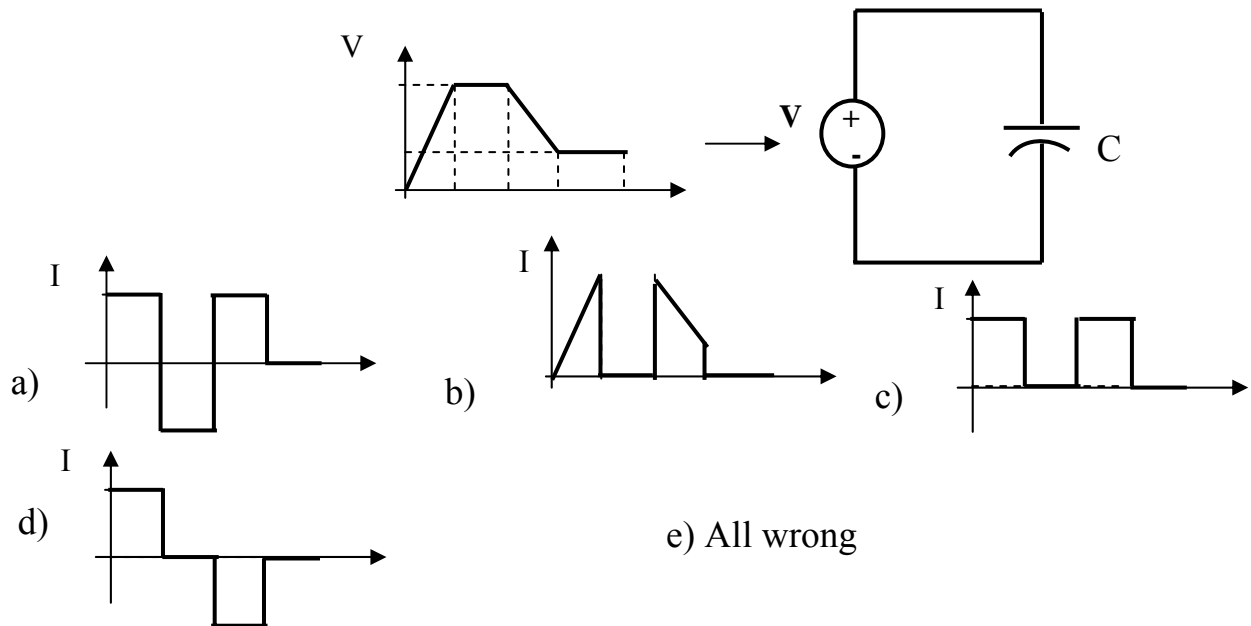


King Saud University
College of Engineering
Department of Electrical Engineering

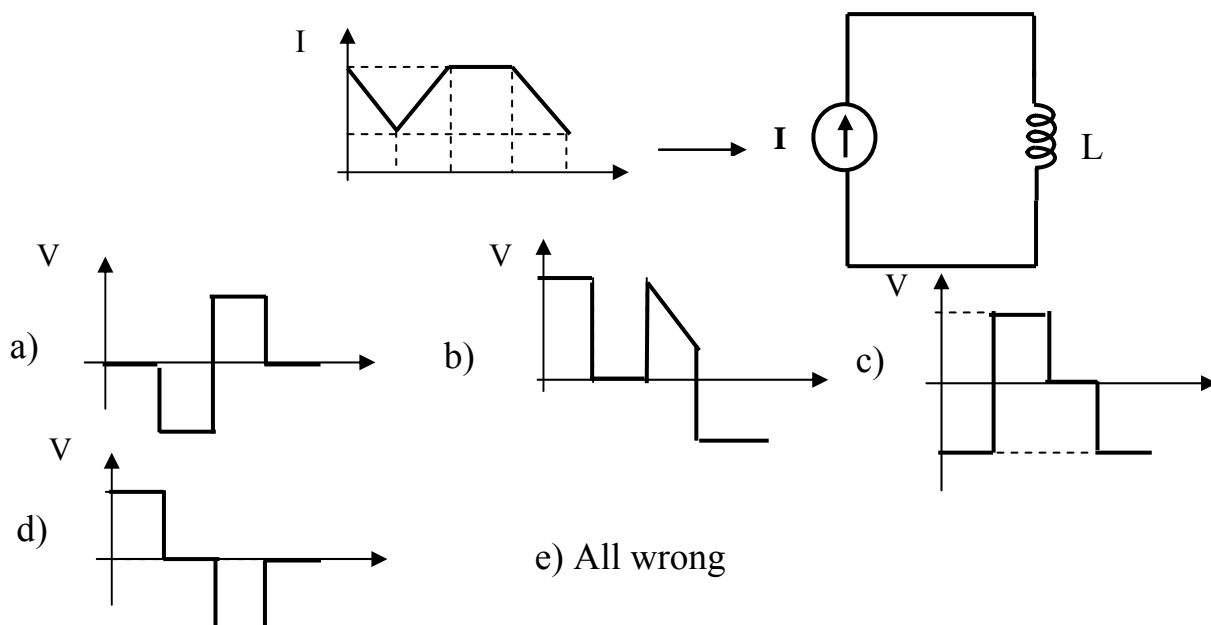
EE 201 Electric Circuits Fundamentals
Final Examination
Name:-

