

Code: EE2T5

I B.Tech - II Semester – Regular Examinations – JULY 2015

ELECTRICAL CIRCUIT ANALYSIS - I
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks

11x 2 = 22 M

1. a) Define i) Ohm's Law ii) Kirchhoff's Laws
- b) Find the direction and magnitude of current in the ammeter of resistance 10Ω for the circuit shown in Figure-1.

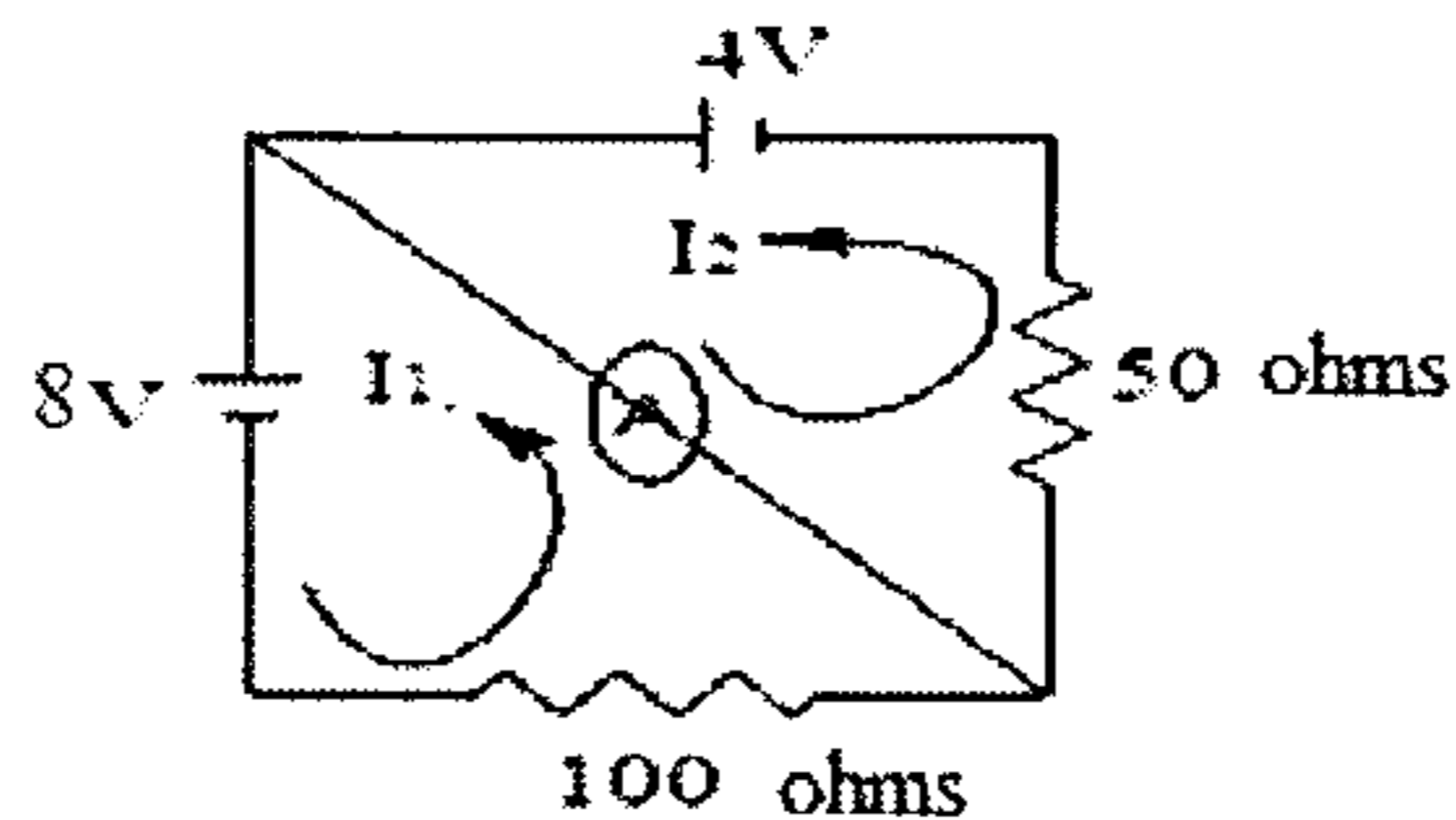


Figure-1

- c) Using Mesh Analysis for the given circuit in Figure-2, write KVL equations.

