JAYPEE INSTITUTE OF INFORMATION TECHNOLOGY

Electronics and Communication Engineering
Electrical Science-1 (15B11EC111)
Tutorial Sheet: 6

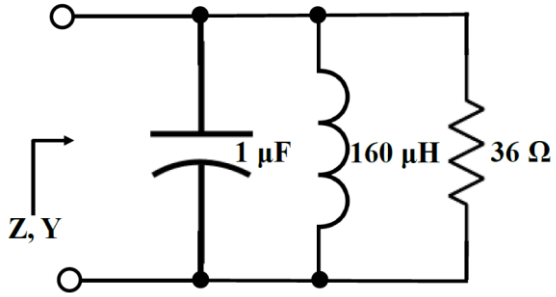
Q. 1. [CO2] A voltage V= 3cos4t+4sin3t. Find the voltage in the form of V=A cos(ωt+θ).

Q. 2. [CO2] Express the following summations of sinusoids in the general form Asin(ωt+θ) by using trigonometric identities:

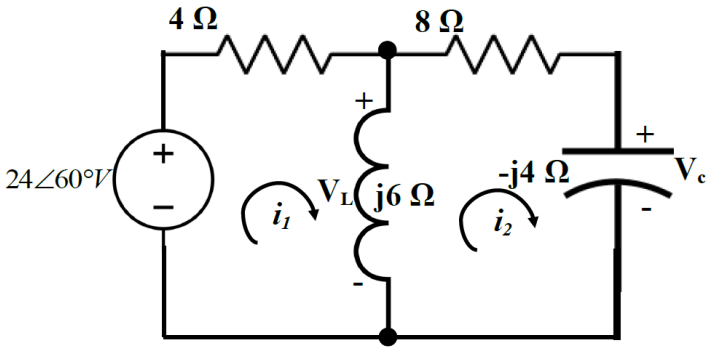
$$i(t) = 2\cos(6t+120°)+4\sin(6t-60°)$$

Q. 3. [CO2] The voltage across an element is v =3cos3t V, and the associated current through the element is i =-2sin (3t+100°) A. Determine the phase relationship between voltage and current.

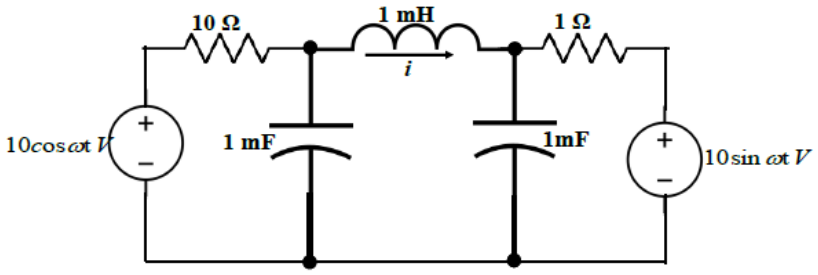
Q. 4. [CO2] Find Z and Y for the circuit shown in Fig. operating at 10 KHz.



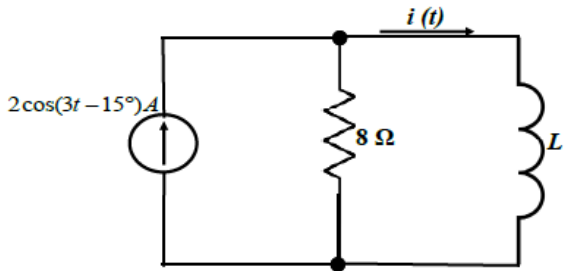
Q.5 [CO2] Find i_1, i_2, V_L and V_c for the circuit shown below using mesh analysis:



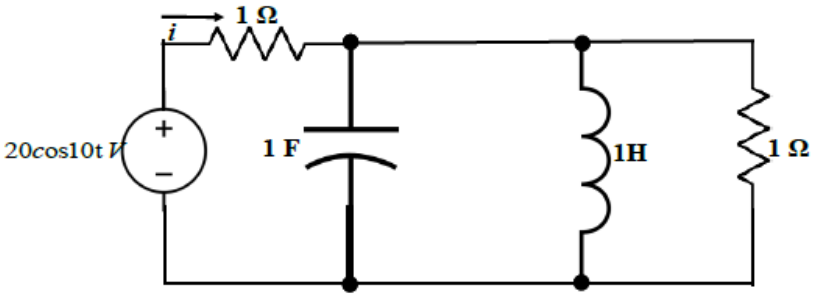
Q. 6. [CO2] Determine mesh equation for the circuit given below:



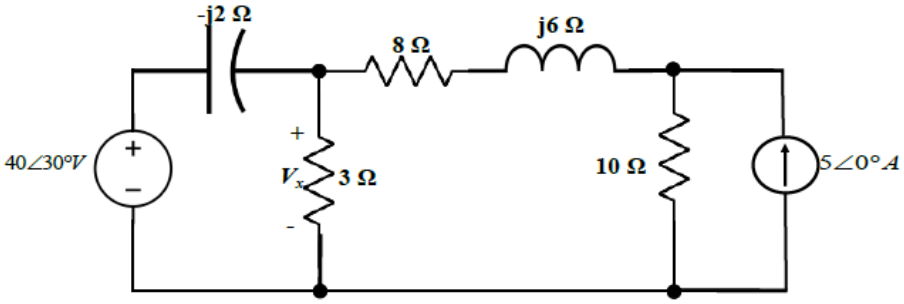
Q. 7. [CO2] Determine B and L for the circuit shown in Fig. below, when i (t) = B cos (3t-51.87°) A.



Q. 8. [CO2] Determine *i* in the circuit below:



Q. 9. [CO2] Determine V_x in the circuit of Fig. using any method of your choice.



Q. 10. [CO2] Use the superposition theorem to obtain v_x in the circuit shown in **Fig. 1.** Let **v_s = 50sin2t V and i_s = 12 cos (6t+10°) A.**

Q. 11. [CO2] use superposition to find *i* (t) in the circuit shown in **Fig. 2.**

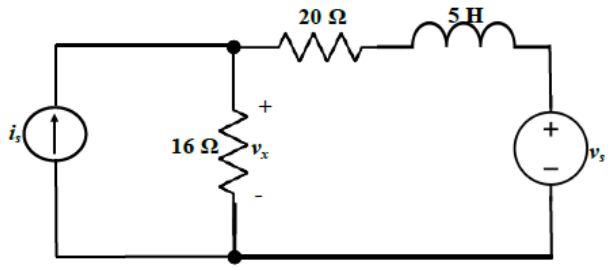


Fig. 1

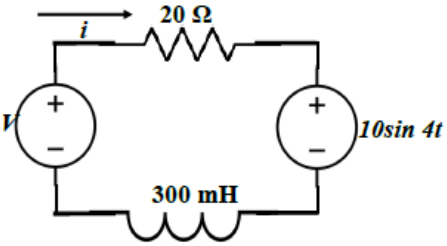


Fig. 2