KATHMANDU UNIVERSITY
Department of Electrical and Electronics Engineering
ELEMENTS OF ENGINEERING II ENGG112

SECOND INTERNAL

Full Marks: 20
Time: 50 minutes

[ATTEMPT ANY 4 QUESTIONS]

Question 1. For the network of Figure. 1, find the current I, the voltage V_C, and the average power delivered to the network. **[5]**

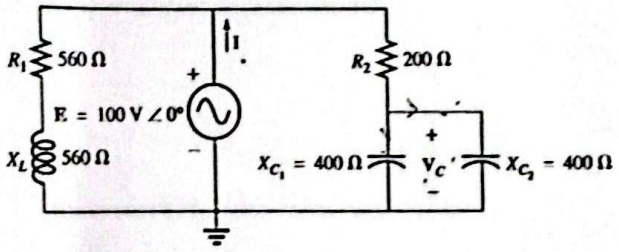

Figure 1

Question 2. Find the average value and RMS of AC signal in Figure 2. **[2+3]**

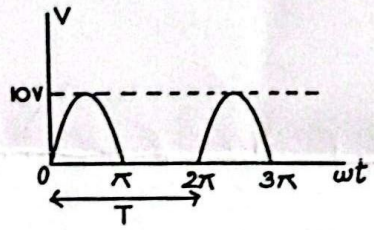

Figure 2

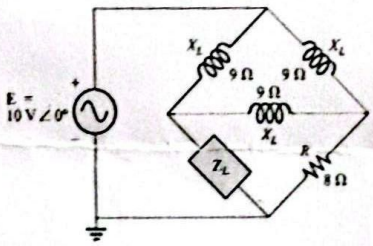

Figure 3

Question 3. In network shown by figure 3, find the load impedance in the network for maximum power to the load and find the maximum power delivered. **[5]**

Question 4. Derive the expression of resonating frequency in series RLC circuit. Write an equation for Bandwidth, Quality factor and half power frequencies. **[2+1+1+1]**

Question 5. A star connected 3-phase load has a resistance of 6 ohm and inductive reactance of 8 ohm in each branch. A line-to-line voltage of 220V is supplied to the 3-phase load through a 3-phase source. Find the voltage across each branch, line currents and total active power. (Write the voltage across each branch and line currents in phasor form). **[2+2+1]**

$V_\phi = ?$
$I_\phi = ?$
$V_L = \sqrt{3} V_\phi$
$I_L = I_\phi$
$P = \sqrt{3} I_\phi V_\phi \cos\theta$