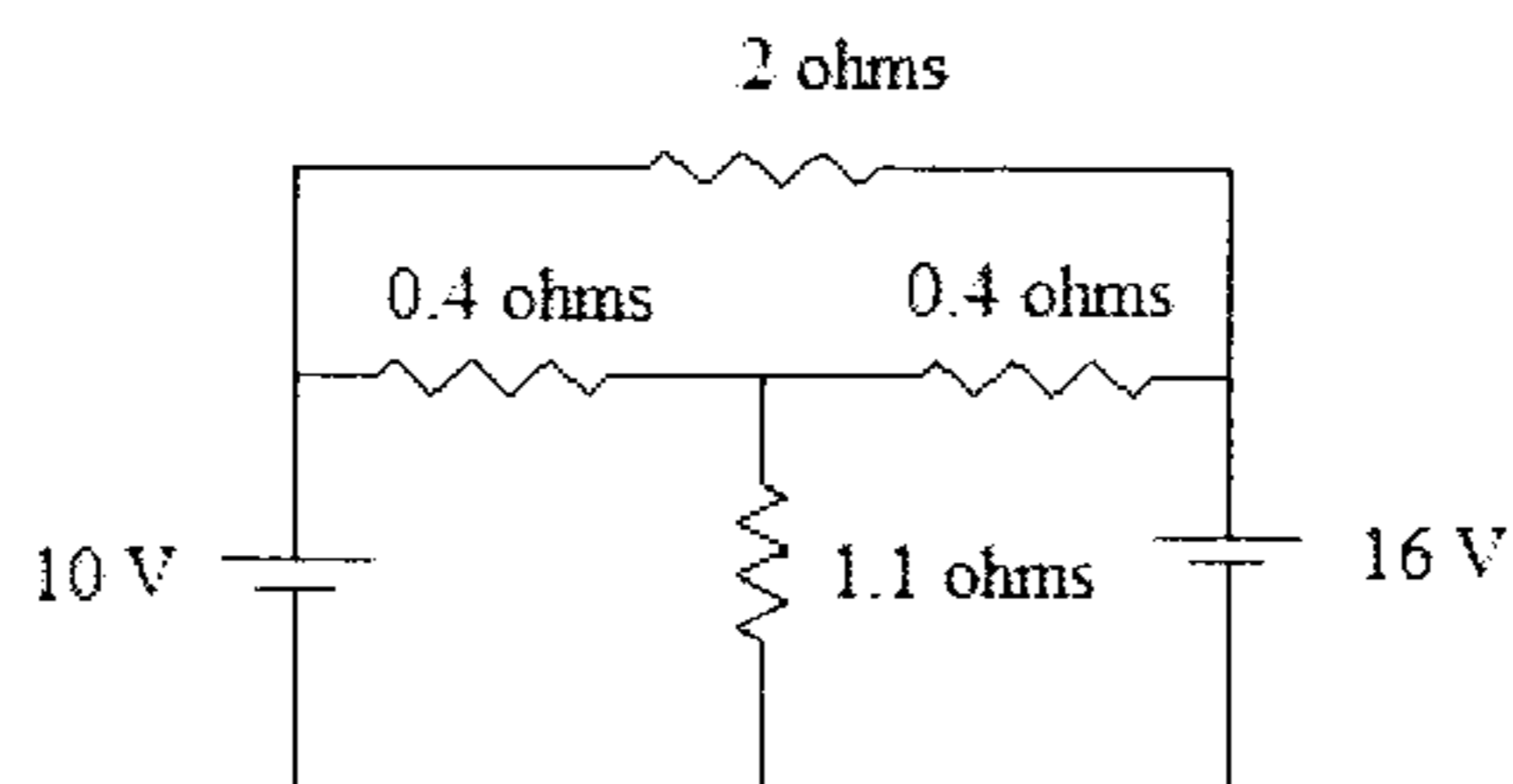
