1. In the given circuit find the current through the 4 Ohm resistor. Also Comment - on the unrealistic nature of this circuit.

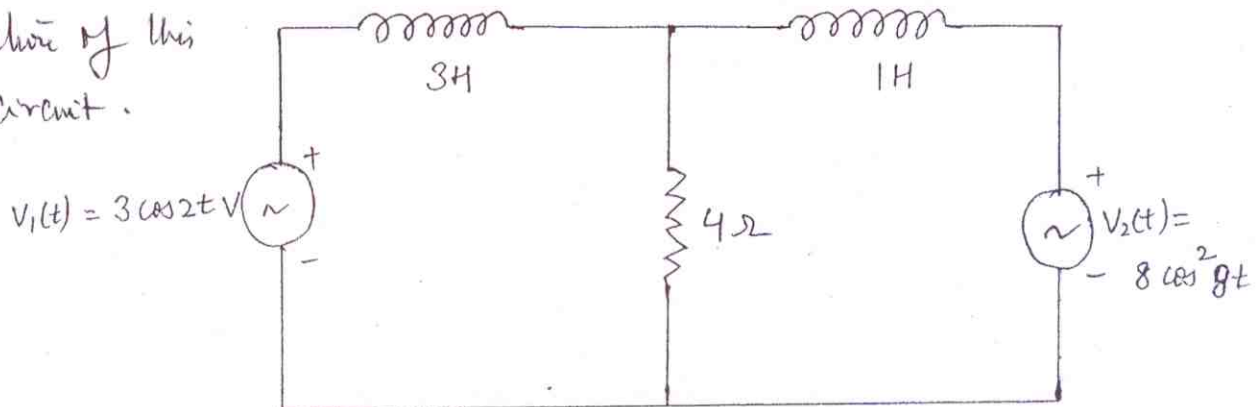$V_1(t) = 3\cos 2t$ V   3H   1H $4\,\Omega$ $V_2(t) = 8\cos^2 8t$

Fig 1

2. Calculate the current I_x using Thevnin's theorem.

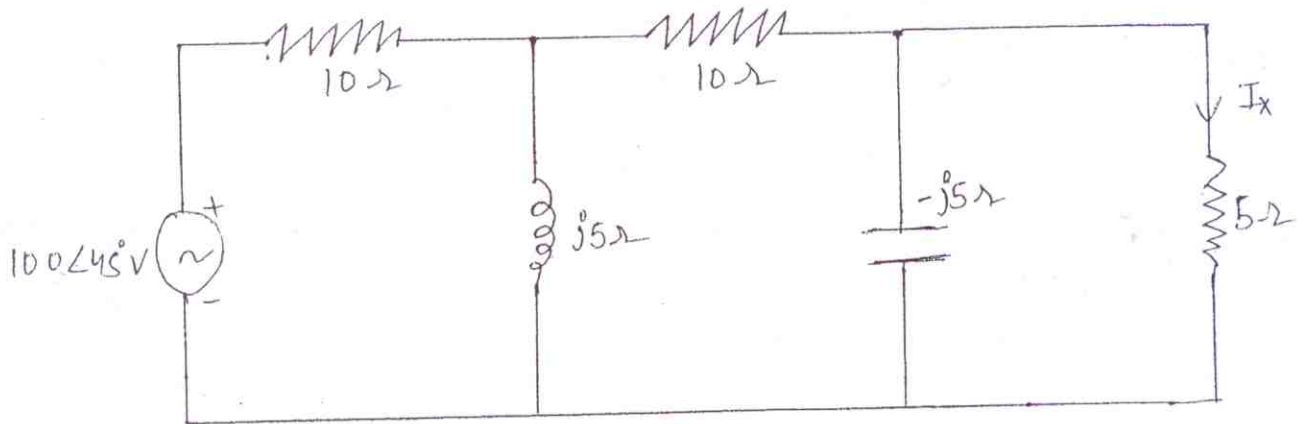$100\angle 45°$ V $10\,\Omega$ $j5\,\Omega$ $10\,\Omega$ $-j5\,\Omega$ I_x $5\,\Omega$

