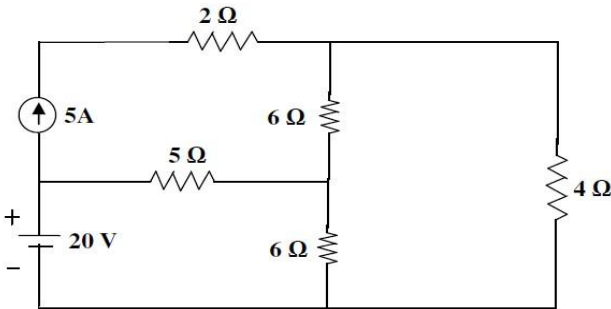
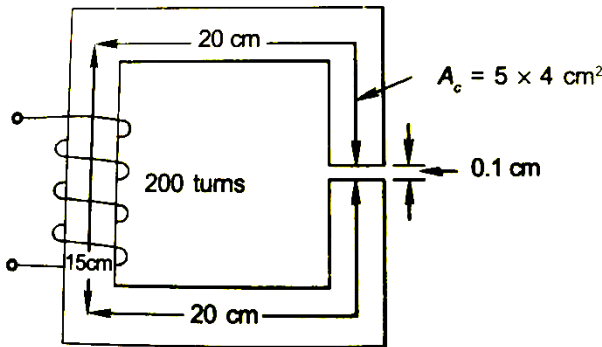
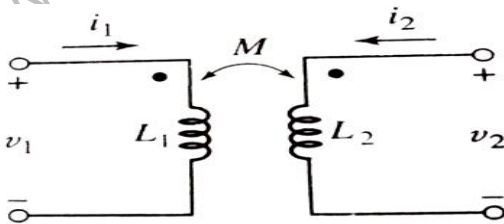
TIME: 3Hrs.

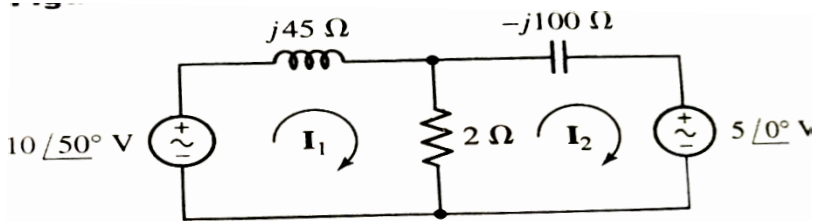
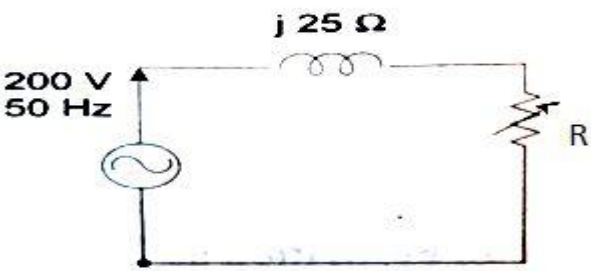
Max. Marks: 75 M

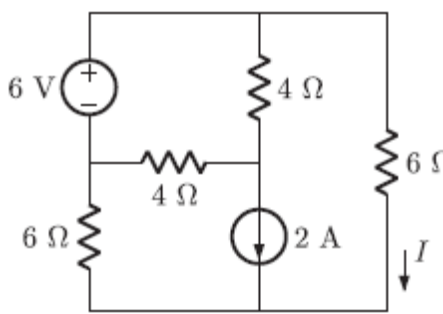
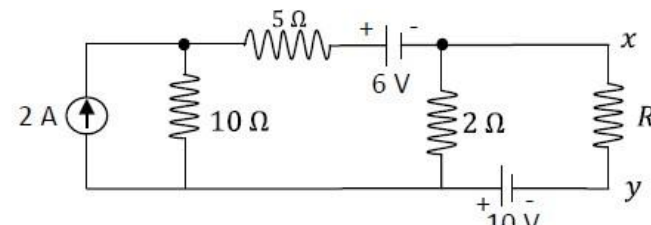
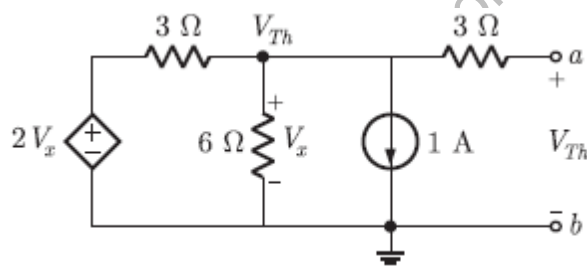
Answer **ONE Question** from **EACH UNIT**.

