

Code: EM1T4

I B.Tech-I Semester-Regular Examinations-February 2013

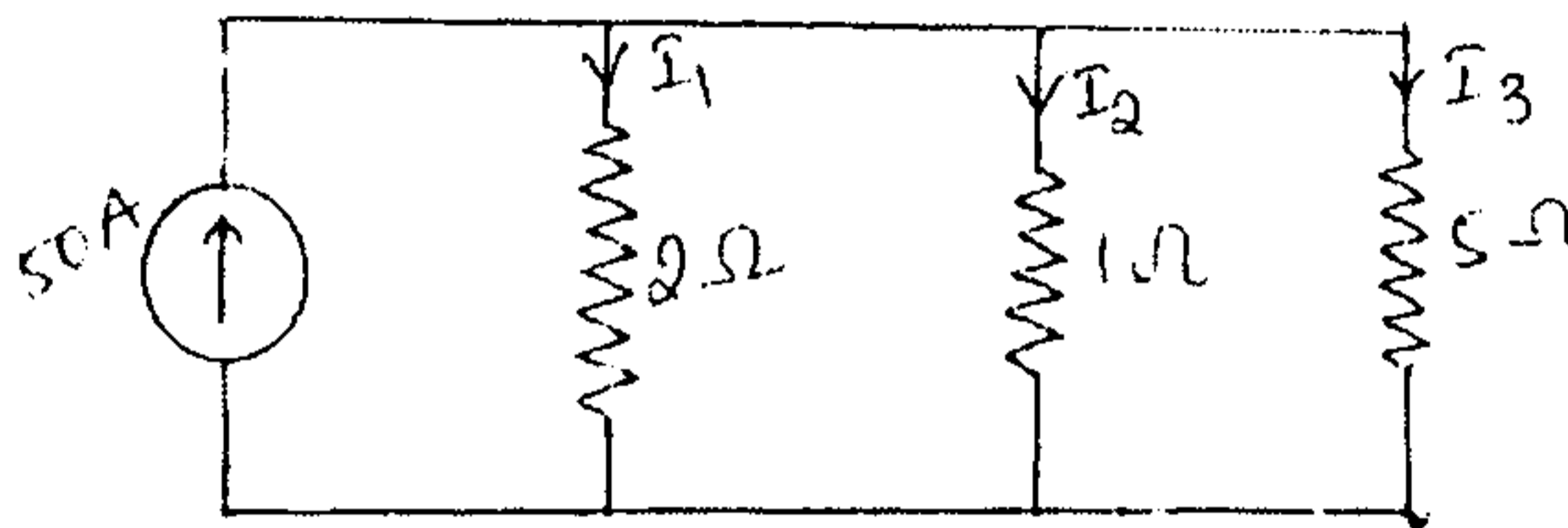
NETWORK THEORY
(For Electronics and Computer Engineering)