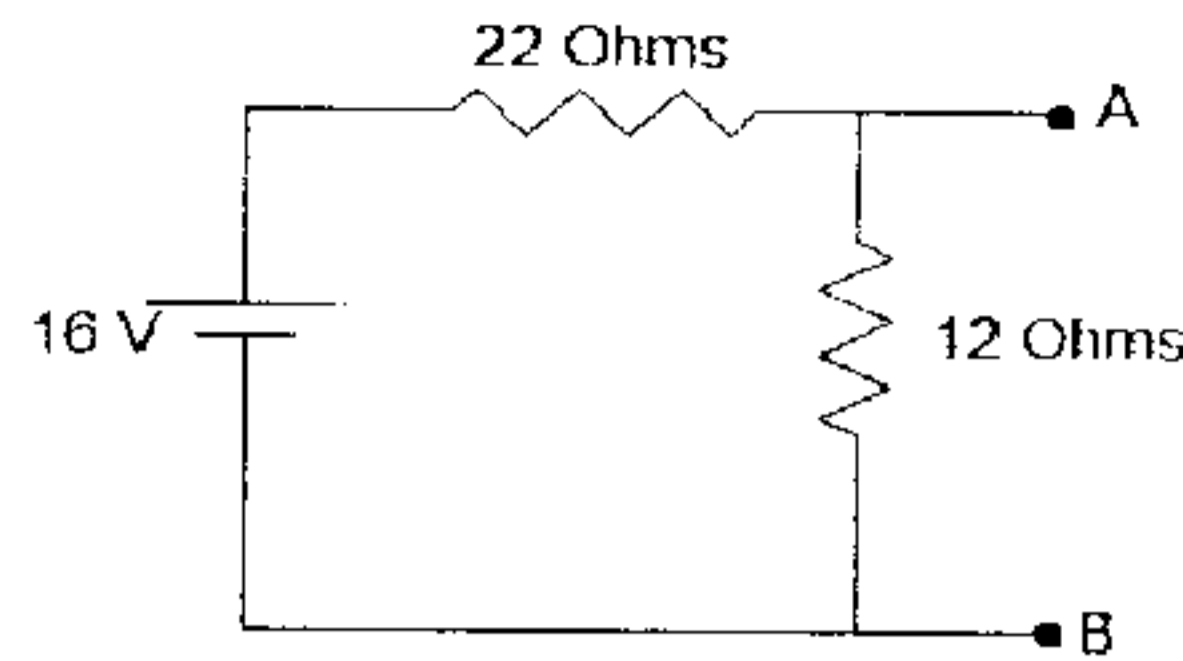


