*PROB:*
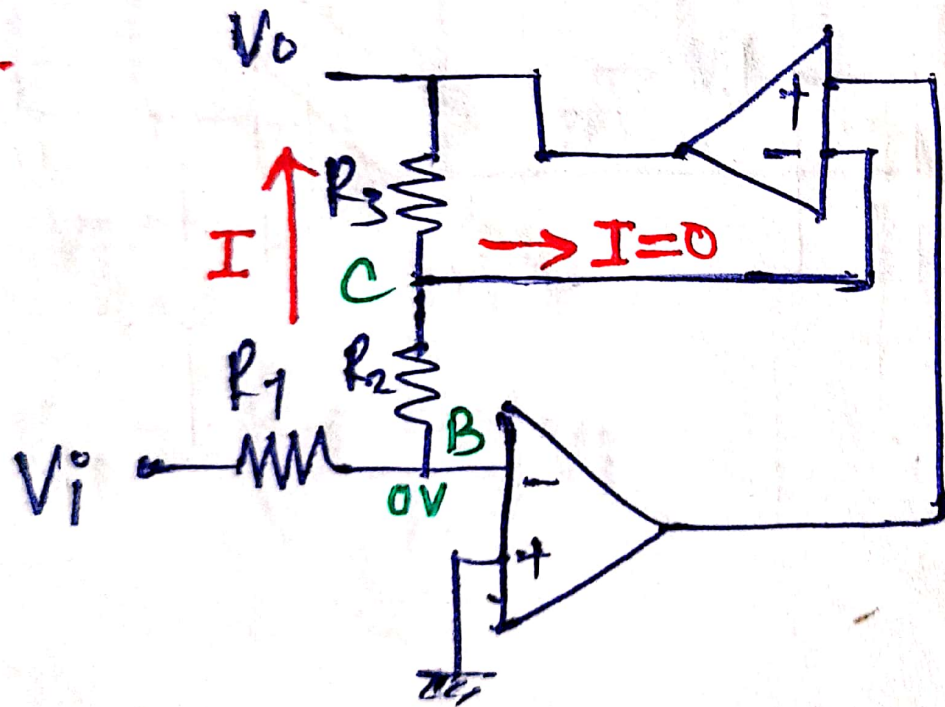


$V_0$

$I$

$R_3$

$\longrightarrow I = 0$

$C$

$R_1$

$R_2$

$B$

$V_i$

$0V$
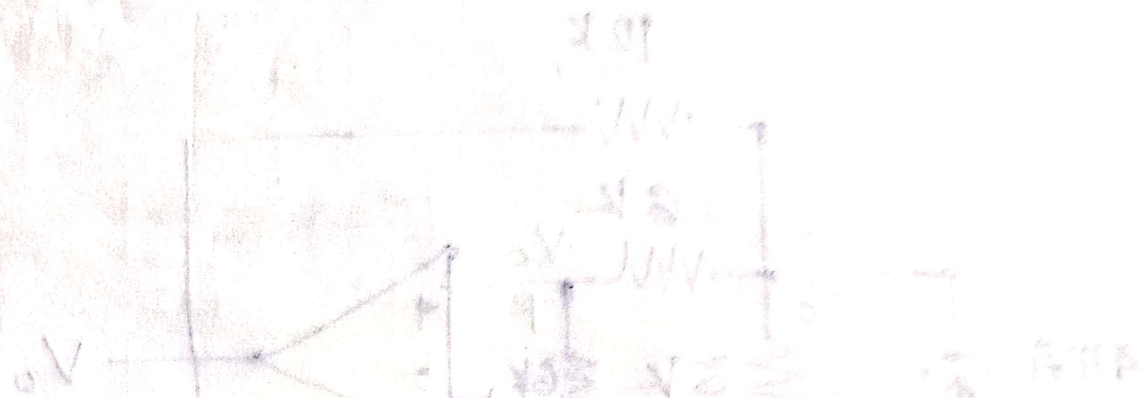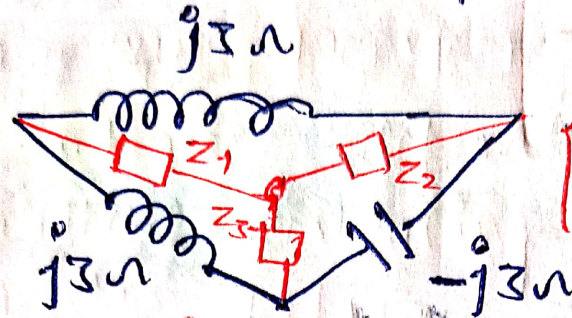
KCL at node B —

$$\frac{0-V_i}{R_1} + \frac{0-V_0}{R_2+R_3} = 0$$

$$V_0 = -\left(\frac{R_2+R_3}{R_1}\right) V_i$$

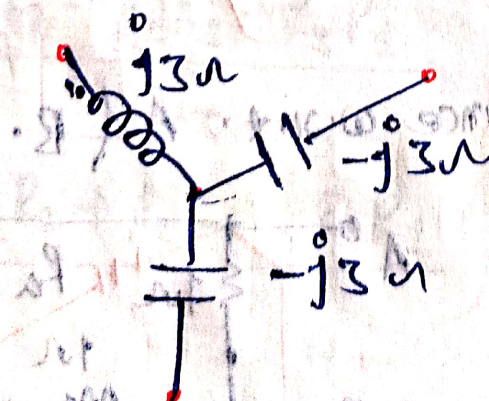Obtain eq. Star connection of N/w shown :-



$jX_L \Rightarrow$ inductance
$-jX_C \Rightarrow$ capacitance

$$Z_1 = \frac{(j3\Omega)(j3\Omega)}{j3\Omega + j3\Omega - j3\Omega} = j3\Omega \text{ (inductor)}$$

$$Z_2 = \frac{(j3\Omega)(-j3\Omega)}{j3\Omega + j3\Omega - j3\Omega} = -j3\Omega \text{ (capacitor)}$$

$$Z_3 = \frac{(j3\Omega)(-j3\Omega)}{j3\Omega + j3\Omega - j3\Omega} = -j3\Omega \text{ (capacitor)}$$

Equivalent Circuit —

## SOL(2):



Circuit: input $V_i$ through resistor $R$, with a diode and $2V$ source, output $V_o$.

$V_i$ waveform: sinusoid with peaks at $4V$ and $-4V$.

$V_o$ waveform: clipped sine, peaks at $4V$, baseline at $2V$.

Transfer characteristic: $V_o$ vs $V_i$, with $2V$ marked on both axes.