Duration: 3Hours

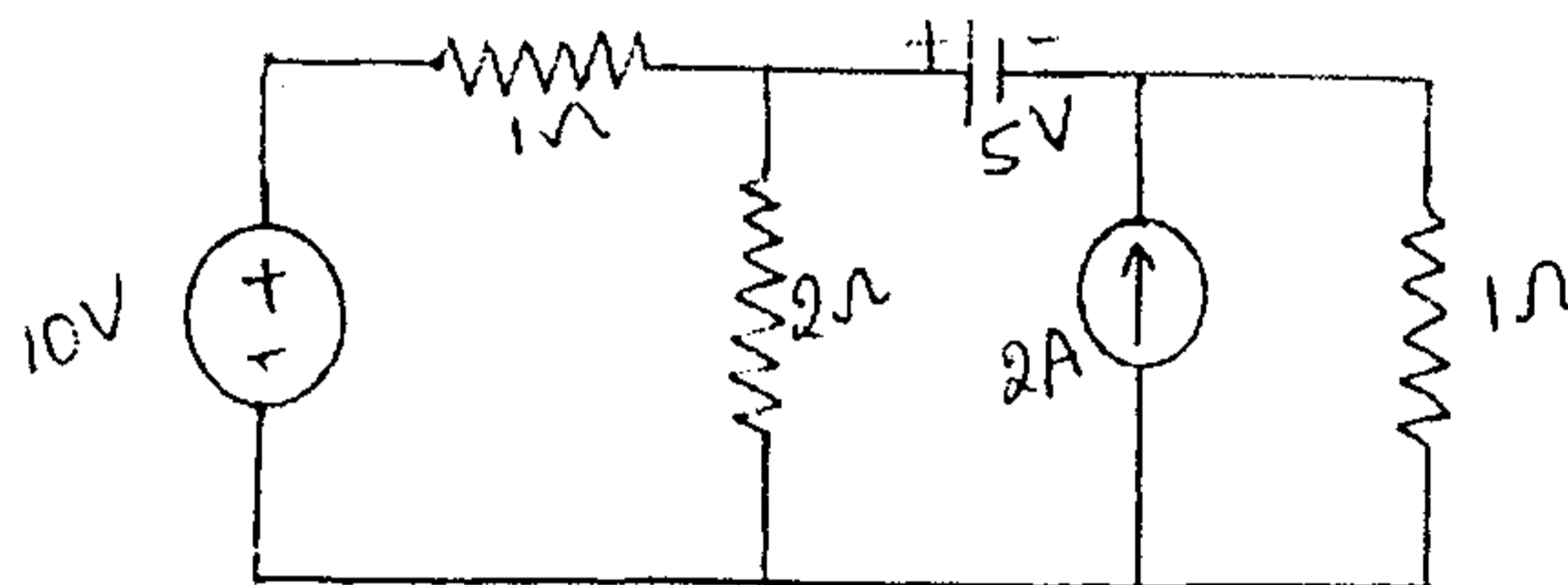
Marks: $5 \times 14 = 70$

Answer any FIVE questions. All questions carry equal marks

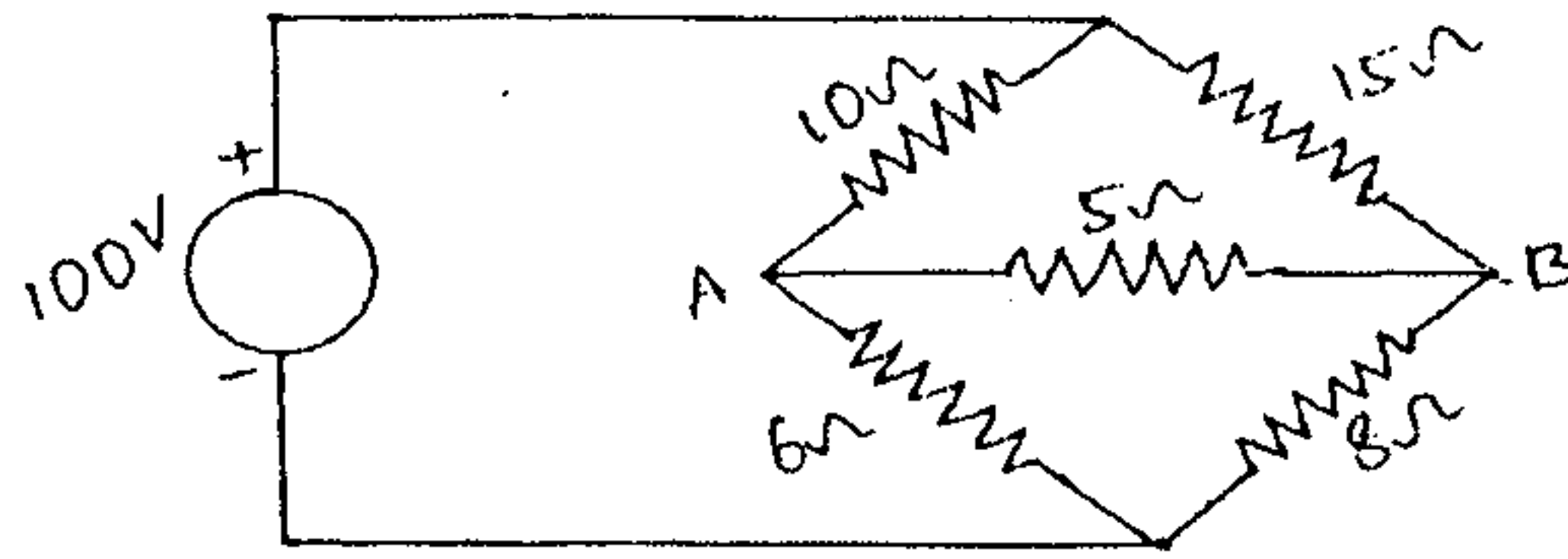
1. (a) Determine the current in all resistors in circuit shown below by using mesh analysis. [7M]



