



I Semester B.Sc. Examination, October/November 2011
(Semester Scheme) (O.S.)
ELECTRONICS (Paper - I)
Electronics Fundamentals

Time : 3 Hours

Max. Marks : 60

Instructions : Answer any five questions from Part - A, four questions from Part - B and any five questions from Part - C.

PART - A

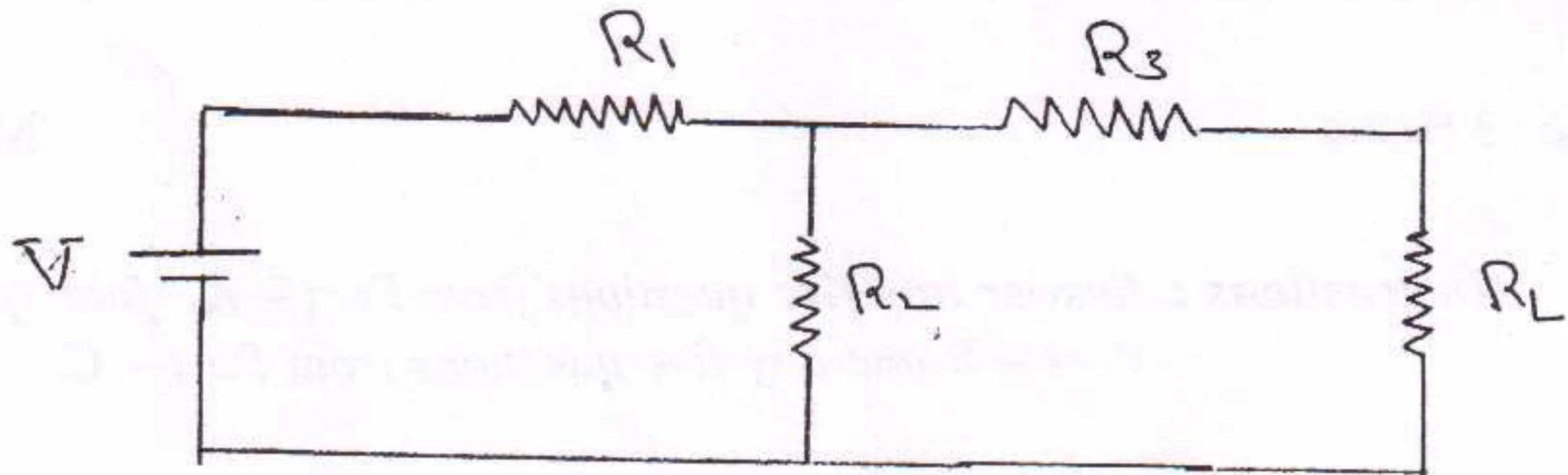
Answer any five questions :

(5×6=30)

1. a) Explain the colour coding concept in carbon composition resistors.
b) Mention the factors affecting the value of parallel plate capacitance. (4+2)
2. With neat diagram explain the working of C.R.T. 6
3. a) State and explain Kirchoff's laws.
b) Define Ideal current and Ideal voltage source. (4+2)
4. a) Define the following terms :
 - 1) Time period
 - 2) Peak value
 - 3) rms value
 - 4) Power factor
b) Give the expression for Inductive Reactance and Capacitive Reactance. (4+2)
5. Derive an expression for the current, impedance and phase angle of an RC circuit excited by an a.c source. 6



6. State and prove maximum power transfer theorem for a D.C. network. 6
7. a) State super position theorem.
- b) Explain the steps involved in Nortonising the given network. (2+4)



8. a) Explain the formation of depletion layer in a pn junction diode.
- b) Mention the applications of a zener diode. (4+2)

