United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

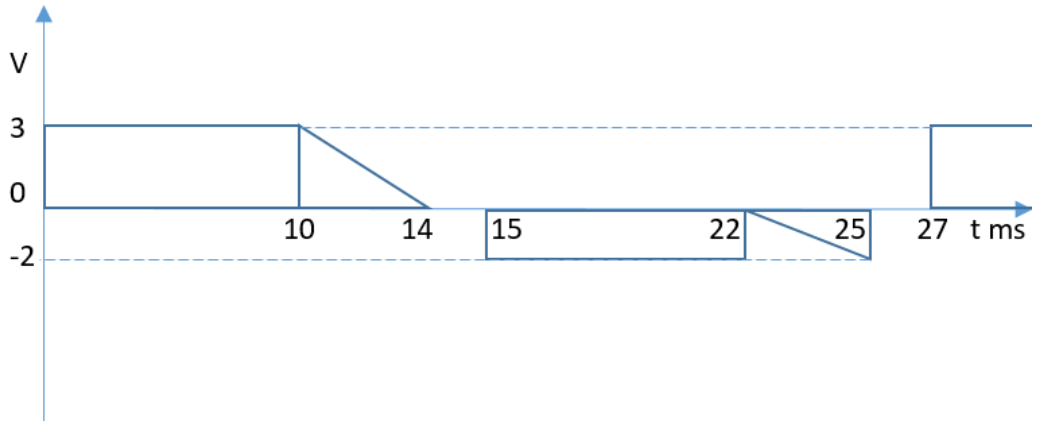
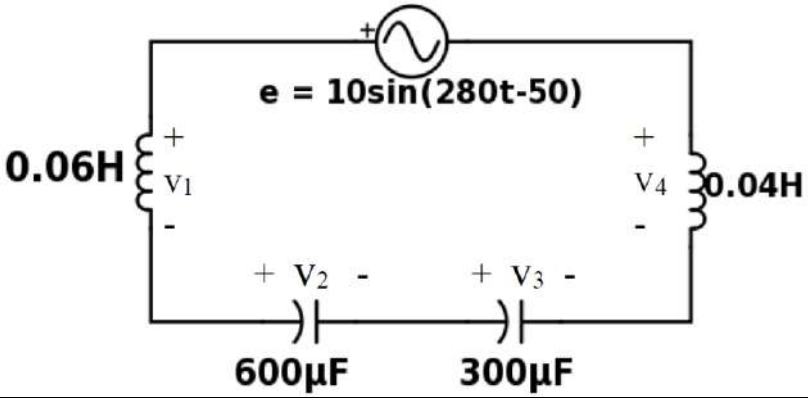
***Final Exam* : Trimester: Summer 2017**

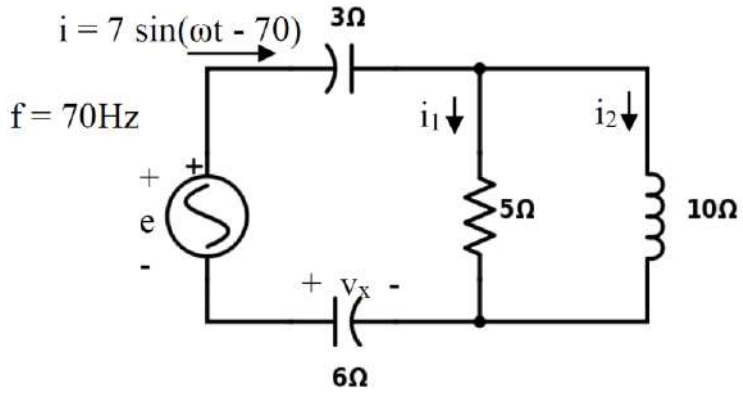
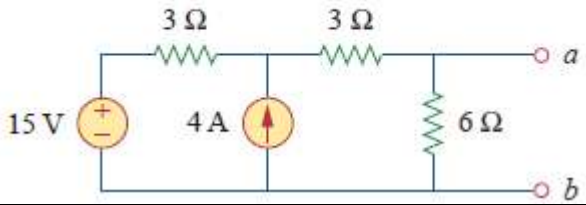
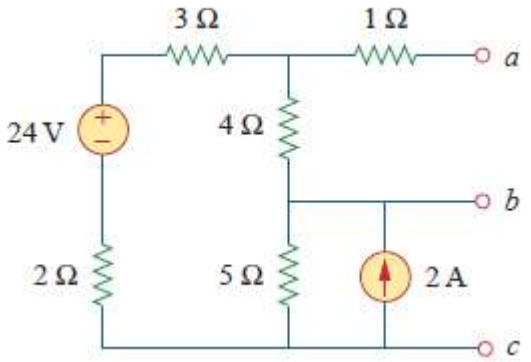
Course: CSE 113 Electrical Circuits,