- (b) Find the power delivered by 5V source using nodal analysis. [7M]



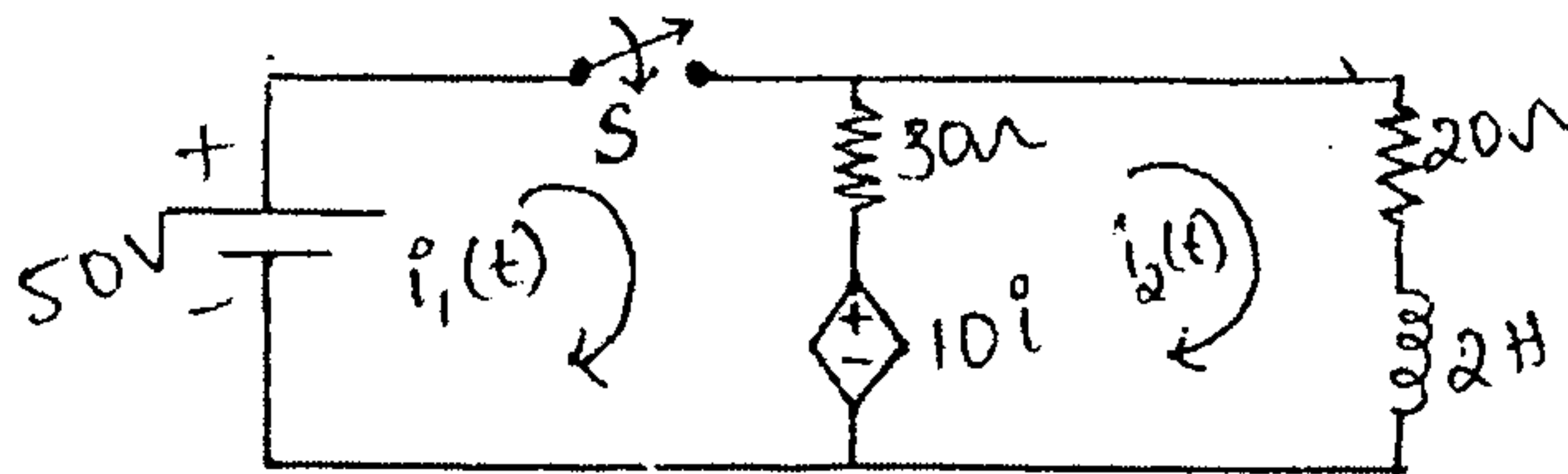
- 2.(a) Find the current through the 5Ω resistor using Thevenin's theorem. [7M]



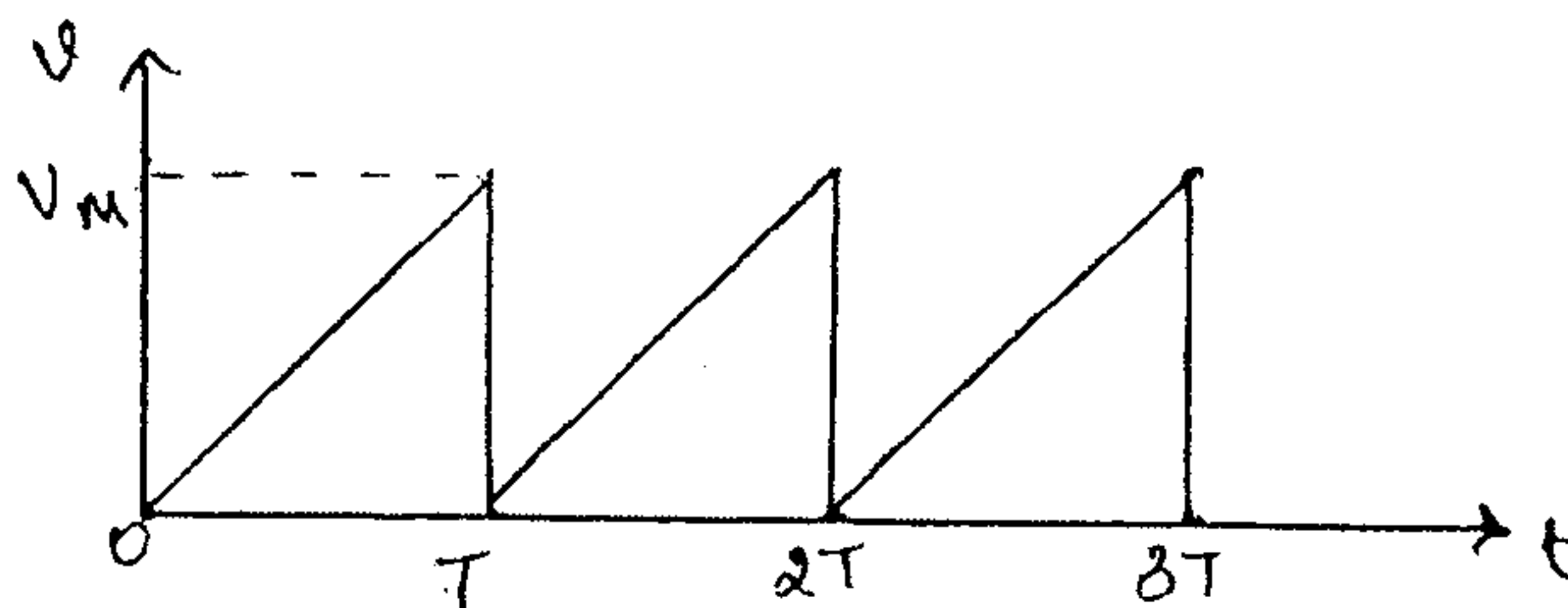
(b) State and derive the equation for the maximum power transfer theorem. [7M]

