

Code: EE2T5

I B.Tech-II Semester-Regular Examinations - July 2014

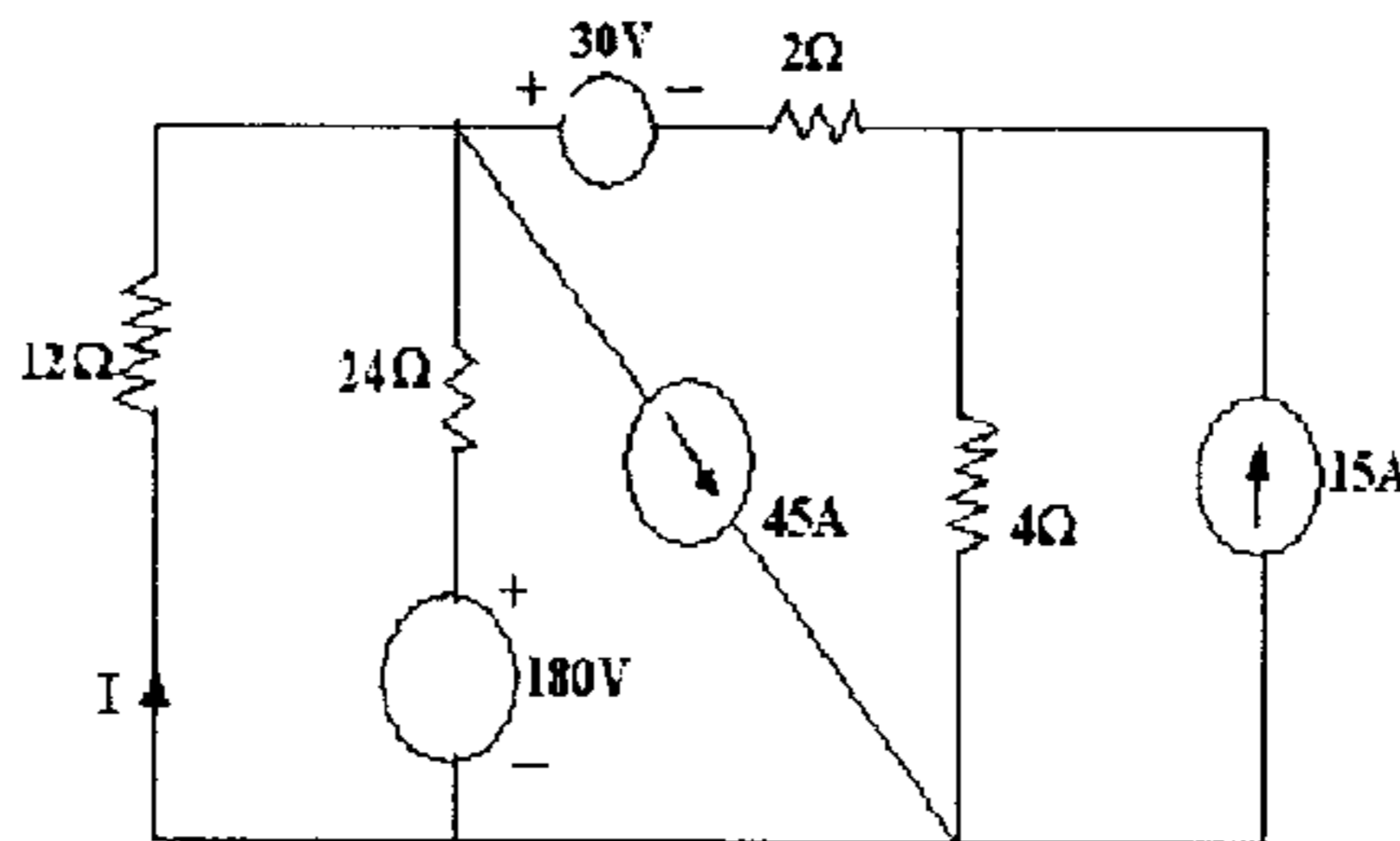
ELECTRICAL CIRCUIT ANALYSIS - I
(Electrical & Electronics Engineering)