Summer Term 1427/1428 H
Time Allowed 3 Hours.
Number:-

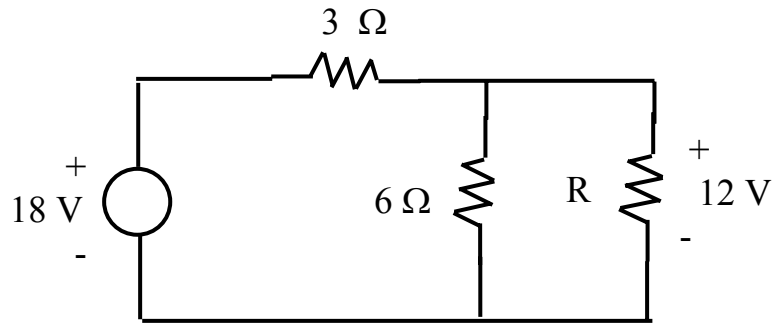
- 1) The voltage waveform shown below is applied across the capacitor. Determine the waveform of the capacitor current.



- 2) The current waveform shown below is applied across the inductor. Determine the waveform of the voltage across the inductor.

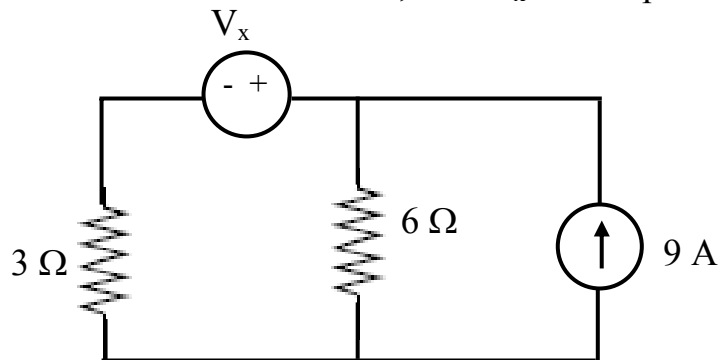


3) For the circuit shown below, determine R so that voltage across it is 12 V.



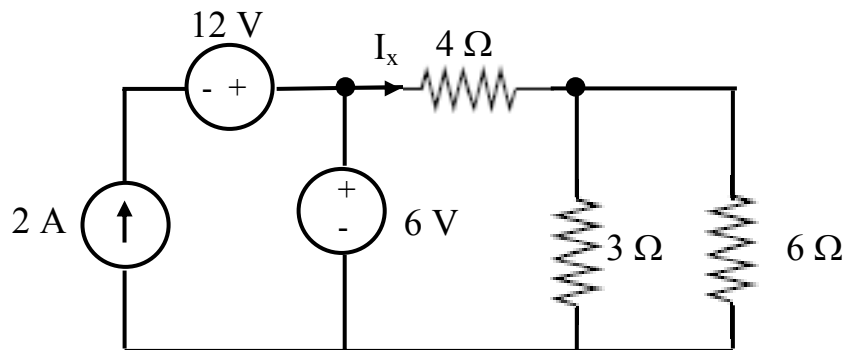
a) 6 Ω b) 3 Ω c) 0 Ω d) ∞ Ω e) All wrong

4) For the circuit shown below, find V_x so that power in the 6 Ω resistor is 96 W.