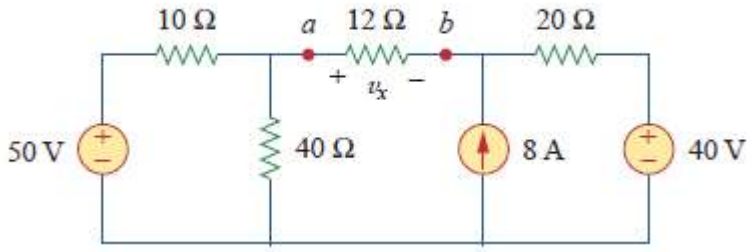
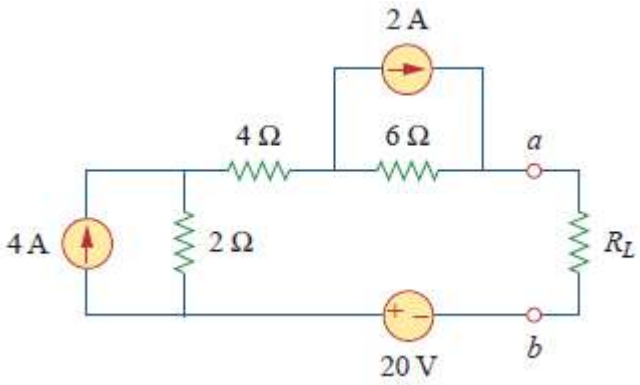
Marks: 40, Time: 2 hour

Figures in the right-hand margin indicate full marks.

Answer Any Four out of the Five Question Sets

1.	a)	Plot the following curves on same set of axes and show their phase relation. Also calculate period of the curves. i) $v = 4 \sin(-328t + 120^0)$ ii) $i = -3 \cos(328t - 45^0)$	**2+1+1**
	b)	Calculate V_{avg} and V_{rms} for the curve. [period = 27ms] What will be instantaneous value at t = 122 ms? 	**2+3+1**
2.		Consider the following AC network 	
	a)	Calculate total impedance Z_T	**3**
	b)	Draw impedance diagram	**2**
	c)	Find sinusoidal expression for V_1, V_2, V_3 and V_4	**2**

	d)	Find the average power and power factor of the circuit indicating whether it is leading or lagging	**3**
3.		Consider the following circuit.  	
	a)	What is angular velocity of the given network?	**1**
	c)	Calculate total admittance Y_T and source voltage e.	**3+1**
	d)	Calculate i_1 , i_2 and draw phasor diagram showing I, I_1 and I_2	**2+1**
	e)	Calculate v_x from the given circuit.	**2**
4.	a)	Find the Norton equivalent for the following circuit:  	**5**
	b)	Find the Thevenin equivalent circuit as seen from terminals a-b :  	**5**

5.	a)	Apply source transformation to find v_x in the following circuit.  	**5**
	b)	Find R_L for maximum power deliverable to R_L. Determine that maximum power.  	**3+2=5**