Duration: 3 hours

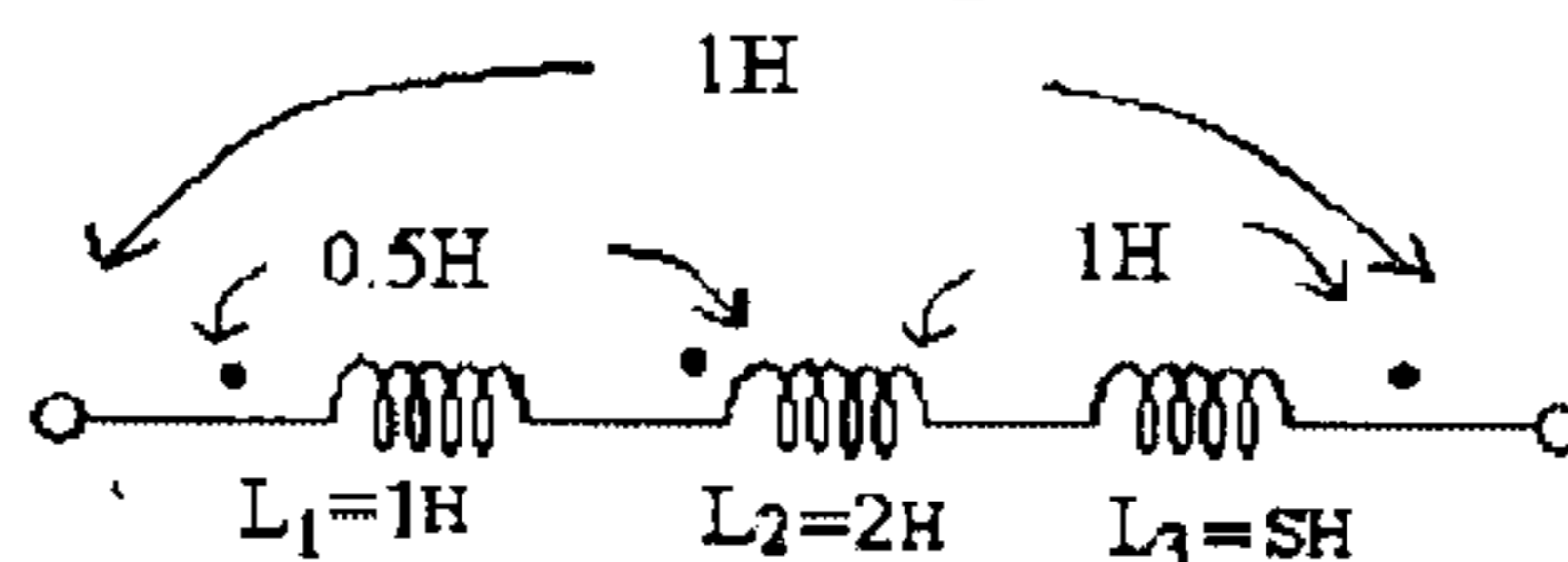
Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