a) 6 V b) -9 V c) 9 V d) 12 V e) All wrong

5) For the circuit shown below, determine I_x

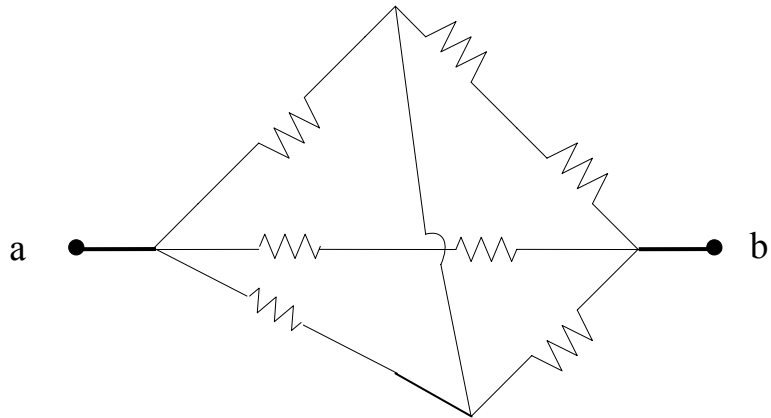


a) 2 A b) 2.8 A c) 1 A d) 5 A e) All wrong

6) For the circuit in problem 5, determine voltage across the current source.

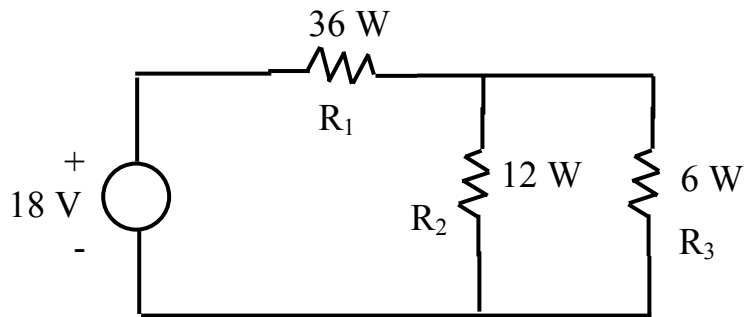
a) 6 V b) -6 V c) 18 V d) -18 V e) All wrong

7) In the circuit shown, all resistances are equal $R = 3\ \Omega$. Determine R_{ab} .



- a) $1.58\ \Omega$ b) $2.45\ \Omega$ c) $2.21\ \Omega$ d) $3.16\ \Omega$ e) All wrong

8) For the circuit shown below, determine R_1 .

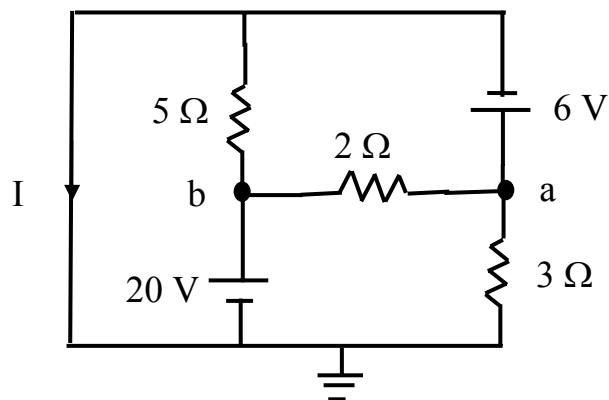


- a) $5\ \Omega$ b) $3\ \Omega$ c) $4\ \Omega$ d) $6\ \Omega$ e) All wrong

9) For the circuit in problem 8, determine R_2 .

- a) $5\ \Omega$ b) $3\ \Omega$ c) $4\ \Omega$ d) $6\ \Omega$ e) All wrong

10) For the circuit shown below, determine V_a .

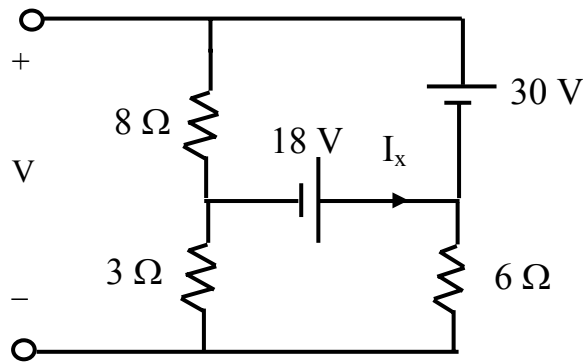


- a) $20\ \text{V}$ b) $26\ \text{V}$ c) $14\ \text{V}$ d) $6\ \text{V}$ e) All wrong

11) For the circuit in problem 10, determine I

- a) $1\ \text{A}$ b) $8\ \text{A}$ c) $9\ \text{A}$ d) $-1\ \text{A}$ e) All wrong

12) For the circuit shown below, determine V .