Figure-2

d) Convert the given circuit by using Source Transformation.



e) Define i) Power Factor ii) Form Factor.

f) If $A=10+12i$, $B = 2+16i$, Then find

i) $A*B$, ii) A/B , iii) $(A+B)*(A-B)$.

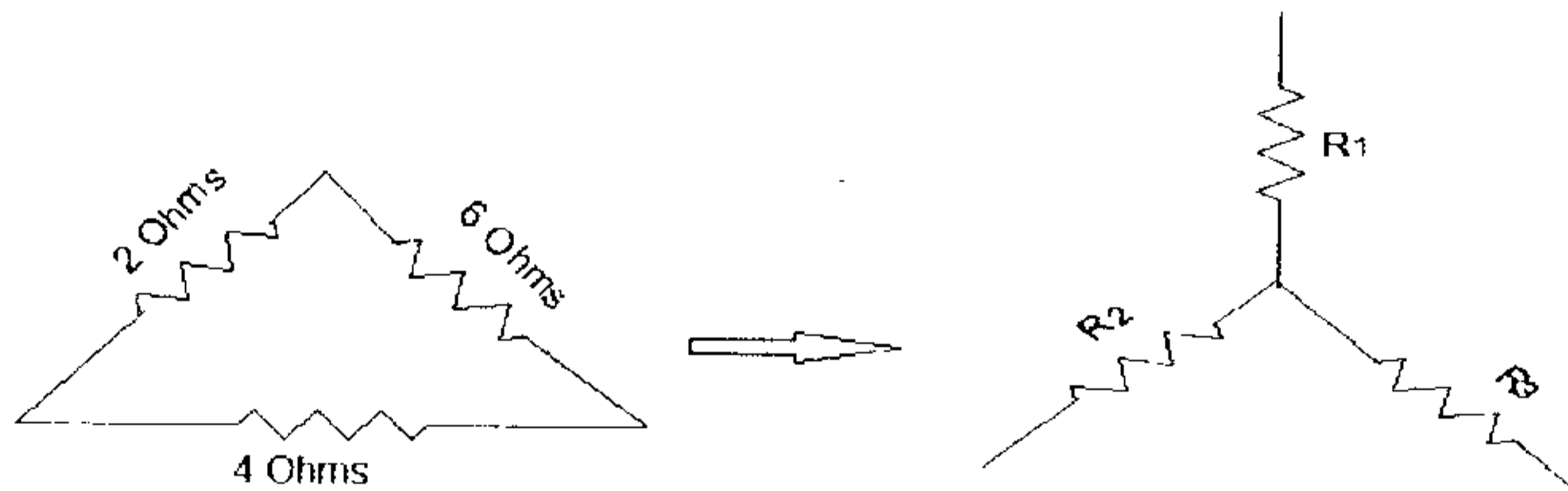
g) Give the relation between line and phase voltages, line and phase currents in Delta connected Unbalanced 3 –phase system.

h) Define resonance frequency, Band width.

i) Explain super node analysis.

j) Draw the vector diagram for R-L-C series network, When $V=V_m \sin \omega t$.

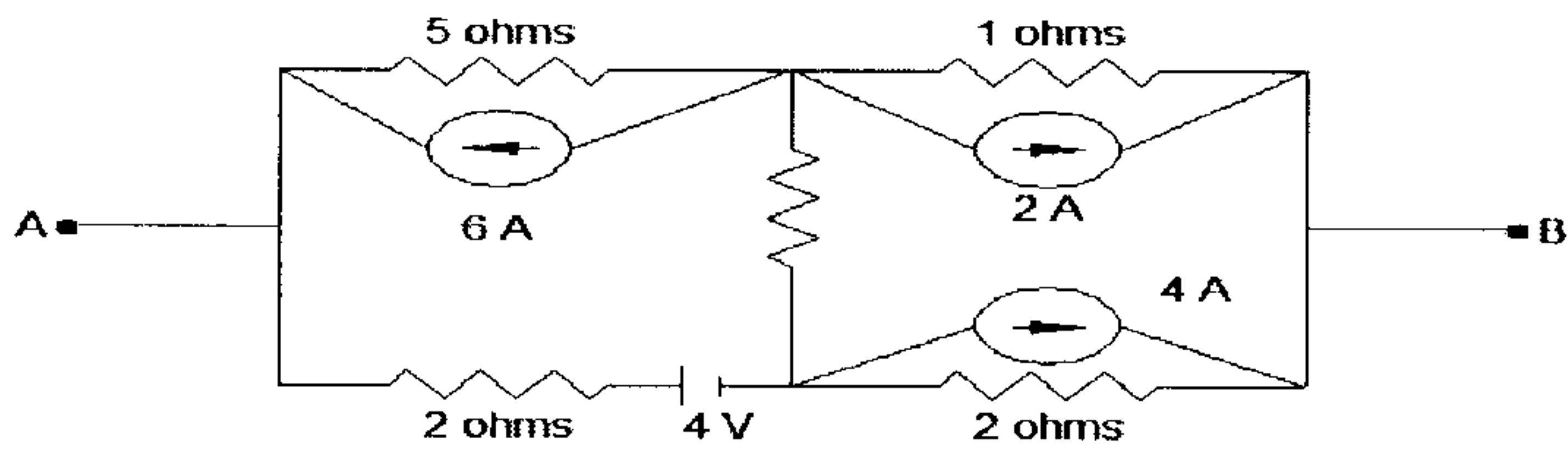
k) Find its equivalent resistance for the given circuit diagram.



