

Code: EMIT4

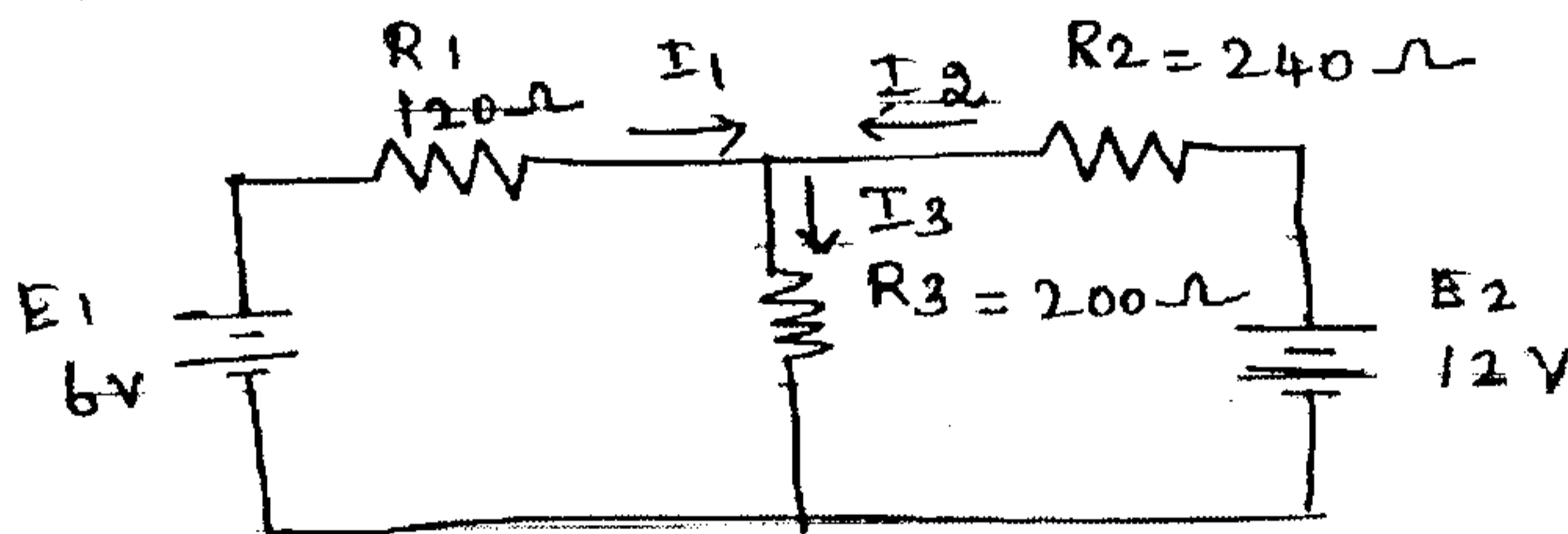
I B.Tech-I Semester – Regular Examinations-February 2014**NETWORK THEORY
(FOR ELECTRONICS AND COMPUTER ENGINEERING)**

Duration: 3 hours

Marks: $5 \times 14 = 70$

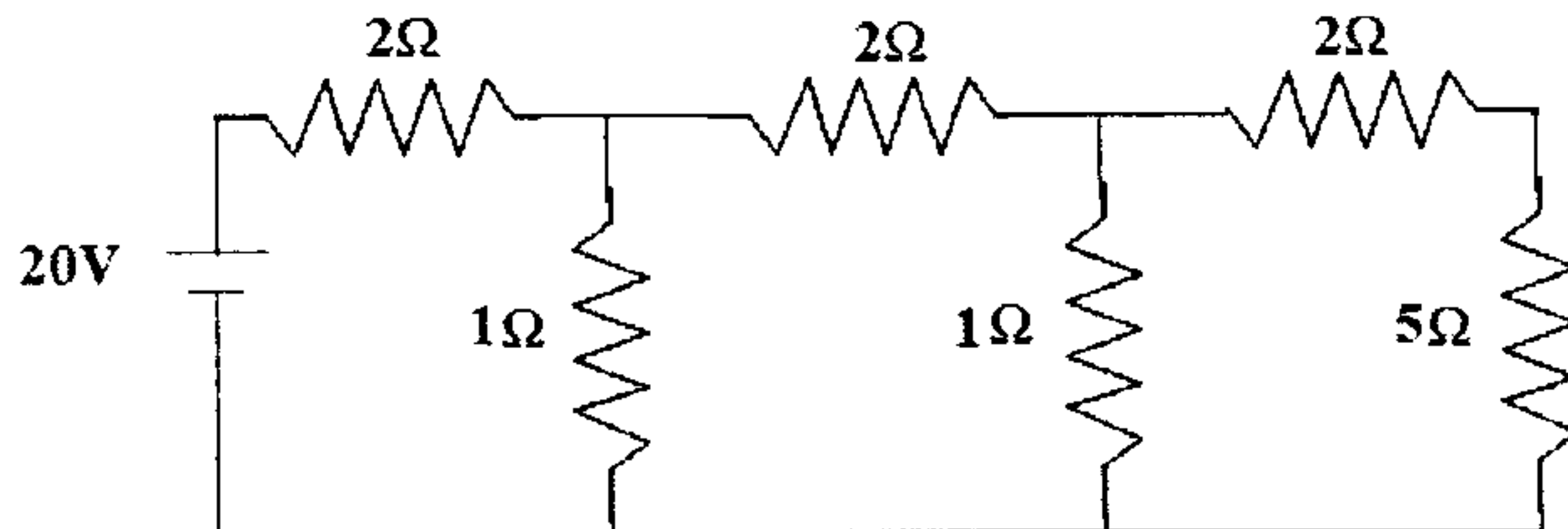
Answer any FIVE questions. All questions carry equal marks