- a) 48 V b) 36 V c) 42 V d) 30 V e) All wrong

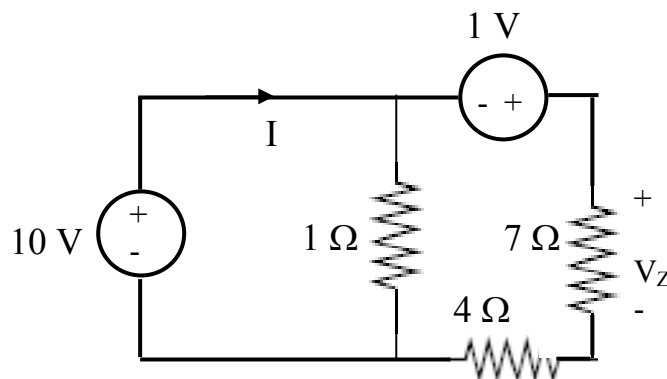
13) For the circuit in problem 12, determine I_x .

- a) 2 A b) 3 A c) 8 A d) 10 A e) All wrong

14) If a 5Ω is connected across V in the circuit of problem 12, determine current flowing in it.

- a) 1 A b) 8 A c) 9 A d) 6 A e) All wrong

15) For the circuit shown below, determine V_Z .

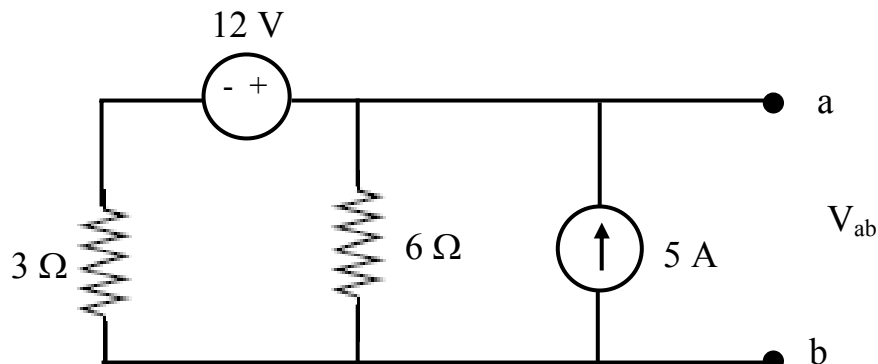


- a) 11 V b) 9 V c) 7 V d) 3.667 V e) All wrong

16) For the circuit in problem 15, determine I .

- a) 9 A b) 10 A c) 11 A d) 12 A e) All wrong

17) For the circuit shown below, determine voltage V_{ab} .

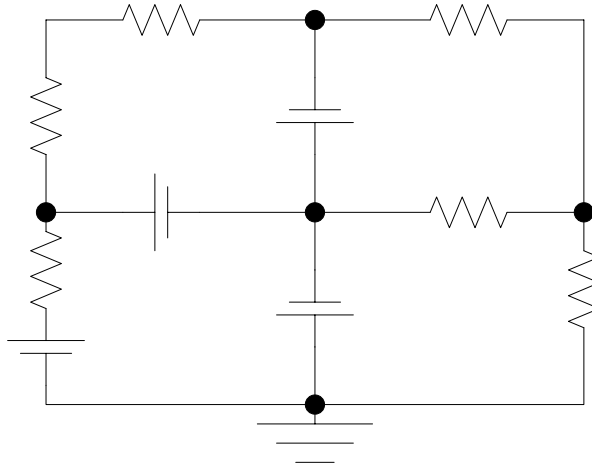


- a) 12 V b) 24 V c) 30 V d) 18 V e) All wrong

18) Determine the highest power which can be taken from the circuit in problem 17 between terminals a & b.

- a) 20.8 W b) 31.6 W c) 40.5 W d) 50.2 W e) All wrong

19) For the circuit shown below, determine V_3 .



