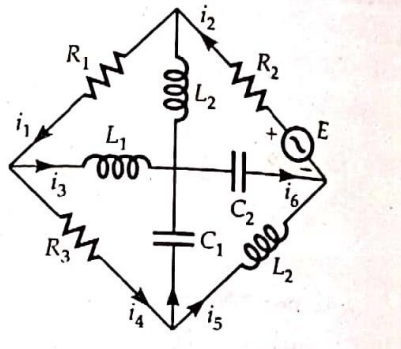


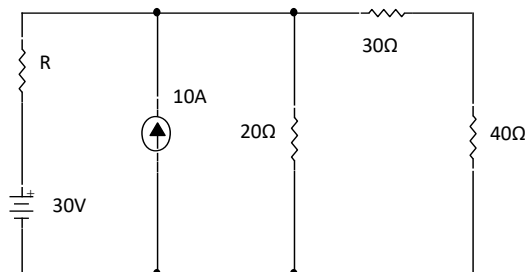


4. A network is shown in the figure below draw the directed graph, tree and show the loops

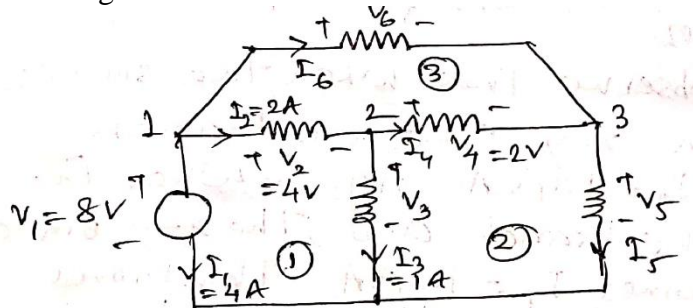


Or

In the following circuit, find the value of the unknown resistance,  $R$ , so that maximum power will be transferred to load. Also find maximum power.

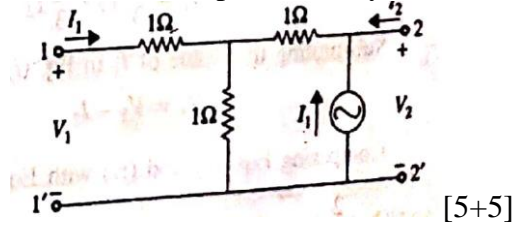


5. Check the validity of Tellegen theorem for below network



**GROUP –C**Answer *any two* of the following $2 \times 10 = 20$ 

6. a) A coil of resistance  $30\ \Omega$  and inductance  $320\text{ mH}$  is connected in parallel to a circuit consisting of  $75\ \Omega$  in series with  $150\ \mu\text{F}$  capacitor. The circuit is connected to a  $200\text{ volt}$ ,  $50\text{ Hz}$  supply. Determine supply current and circuit power factor.  
 b) Determine  $Z$  and transmission parameters of the network which is shown in below figure also show the network is neither reciprocal nor symmetric.



7. a) State and derive the mathematical expression of Parseval's theorem.  
 b) Find the convolution of

$$x = \{2 \quad -1 \quad 1 \quad 3\}, \quad h(n) = \{3 \quad 4 \quad 2\}$$

↑

[6+4]

8. a) Design a  $2^{\text{nd}}$  order Butterworth low pass filter with cut off frequency  $1\text{ kHz}$ .  
 b) Find out the fourier transform of  
 i)  $\delta(t)$   
 ii) Triangular signal  $\Delta(t/\tau)$

[5+2+3]