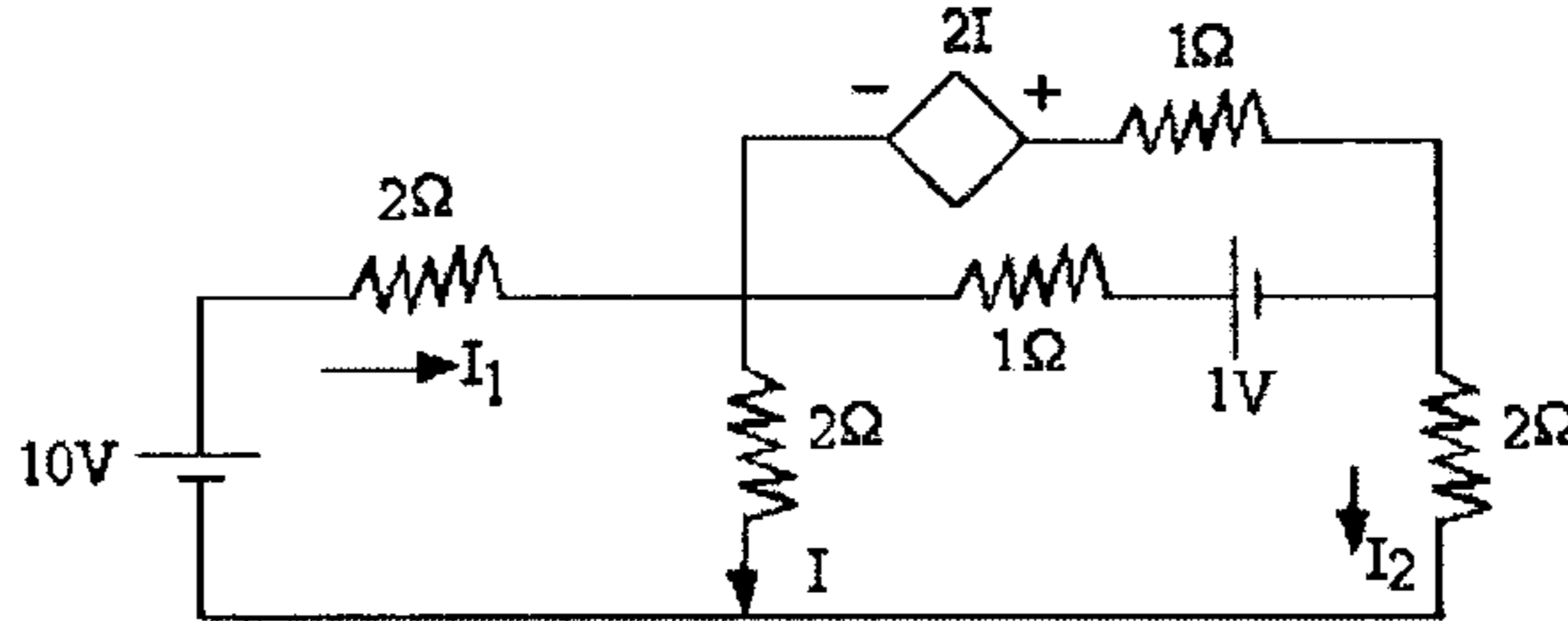
1. Reduce the network shown in figure, to a single loop network by successive source transformation, to obtain the current in the 12Ω resistor. 14 M



2. a) An iron ring of mean length 50cms has an air gap of 1mm and a winding of 200 turns. If relative permeability of iron is 300 when a current of 1A flows through the coil, find the flux density? 7 M
- b) Find the total inductance of the three series connected coupled coils as shown in figure below. 7 M