3. (a) Analyze the series R-C circuit for a DC Supply and derive the expressions. [7M]

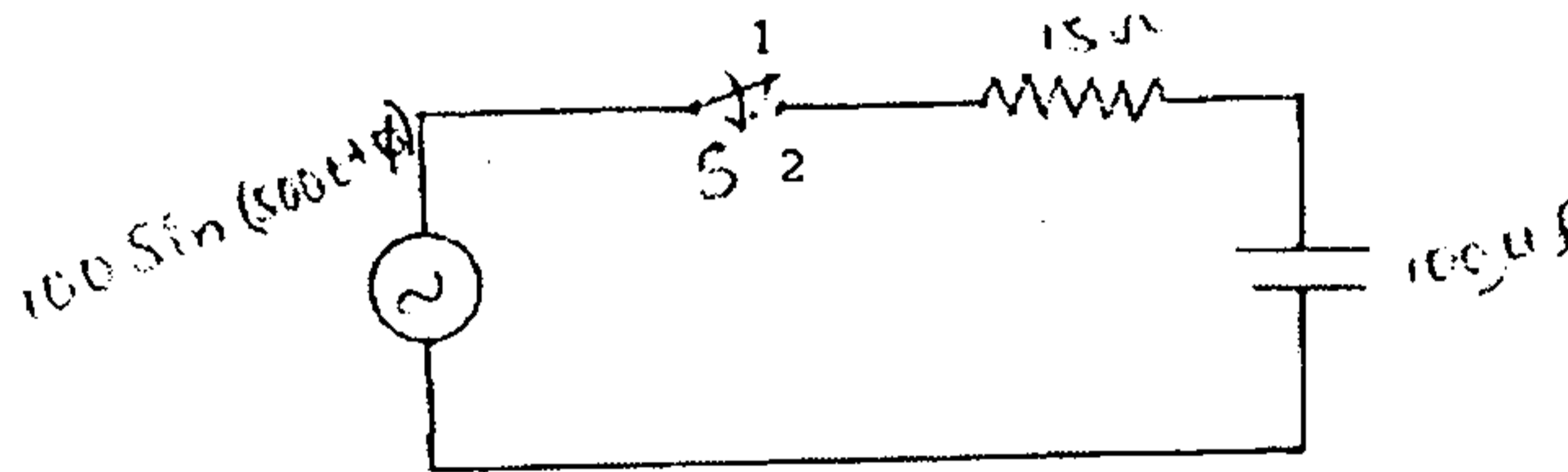
(b) For the circuit shown find the current in the 20Ω resistor when the switch is opened at $t=0$. [7M]