4 Ω

- a) -6 V b) -3 V c) 9 V d) -9 V e) All wrong

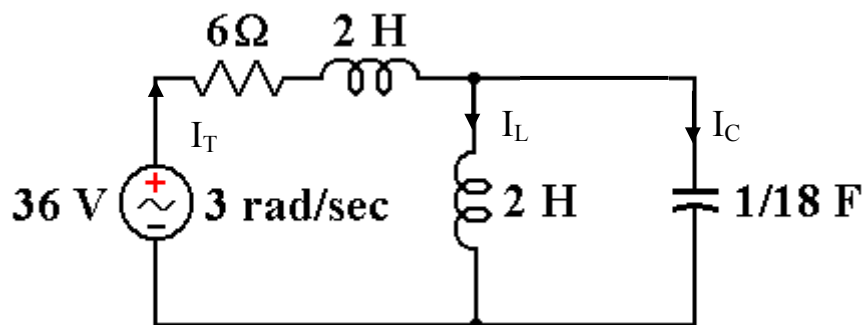
20) For the circuit in problem 19, determine V_4 .

6 Ω

- a) 3 V b) -3 V c) 5 V d) -5 V e) All wrong

3 V

21) For the circuit shown below, find I_T .



4 Ω

4 V

- a) 6 A b) $5.69 \angle -18.4^\circ$ A c) $5.69 \angle 18.4^\circ$ A d) 0 A e) All wrong

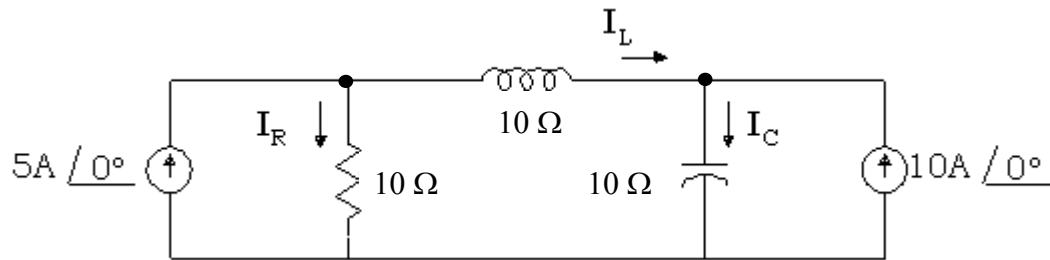
22) For the circuit in problem 21, find I_L .

- a) 0 A b) $18 \angle -90^\circ$ A c) $j 6$ A d) $-j 6$ A e) All wrong

23) For the circuit in problem 21, find I_C .

- a) 0 A b) $18 \angle 90^\circ$ A c) $-j 6$ A d) $j 6$ A e) All wrong

24) For the circuit shown below, find I_L .



a) $5 \angle 0^\circ$ A b) $5 + j 10$ A c) $15 - j 15$ A d) -10 A e) All wrong

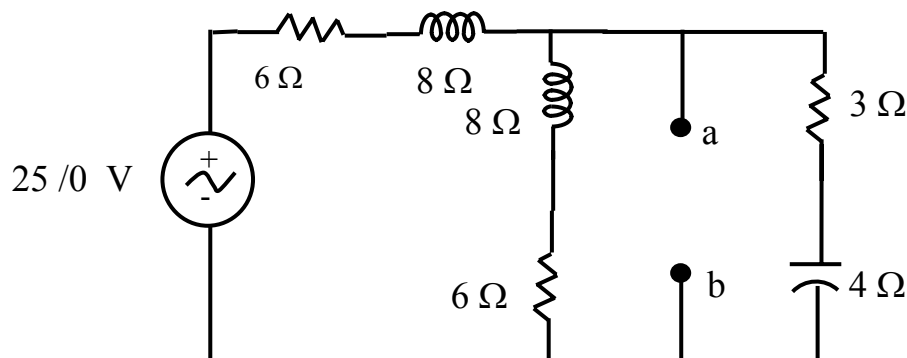
25) For the circuit in problem 24, find I_R

a) $5 \angle 0^\circ$ A b) $5 - j 10$ A c) $j 10$ A d) $-j 10$ A e) All wrong

26) For the circuit in problem 24, find I_C

a) $10 \angle 0^\circ$ A b) $15 - j 10$ A c) $15 + j 10$ A d) $j 10$ A e) All wrong

27) For the circuit shown below determine impedance Z_L which when connected between the two dots a & b will take maximum power.

