1. Consider the two inductances depicted in fig.1 Set $L_1 = 10mH$, $L_2 = 5mH$, and $M = 1mH$. Determine the steady-state expression for (a) v_1 if $i_1 = 0$ and $i_2 = 5\cos 8t$ A; (b) v_2 if $i_1 = 3\sin 8t$ A and $i_2 = 0$; (c) v_2 if $i_1 = 5\cos(8t - 40°)$ A and $i_2 = 4\sin 8t$ A.

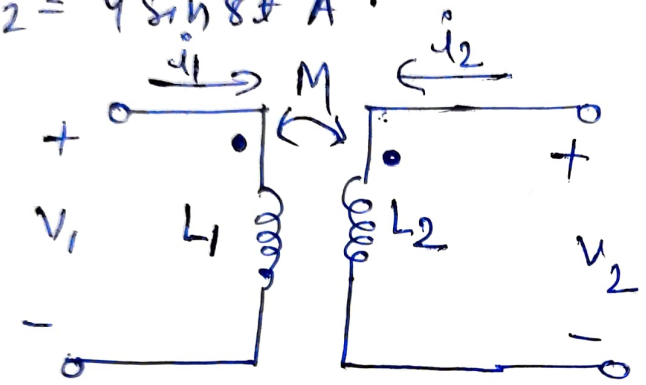

fig 1

2. For the circuit of fig:2 (a) draw the phasor representation; (b) write a complete set of mesh equations; (c) calculate i_2 if $v_1(t) = 8\sin 720t$ V.

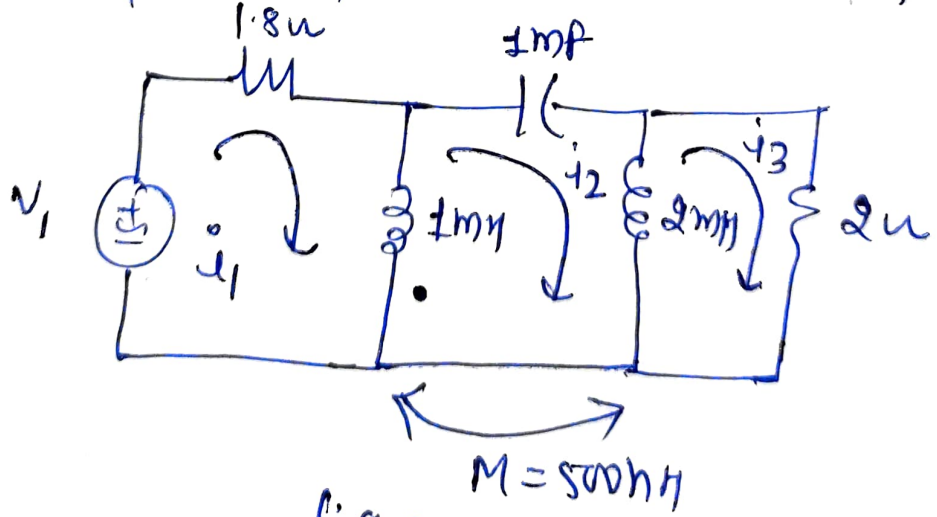

fig 2

3. Note that there is no mutual coupling between the 5H and 6H inductors in the circuit of fig 3
(a) write a set of equations in terms of $I_1(j\omega)$, $I_2(j\omega)$, and $I_3(j\omega)$.
(b) find. $I_3(j\omega)$, if $\omega = 2$ rad/s.