4. For the given waveform obtain V_{rms} , V_{dc} , peak factor, form factor. [7M]

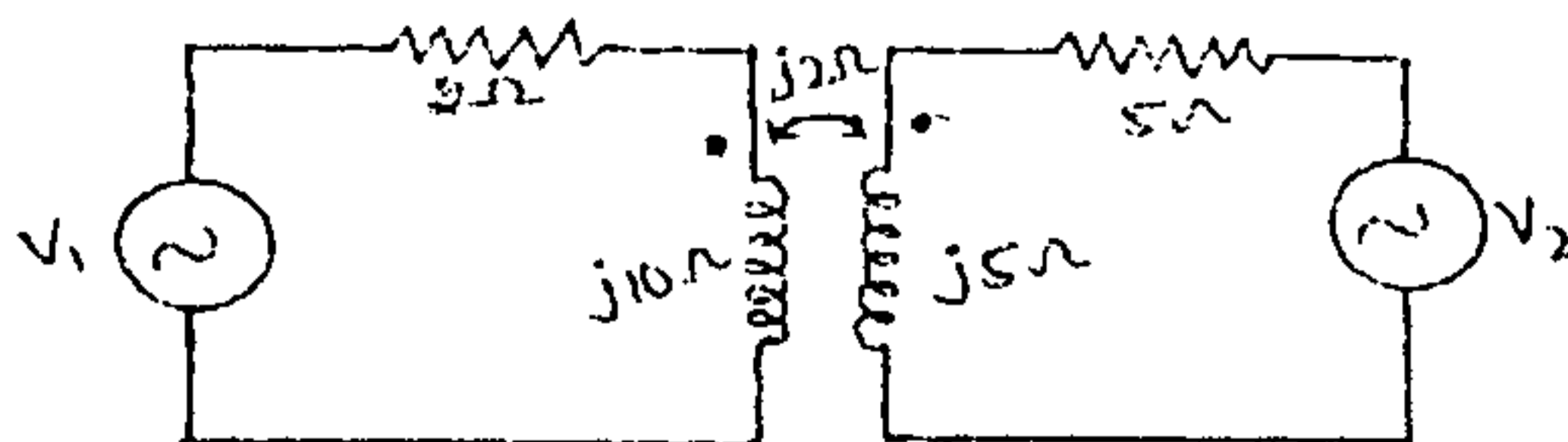


5. (a) The circuit shown in fig. consists of a series RC elements $R=15\Omega$ and $C=100\mu\text{F}$. A sinusoidal voltage is $V=100\sin(500t+\phi)$ volts is applied to the circuit at time corresponding $\phi = 45^\circ$. Obtain the current transient. [7M]



- (b) For circuit shown above, obtain the current equation when switch is changed from position 1 to Position 2 at $t=0$. [7M]

6. (a) Explain self inductance, mutual inductance and coefficient of coupling with neat diagram. [7M]
- (b) For complex circuit find the voltage ratio V_2/V_1 which results in zero current I_1 . [7M]

