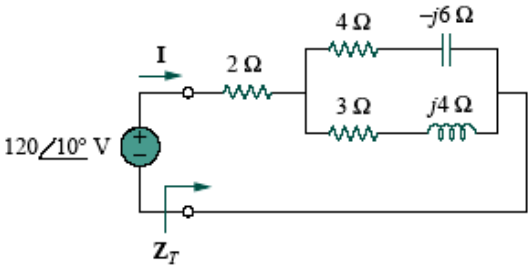
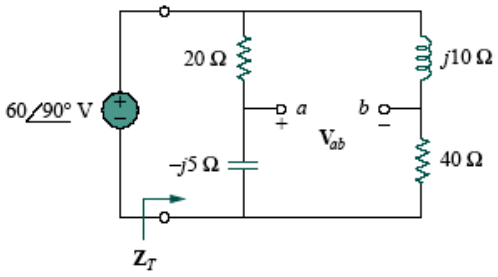
Electrical Engineering Department
Faculty of Engineering at Shoubra
Banha university

Subject: Electrical Circuit
1st semester, 2015/2016
Sheet No. 2

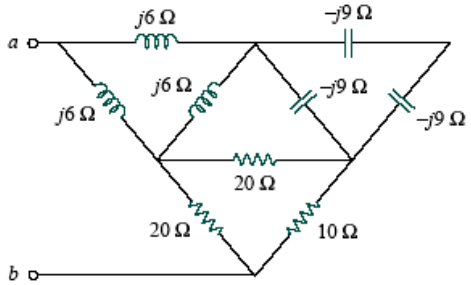
(1) Determine I and Z_T for the circuit shown



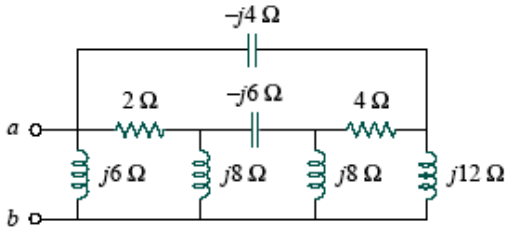
(2) For the circuit shown calculate Z_T and V_{ab}



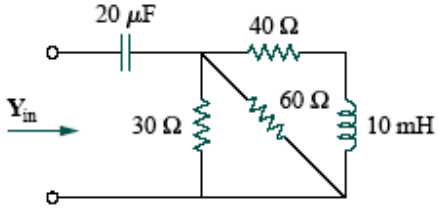
(3) Calculate the value of Z_{ab} in the network shown.



(4) Determine the equivalent impedance of the circuit shown



(5) At $\omega=10^3$ rad/s, find the input admittance of the circuit shown



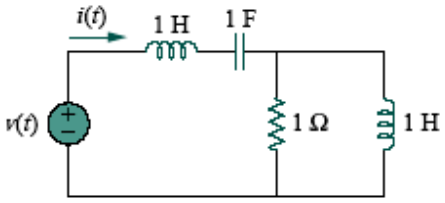
(6) A series RLC circuit has R=2kΩ, L=40 mH, and C=1 μF. Calculate the impedance at resonance and at one-fourth, one-half, twice, and four times the resonant frequency.

(7) Design a series RLC circuit that will have an impedance of 10Ω at the resonant frequency of ω_o=50 rad/s and a quality factor of 80. Find the bandwidth.

(8) Design a series RLC circuit with B=20 rad/s and ω_o=1000 rad/s Find the circuit's Q.

Sheet No. 2

(9) For the circuit shown, find the frequency ω for which v(t) and i(t) are in phase.

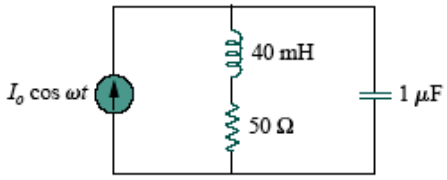


(10) Design a parallel resonant RLC circuit with ω_o=10 rad/s and Q=20. Calculate the bandwidth of the circuit.

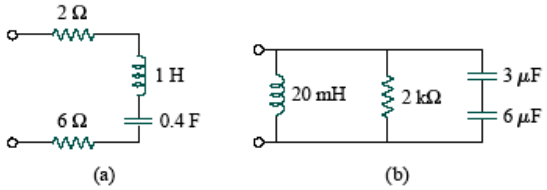
(11) A parallel resonant circuit with quality factor 120 has a resonant frequency of $6x10^6$ rad/s. Calculate the bandwidth and half-power frequencies.

(12) It is expected that a parallel RLC resonant circuit has an admittance of $25x10^3$ S, quality factor of 80, and a resonant frequency of 200 krad/s. Calculate the values of R, L, and C. Find the bandwidth and the half-power frequencies.

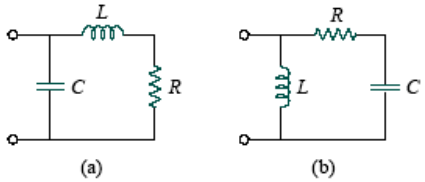
(13) For the circuit shown, find the resonant frequency.

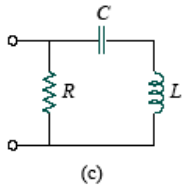


(14) For the circuit shown, find the resonant frequency ω_o, the quality factor Q, and the bandwidth B.

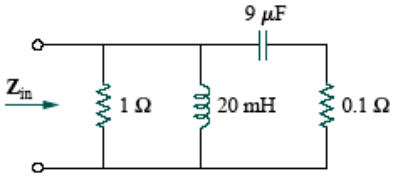


(15) Calculate the resonant frequency of each of the circuits





(16) For the circuit shown, find:
(a) the resonant frequency ω_o
(b) $Z_{in}(\omega)$



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