All questions carry equal marks.

			CO	KL	M
		UNIT-I			
1.	a).	Simplify the given network by using Y- Δ transformation and obtain equivalent resistance across X-Y terminals. 	CO1	K4	8
	b).	Obtain the single equivalent circuit across the terminals A-B make use of source transformation technique. 	CO1	K3	7
		OR			
2.	a).	Find the current through the 6 ohm resistor using nodal analysis. 	CO1	K3	8

	b).	shown below.	CO1	K3	7
					
		UNIT-II			
3.	a).	Explain Faraday's Law of Electromagnetic Induction	CO2	K2	8
	b).	For the magnetic circuit shown calculate the exciting current required to establish a flux of 2 mWb in the air-gap and relative permeability of the core is 2000. Neglecting fringing and leakage flux	CO2	K4	7
					
		OR			
4.	a).	Write abt the Analogy between Magnetic Circuit and Electrical Circuit	CO2	K2	8
	b).	For the following Circuit find V_1 and V_2 , if $L_1=0.4H$, $L_2=2.5H$ coefficient of cpling $K=0.6$ and $i_1=4i_2=20\cos(500t-200)Ma$	CO2	K4	7
					
		UNIT-III			
5.	a).	define the following: i) Amplitude of an alternating quantity ii) Instantanes value of an alternating quantity iii) Frequency iv) RMS value	CO3	K1	8

	b).	Two impedances, $(1+j1)\Omega$ and $(1-j1)\Omega$ are connected in parallel across a 10V srce. Find the power supplied by the srce.	CO3	K4	7
		OR			
6.	a).	An impedance of $(3+j5)$ is connected across a 10V, 50Hz srce. Find (i) power factor (ii) real and reactive power (iii) current drawn by the impedance.	CO3	K1	8
	b).	A R-L series circuit draws a current of 1A when connected across a 10V, 50Hz AC. supply. Assuming the resistance to be 5 ohms, find the inductance of the circuit. What is its power factor?	CO3	K1	7
		UNIT-IV			
7.	a).	Define Quality factor, Band width with respect to parallel RLC circuit and draw the characteristics of parallel RLC circuit at resonance.	CO4	K1	8
	b).	For the following circuit compute average power delivered to each of the passive elements. 	CO4	K4	7
		OR			
8.	a).	For the following circuit plot locus of the current, mark the range current for maximum and minimum values of R and maximum power consumed by circuit. Assume $X_L = 25 \Omega$. The voltage is 200V, 50Hz. 	CO4	K4	8
	b).	A series RLC circuit with $R=10 \Omega$, $L=0.1 \text{ H}$ and $C=50 \mu\text{F}$ has an applied voltage $V=50\angle 0$ with a variable frequency. Find the resonant frequency, the value of frequency at which maximum voltage occurs across the inductor and the value of frequency at which maximum voltage occurs across the capacitor.	CO4	K4	7

UNIT-V					
9.	a).	Find current I in the given circuit making use of super position theorem.	CO5	K3	8
					
	b).	Determine the value of R to have a maximum power transfer in the circuit shown below. Also obtain the amnt of maximum power.	CO5	K3	7
					
OR					
10.	a).	Determine thevenin's equivalent circuit across a-b terminals	CO5	K3	8
					
	b).	Determine the maximum power delivered to the load in the circuit shown in below fig.	CO5	K2	7
		