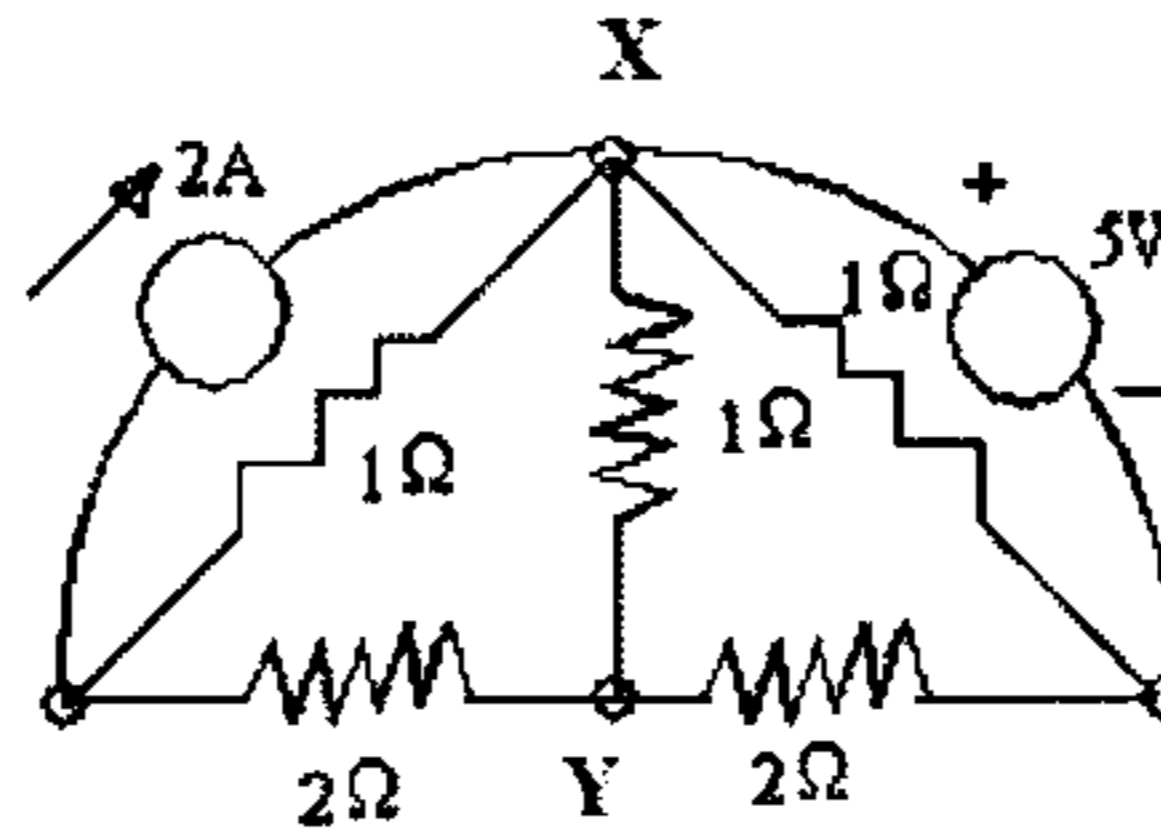


3. Find the Currents I_1 and I_2 using Nodal Analysis. 14 M



4. Determine the Currents in the branch XY using Thevenin's theorem and also obtain the Norton's equivalent circuit.