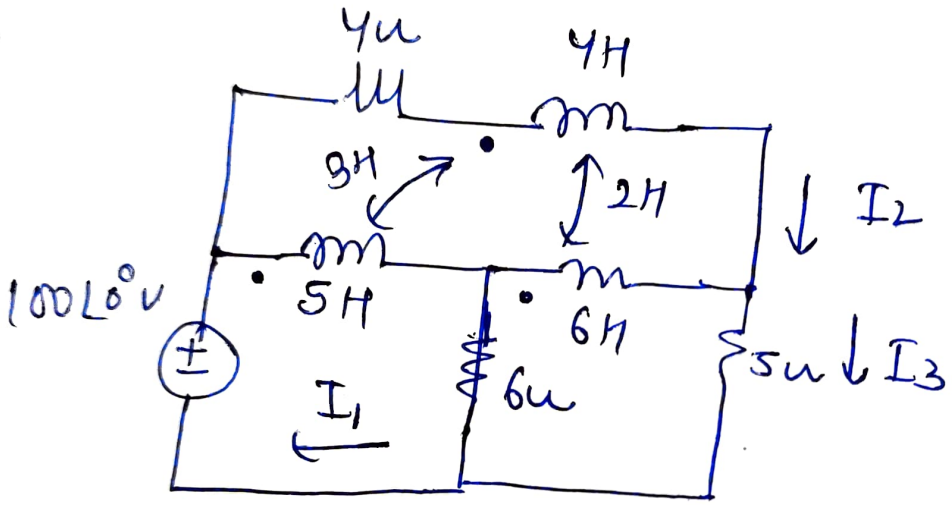

fig:3

4. Assume the following values for the circuit depicted schematically in fig 4.
$R_1 = R_2 = 5\Omega$, $L_1 = 2$ 4H, $L_2 = 1$ 4H and $M = 800$mH.
calculate the input impedance for $\omega = 10^7$ rad/s.
if Z_L is equal to
(a) 1Ω, (b) $j\Omega$ (c) $-j\Omega$ (d) $5\angle 33^\circ\Omega$.

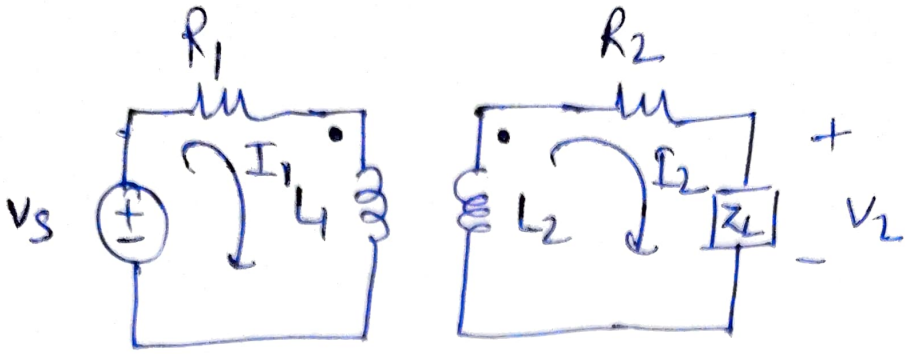

fig 4.

Q-5 (a) for the circuit of fig 5, if $v_s = 8\cos 1000t$ V, Calculate v_o.

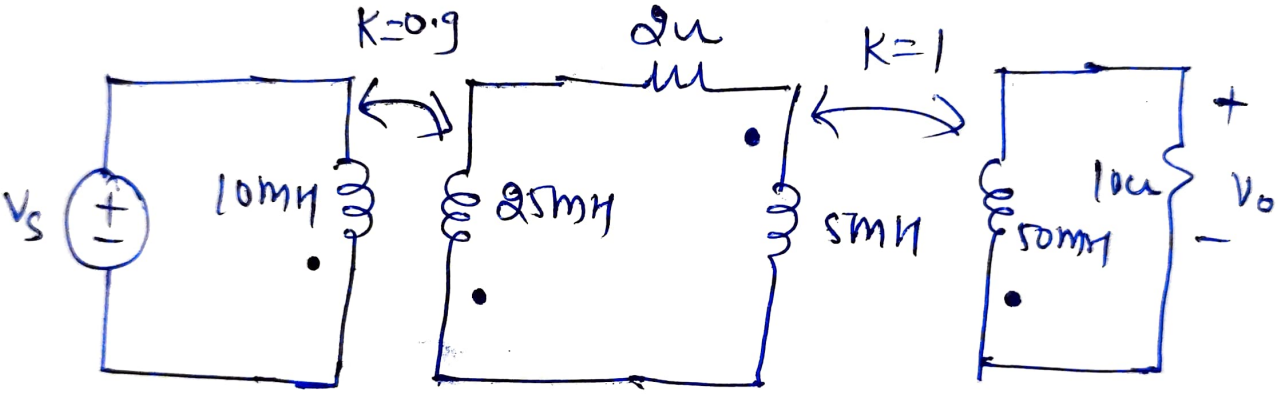

fig 5