PART – B

Answer any **THREE** questions. All questions carry equal marks. 3 x 16= 48 M

2. a) Simplify the given network using successive source transformation. 8 M



b) Find the currents in the various elements of the circuit in the figure. Find the potential difference between Q and S as shown in Figure-3. 8 M

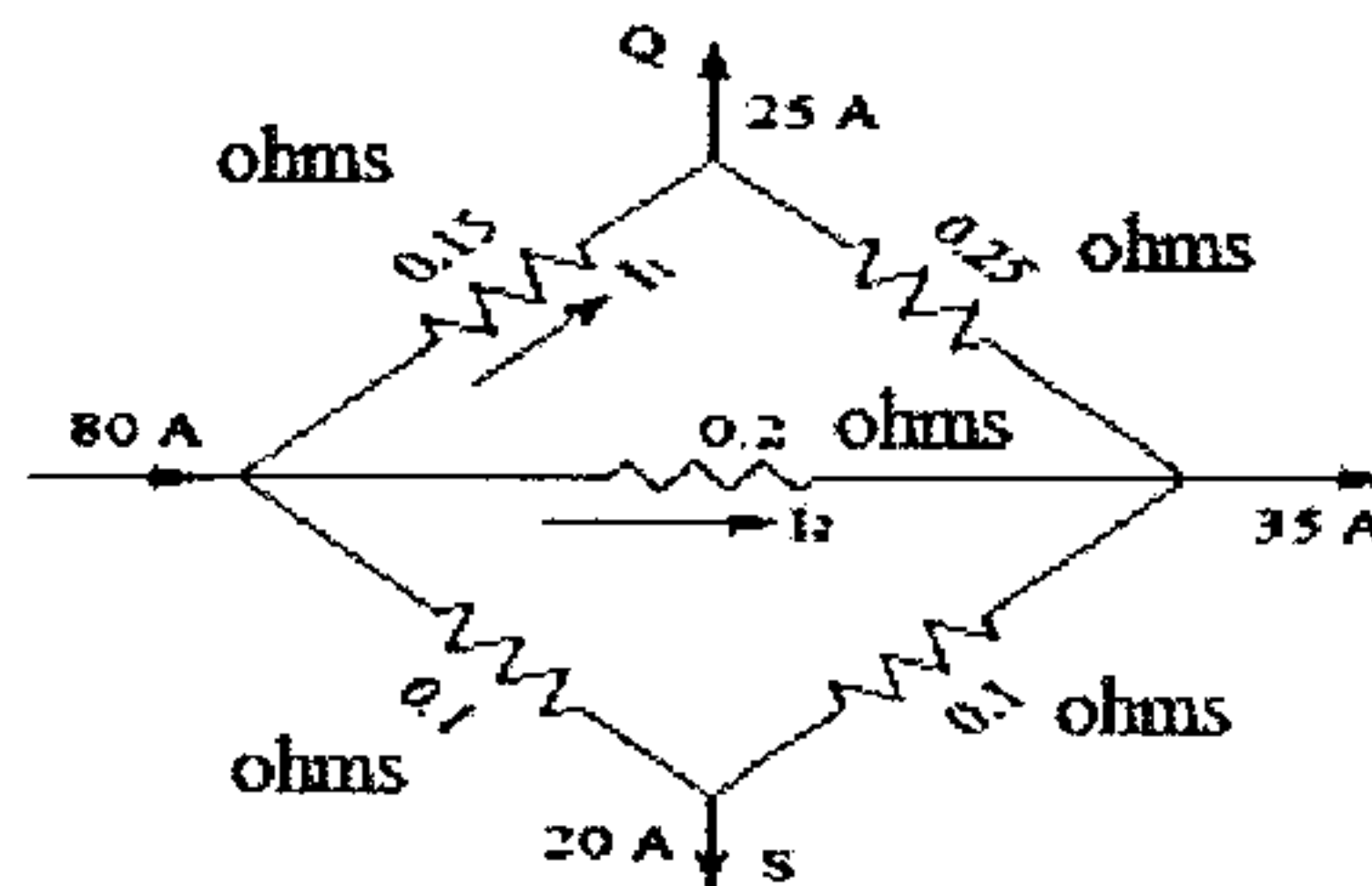


Figure-3

3) Determine power at 8Ω by using nodal analysis for Figure- 4. 16M

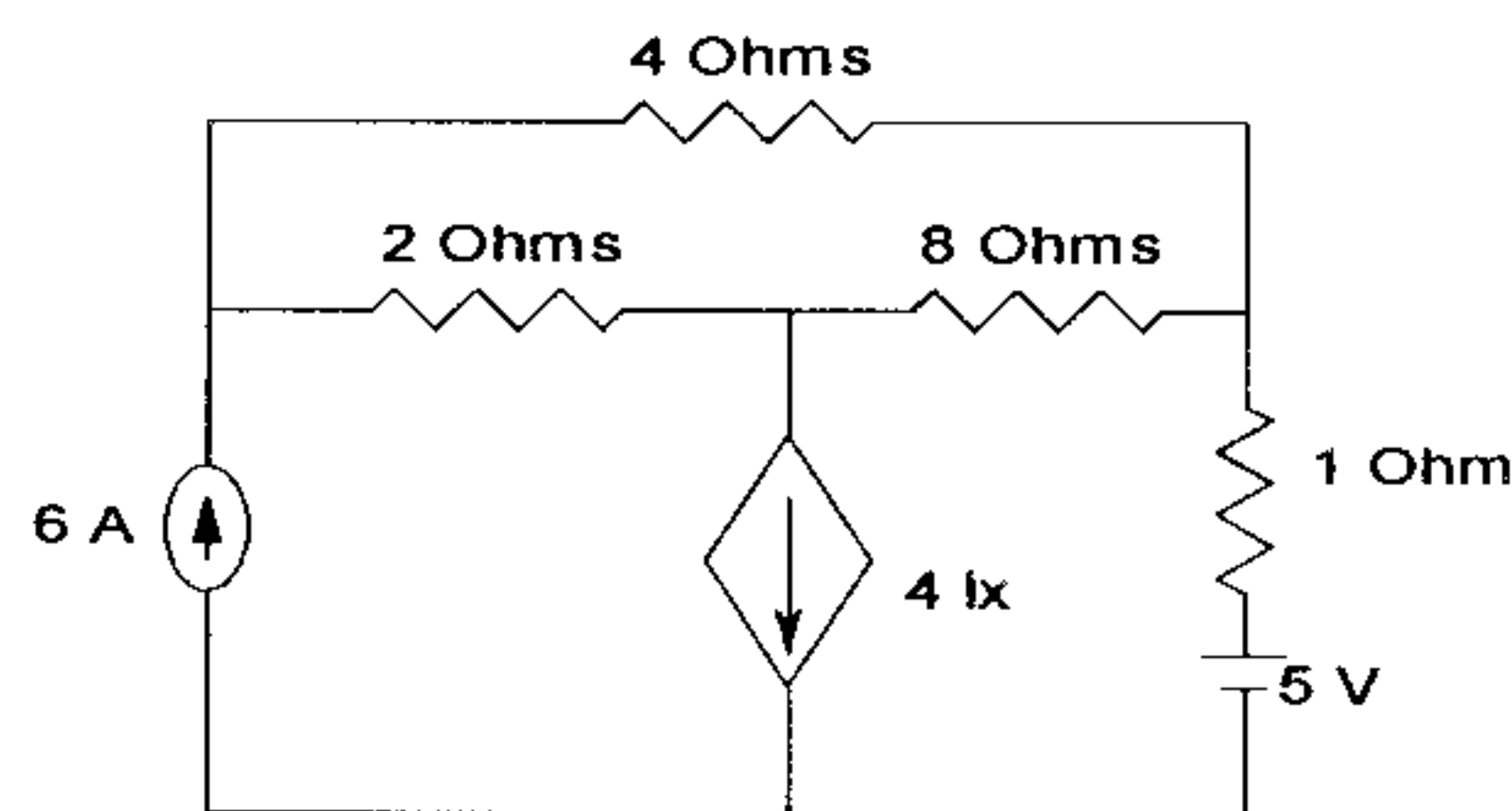