14 M

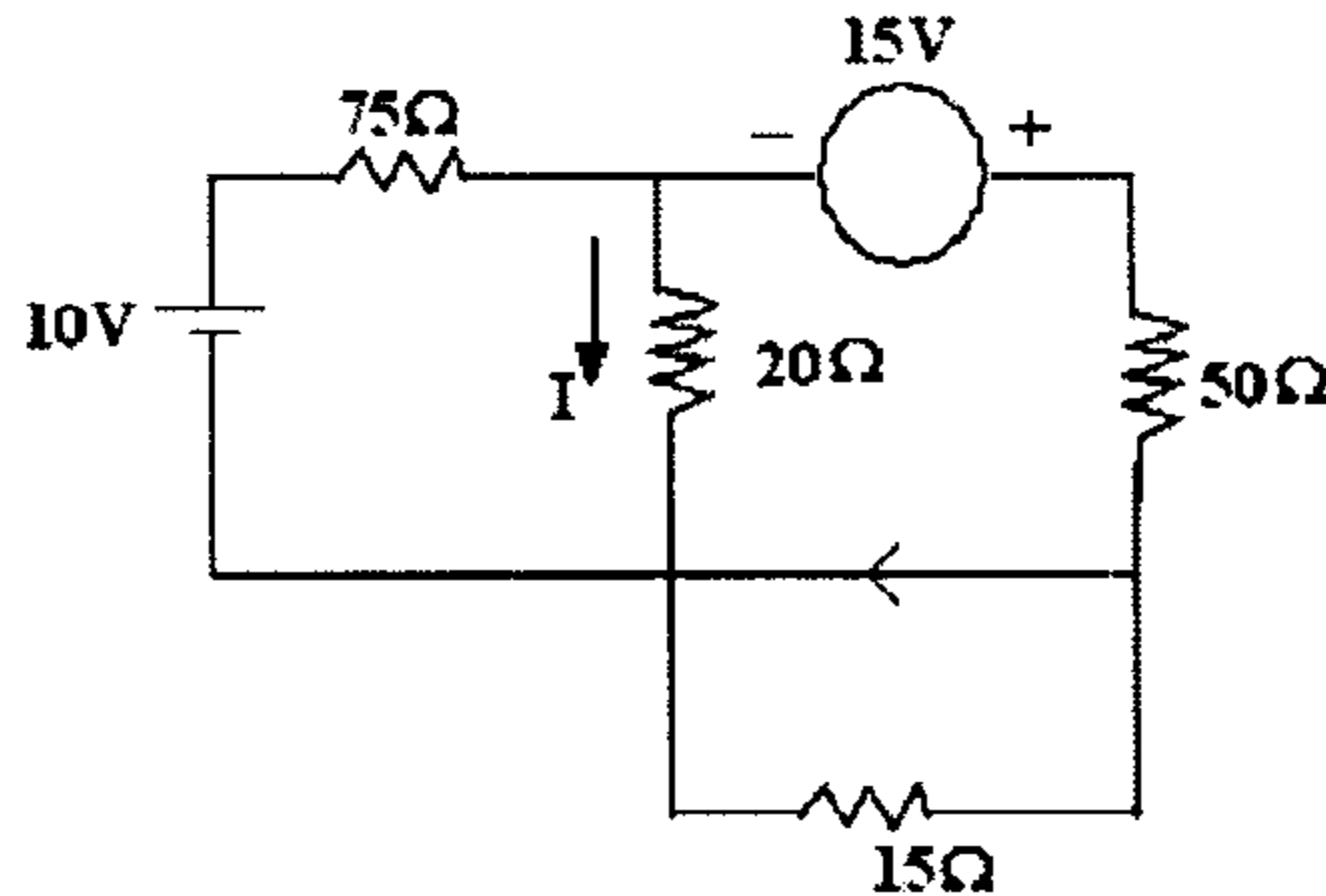


5. a) State and explain Tellegen's theorem .

7 M

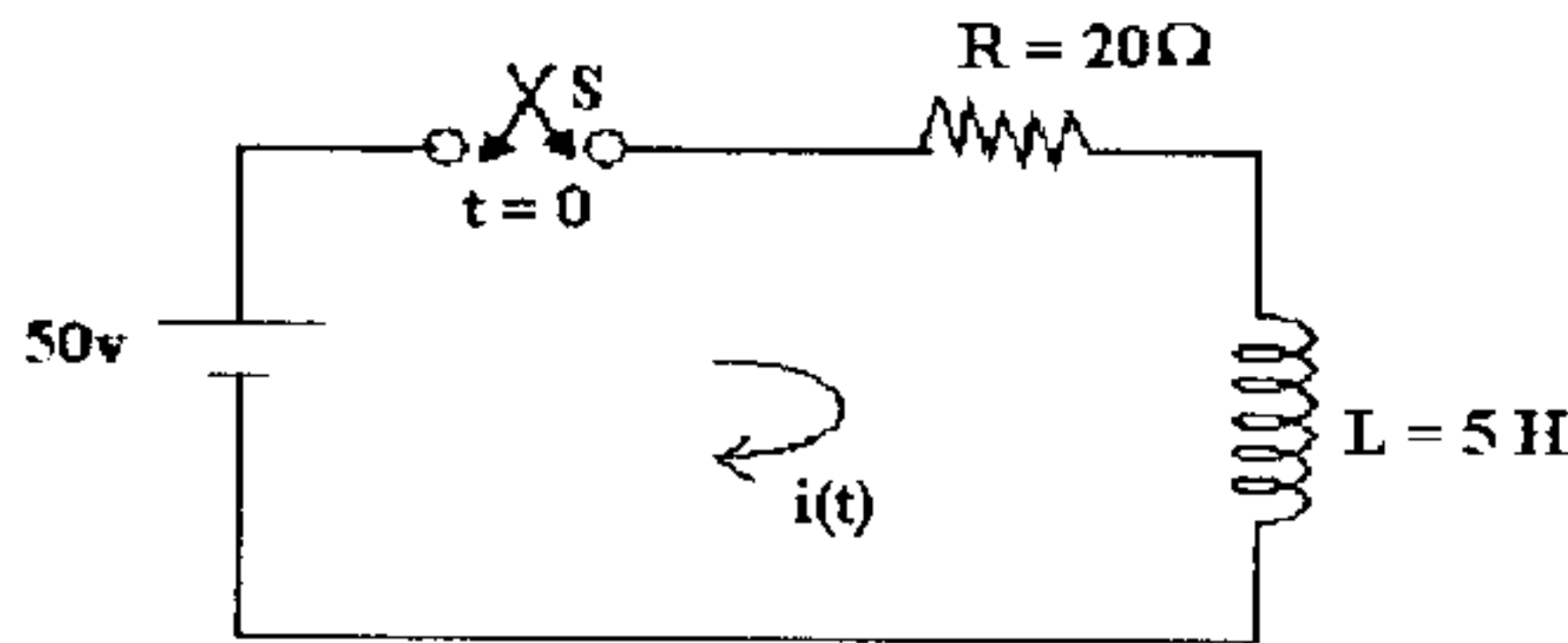
b) Find the maximum power transferred through 20 ohm resistor .