Fig 2

3. Determine the current through the j10 ohm reactance by nodal method, mesh/loop method & Superposition theorem.

$\bar{V}_1 = 100\angle 0°$ V $6\,\Omega$ $j8\,\Omega$ $6\,\Omega$ $-j8\,\Omega$ $j10\,\Omega$ $\bar{V}_2 = 100\angle -60°$
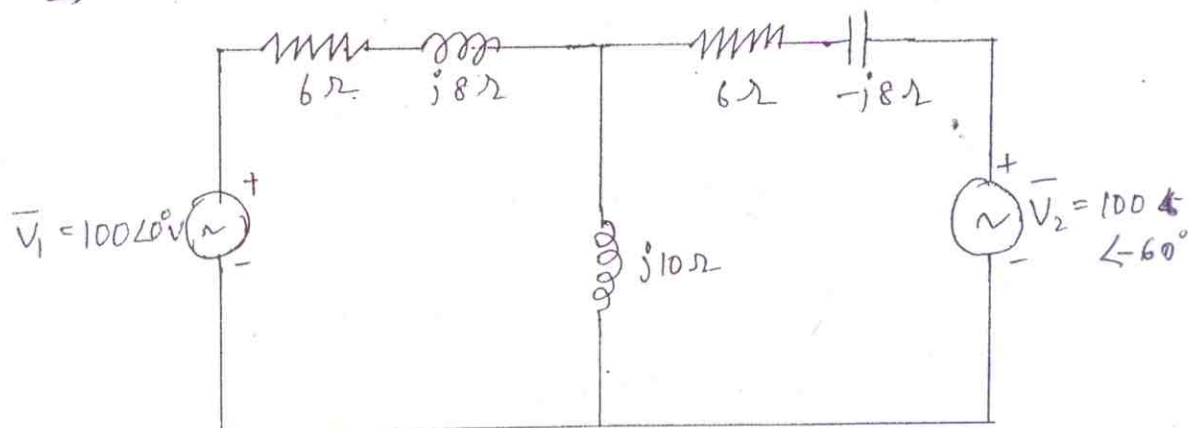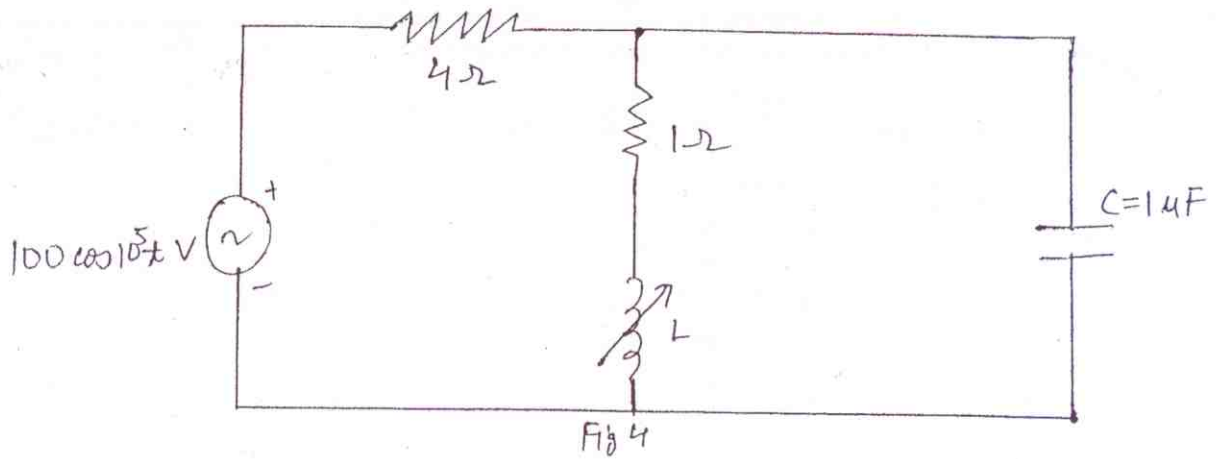
Fig 3

4. (a) Find the value of L for which the steady state voltage across it is maximum.

   (b) For the value of L determined in (b), find the magnitude of phasor voltage across L.

Fig 4

5. In the given circuit, determine the currents i_1 and i_2.

Fig 5