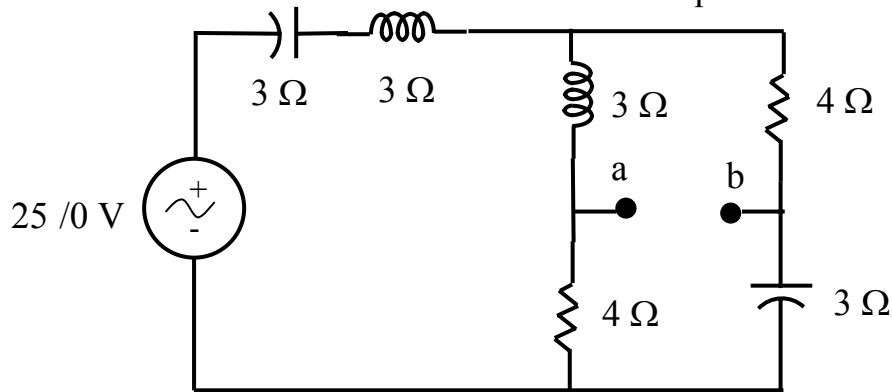


a) $6 - j 8 \Omega$ b) 3.125Ω c) $5.077 \angle 23.96^\circ \Omega$ d) 4.167Ω e) All wrong

28) For the circuit in problem 27, determine V_{ab} .

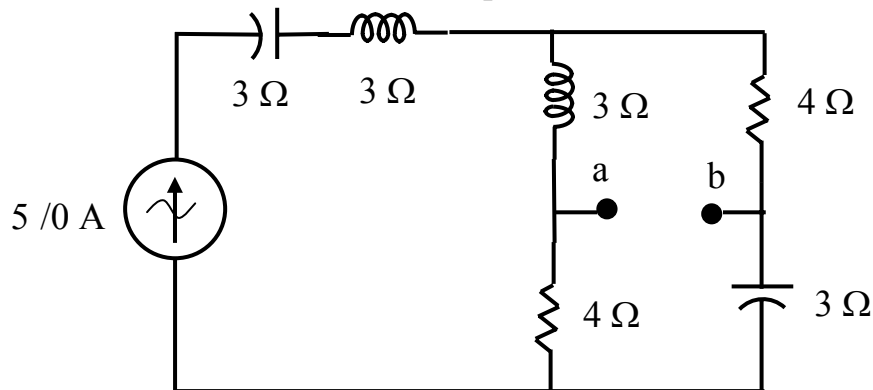
a) $25 \angle 53.13^\circ$ V b) $11.475 \angle -46.8^\circ$ V c) $10.417 \angle -53.13^\circ$ V d) $41.67 \angle 0^\circ$ e) All wrong

- 29) For the circuit shown below determine impedance Z_L which when connected between the two dots a & b will take maximum power.



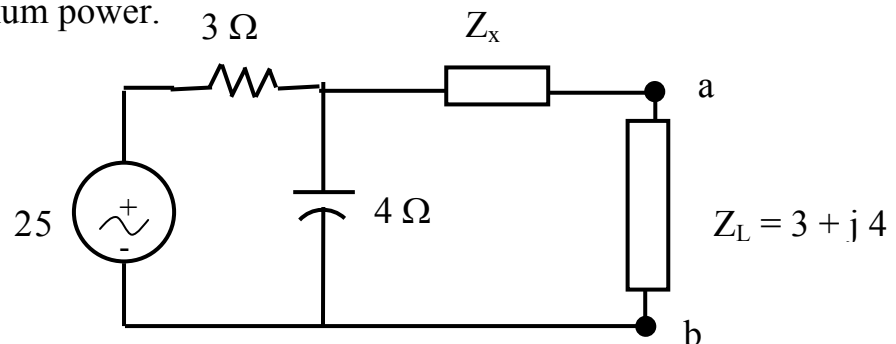
- a) $4 + j 3 \Omega$ b) $4 - j 3 \Omega$ c) 2.88Ω d) 3.125Ω e) All wrong

- 30) For the circuit shown below determine impedance Z_L which when connected between a & b will take maximum power.