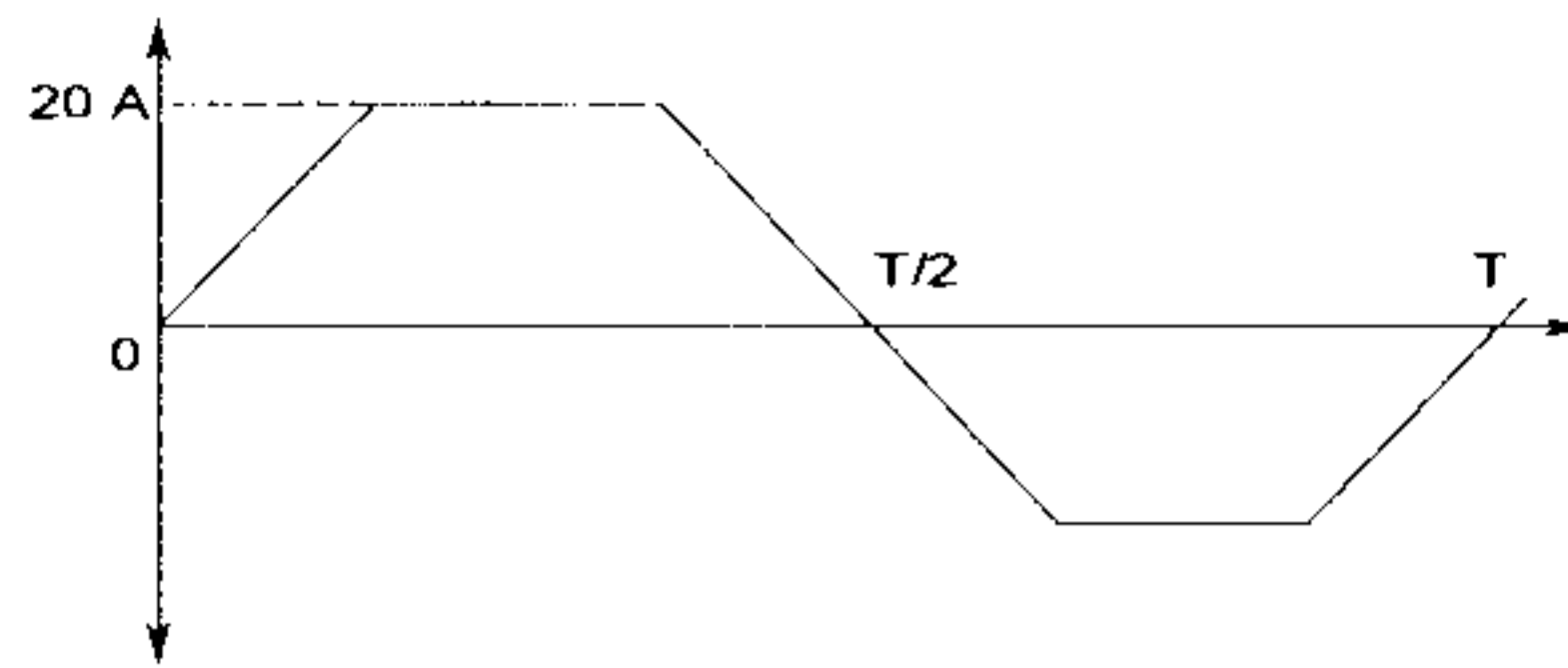


Figure-4

4) a) Find RMS and Average value of following wave form.

8 M



b) A series RLC circuit has $R=25$ ohms, $L=0.221$ H and $C=66.3$ μ F and is supplied at 150 volts, 60HZ Find
i) Equivalent impedance ii) power factor
iii) current iv) reactive power .

8 M

5. a) Derive the relationship between line and phase voltage, currents in a three phase Balanced, Delta connected system.

8 M

b) A balanced star connected load of $8+i6$ Ω is connected to a 3-phase, 230 V supply. Find the line currents, phase currents, power factor, active power, reactive power and total Volt Amperes.

8 M

6) a) Measure the three phase power using two wattmeter method for a delta connected system.

8 M

b) Two wattmeter's produce Readings $W_1=1560$ W, $W_2=2100$ W when connected to a delta-connected load. If the line voltage is 220V, calculate
i) per-phase Active power ii) Per-Phase Reactive power
iii) Power Factor

8 M