7 M



6. a) Derive the expression for current of a series R L circuit for sinusoidal excitation. 7 M

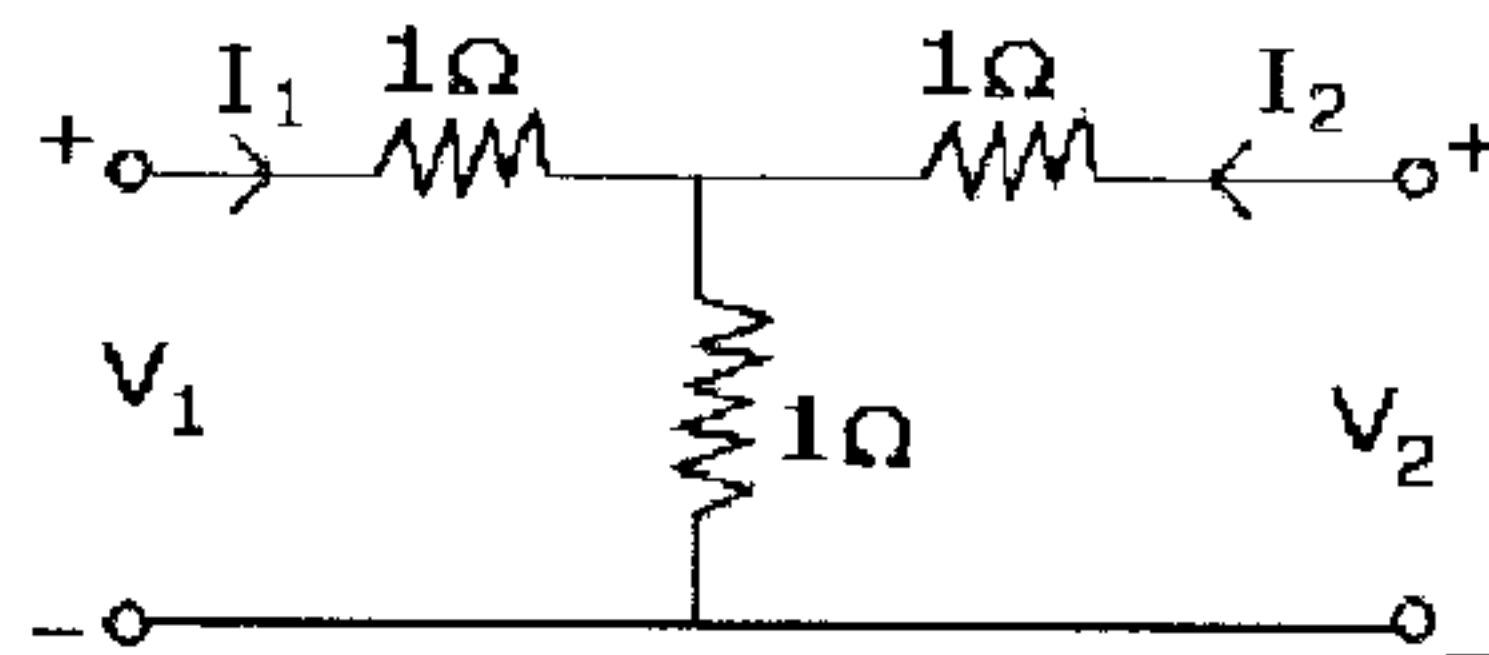
b) A series R-L circuit with $R=20\Omega$ and $L=5H$ has a constant voltage $V=50V$ applied at $t=0$ by closing the switch S. Determine the current $i(t)$, $V_R(t)$ and $V_L(t)$ for $t>0$. 7 M



7. a) Define RMS value, Average value, Form factor of an alternating quantity. Also state the relationship between them. 7 M

b) Find the RMS value of the voltage wave whose equation is $v(t)=10+200\sin(\omega t-30)+100\cos(3\omega t-50)\sin(5\omega t+60)$. 7 M

8. a) Determine the ABCD parameters of given network as shown in Figure 7 M



b) Derive the formulas for interconnection of two port networks (Z-Parameters) 7 M