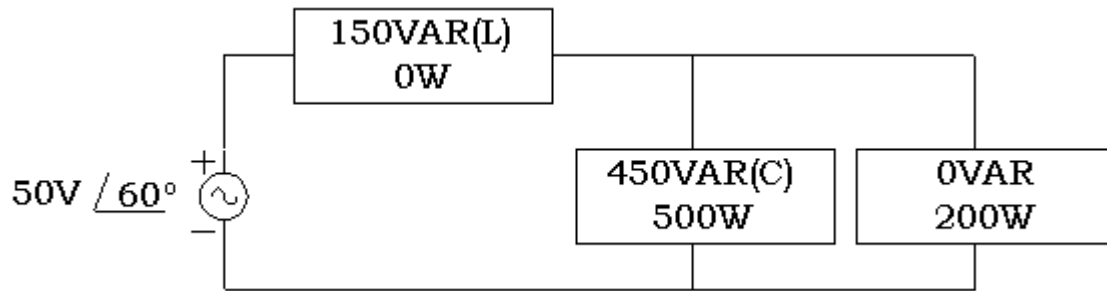
- a) $4 + j 3 \Omega$ b) $4 - j 3 \Omega$ c) 2.88Ω d) 3.125Ω e) All wrong

- 31) For the circuit shown below determine impedance Z_x so that impedance Z_L will take maximum power.



- a) $2.4 - j 1.2 \Omega$ b) $2.4 + j 1.2 \Omega$ c) $0.6 - j 2.8 \Omega$ d) $0.6 + j 2.8 \Omega$
e) All wrong

32) For the circuit shown below, find the total current.



- a) $2.4 \angle 60^\circ$ b) $1.52 \angle 23.2^\circ$ c) $1.52 \angle -23.2^\circ$ d) $1.52 \angle 83.2^\circ$ e) All wrong

33) For the circuit in problem 32, find the total power-factor.

- a) 0.5 b) 0.866 c) 0.92 d) 0.12 e) All wrong

34) The load on a 220V, 60Hz supply is 10 kW (resistive), 20 kVAR (inductive), and 5 kVAR (capacitive). Find the total kVA.

- a) 21.5 kVA b) 24.2 kVA c) 18.03 kVA d) 14.04 kVA e) All wrong

35) In problem 34, find the power-factor for the combined loads.

- a) 0.89 b) 0.555 c) 0.68 d) 0.53 e) All wrong

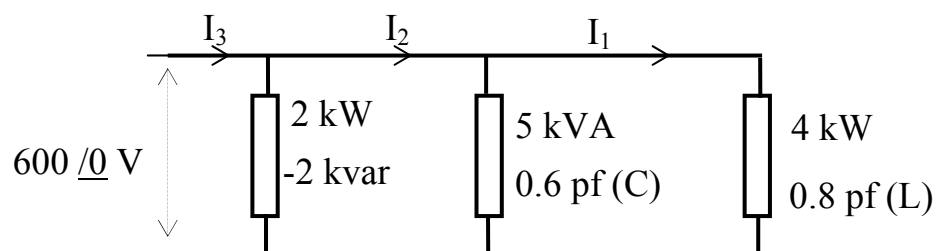
36) In problem 34, find the total current for the combined loads.

- a) 83.42 A b) 85.76 A c) 82 A d) 75.1 A e) All wrong

37) In problem 34, determine the capacitance needed to bring the circuit to unity power-factor.

- a) 678 μ F b) 857.6 μ F c) 822 μ F d) 751 μ F e) All wrong

38) For the circuit shown below, determine I_1



- a) $6.67 \angle 0^\circ$ A b) $6.67 \angle -36.87^\circ$ A c) $8.33 \angle 36.87^\circ$ A d) $8.33 \angle -36.87^\circ$ A

e) All wrong

39) For the circuit in problem 38, determine I_2

- a) $11.78 \angle -8.13^\circ$ A b) $11.78 \angle 8.13^\circ$ A c) $18.33 \angle 36.87^\circ$ A d) $18.33 \angle -36.87^\circ$ A

e) All wrong

40) For the circuit in problem 38, determine I_3

- a) $13.71 \angle -28.13^\circ$ A b) $13.71 \angle 28.13^\circ$ A c) $15.81 \angle -18.4^\circ$ A d) $15.81 \angle -18.4^\circ$ A

e) All wrong