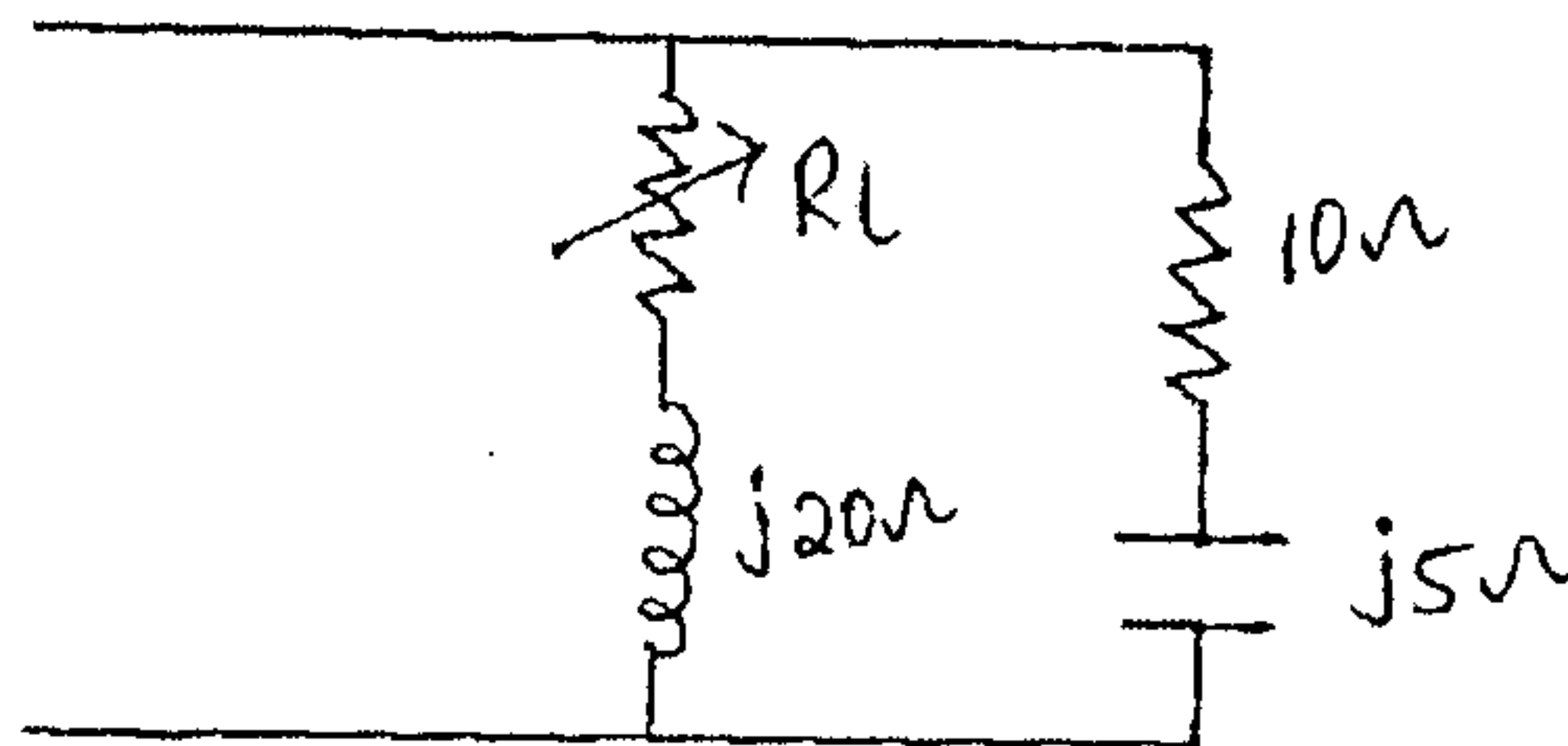


7(a) Derive the resonant frequency for parallel LC-RC circuit.

[7M]

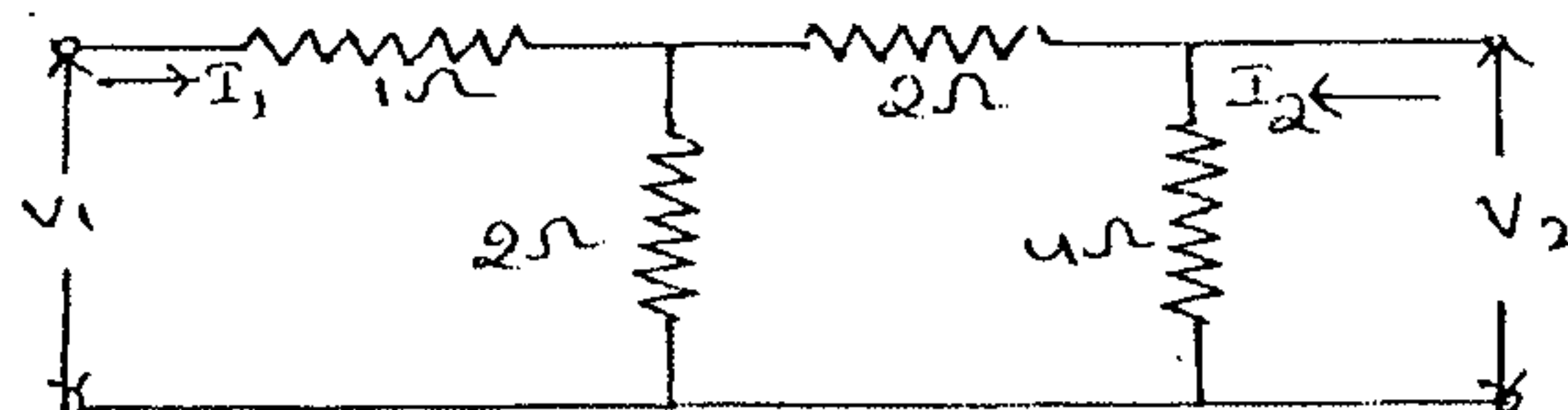
(b) Find the value of R_L for which the given parallel circuit is resonant.

[7M]



8 (a) Find the Y-parameters for the network shown.

[7M]



(b) Define filter and write briefly about different types of filters.

[7M]