- 1 a) Explain about the terms Linear network, passive network, lumped Network, bilateral network, Independent and dependent sources . 7 M
- b) Determine I_1 , I_2 and I_3 in the network shown in Fig below using Kirchoff's law . 7 M

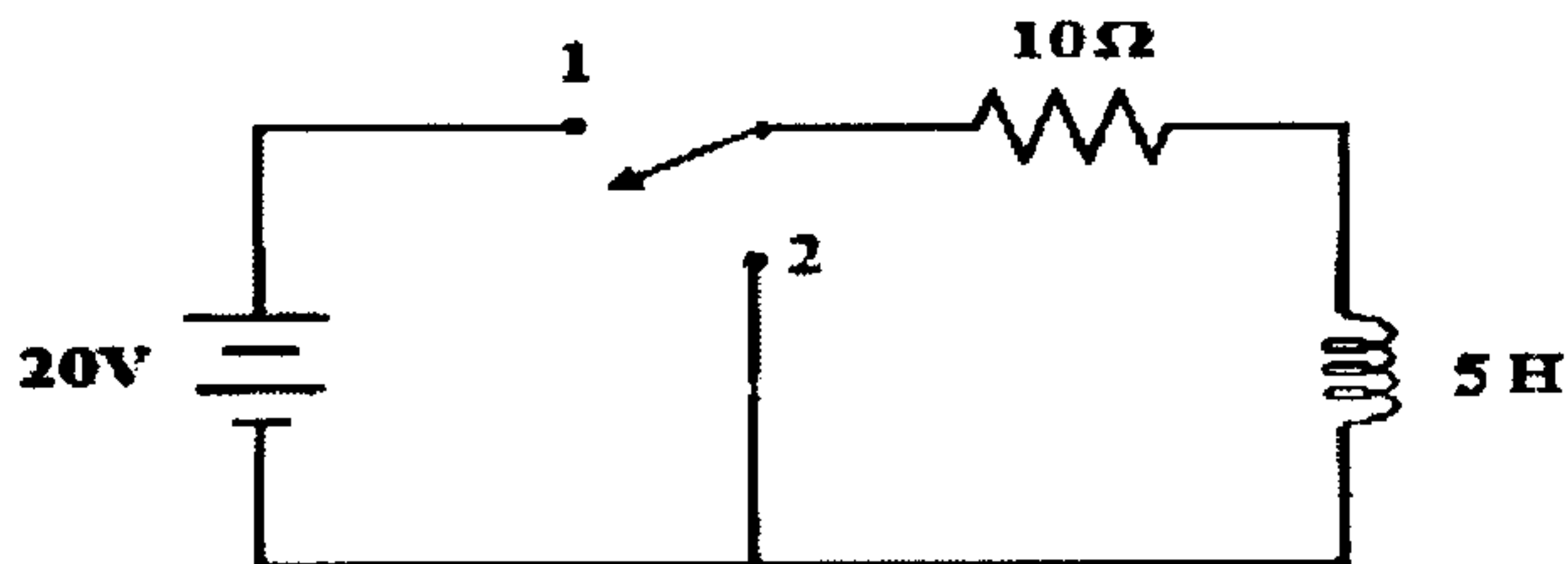


- 2 a) State and explain superposition theorem with an example. 7 M

- b) Determine the maximum power that can be transmitted to the load of 5Ω . 7 M



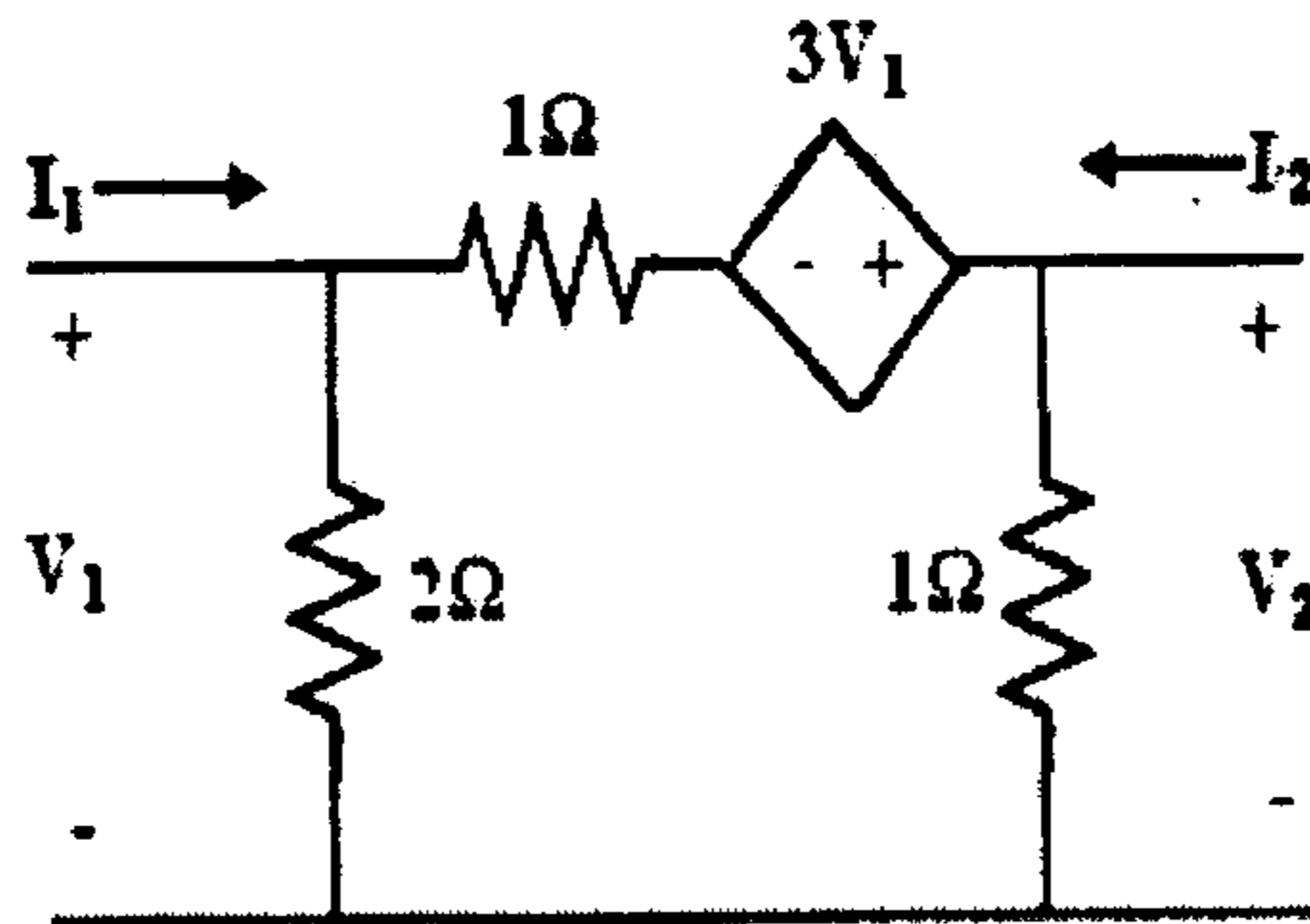
- 3 a) In the network shown below, the switch is in open position 1 for a long time and then moved to position 2 at $t=0$. Find the transient current $i(t)$ 7 M



- b) A series RLC circuit with $R=20$ Ohms, $L=0.1$ Henries and $C=0.25$ Farads has a constant voltage of 10 Volts applied at time $t=0$. Determine the transient current $i(t)$. Assume zero initial conditions. 7 M
- 4 a) Explain about the additions and subtraction of two phasors with an example. 7 M
- b) Find the RMS value, form factor of a triangular wave having a maximum value of 10 V. 7 M

- 5 a) Voltage across the capacitor cannot change instantaneously Justify. 7 M
- b) Derive the expression for $i(t)$ for R-L series when excited by a sinusoidal source. 7 M
- 6 a) What is the difference between self inductance and mutual inductance. Explain the concept of Dot Convention by means of an example. 7 M
- b) A wooden ring has mean diameter of 150 mm and a cross sectional area of 250 mm^2 . It is wound with 1500 turns of insulated wire. A second coil of 900 turns is wound on the top of the first. Assuming that all flux produced by the first coil links with the second, calculate the mutual inductance and the coefficient of coupling. 7 M
- 7 a) Define resonance. Derive the expression for resonant frequency in parallel RLC circuits. 7 M
- b) A coil of resistance 40 ohm and inductance 0.75 H form part of a series circuit for which the resonant frequency is 55 Hz. If the supply is 250V,40 Hz, find the line current, power factor and voltage across the coil. 7 M

8 a) Obtain Y-parameters of the network shown below 7 M



b) Explain cascading of two port networks with appropriate equations. 7 M