EAST WEST UNIVERSITY
Department of Computer Science and Engineering
B.Sc. in Computer Science and Engineering Program
Final Assessment, Spring 2021 Semester

Course: CSE 209 Electrical Circuits, Section-4
Instructor: M. Saddam Hossain Khan, Senior Lecturer, CSE Department
Full Marks: 27 (27 will be counted for final grading)
Time: 1 Hour and 30 Minutes (Including submission)

Note: There are FIVE problems, answer ALL of them. Course Outcome (CO), Cognitive Level and Mark of each question are mentioned at the right margin.

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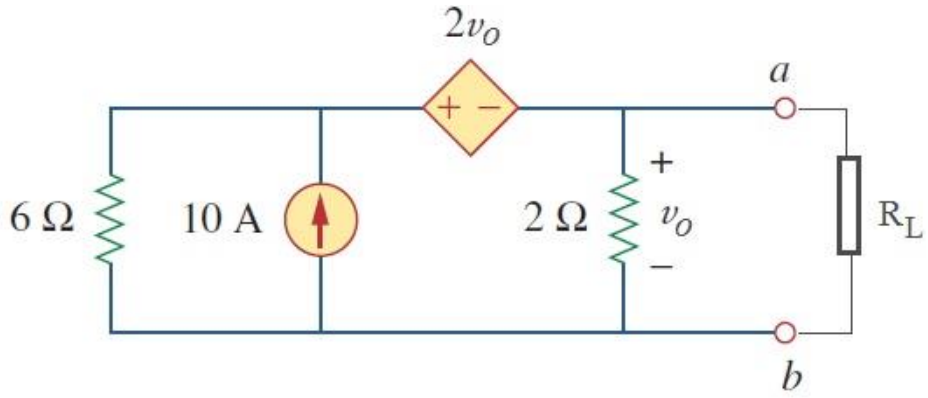
1. a) **Determine** the Thevenin equivalent of the following circuit with respect to terminals a and b. Consider the resistor R_L as the load. [CO2,C4, Mark: 7]



b) **Determine** the value of R_L for maximum power transfer to the load of the following circuit.

c) **Calculate** the maximum power.

2. a) **Determine** $v(t)$ and $i(t)$ in the following circuit. [CO1,C2, Mark:6]

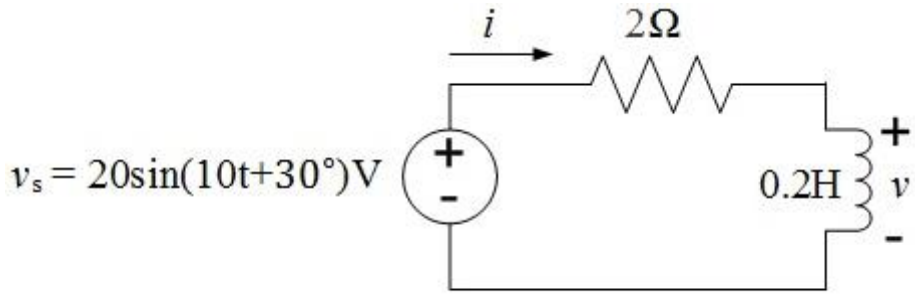
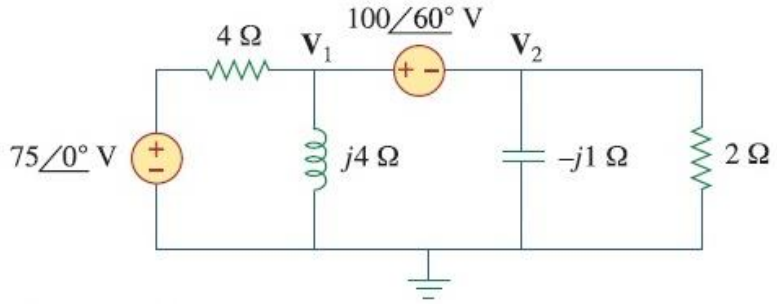


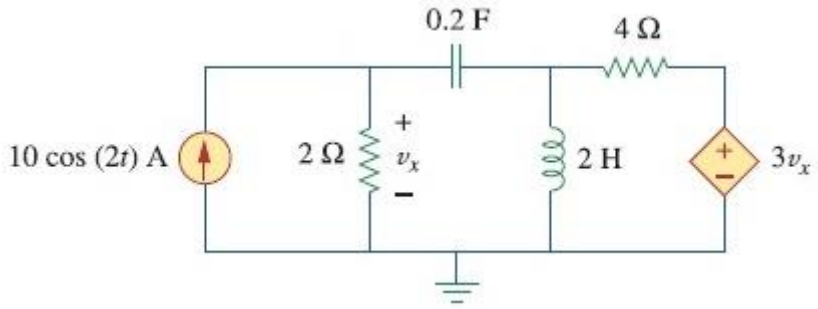
Figure 1

b) Also, **determine** which one leads and by how much (in degrees) between the voltage across and current through the inductor from the circuit in Figure 1.

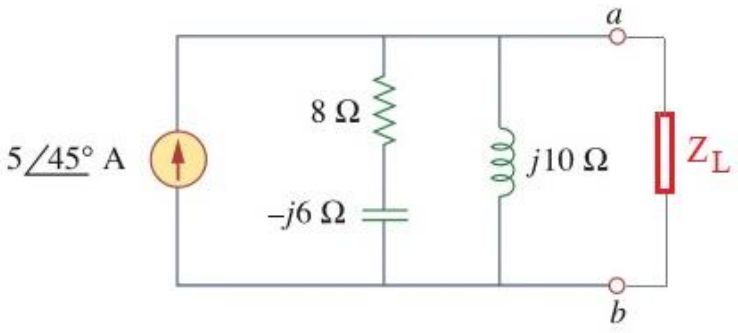
3. Using nodal analysis, **compute** V_2 (in polar form) for the following circuit [Show analysis using Cramer's rule]. [CO3,C4, Mark: 4]



4. Using most effective source transformation, **find** v_x in the following circuit. [CO3,C4, Mark:4]



5. a) **Find** the value of $\boldsymbol{Z}_L$ that will absorb the maximum power and the value of the maximum power in the following circuit. [CO3,C4, Mark:6]



b) **Find** the average power supplied by the source and absorbed by the resistor from Figure 1.