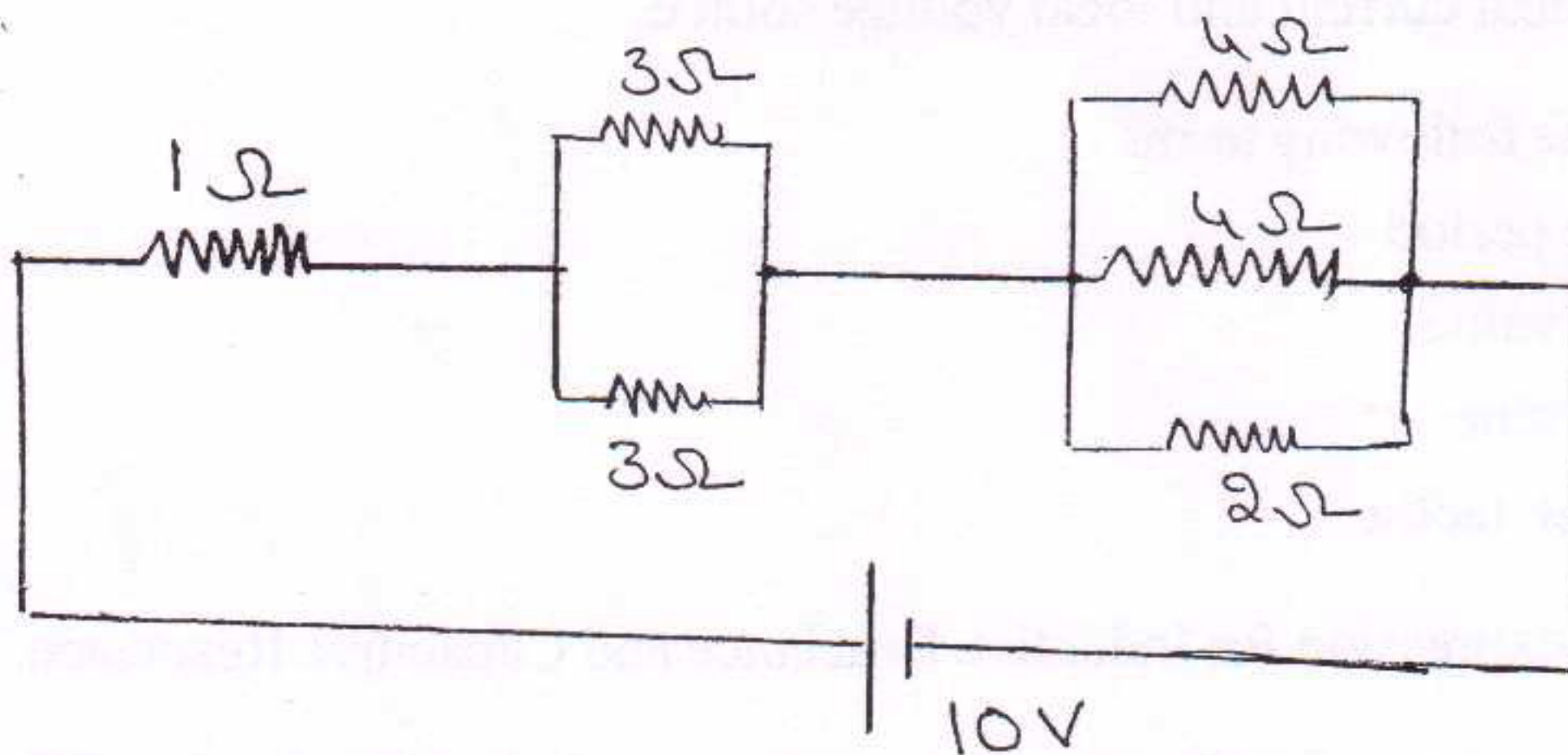
PART - B

Answer **any four** questions :

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(4×5=20)

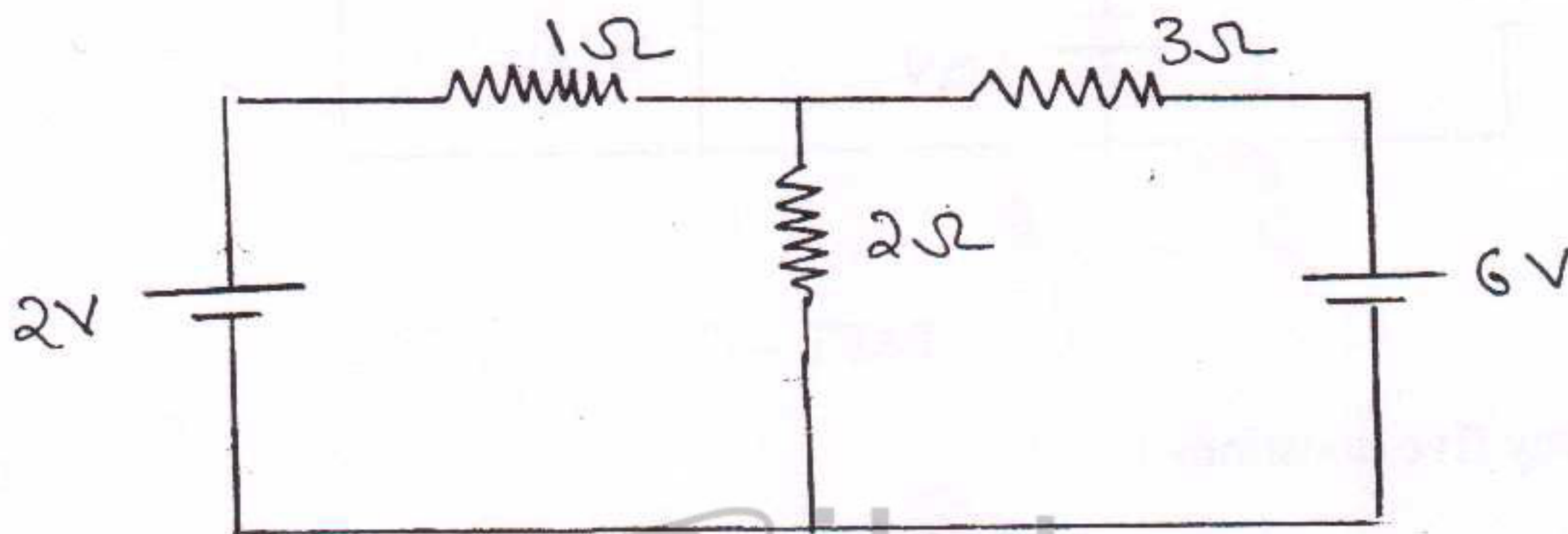
9. In the following circuit determine the current flowing through 2Ω resistor. 5





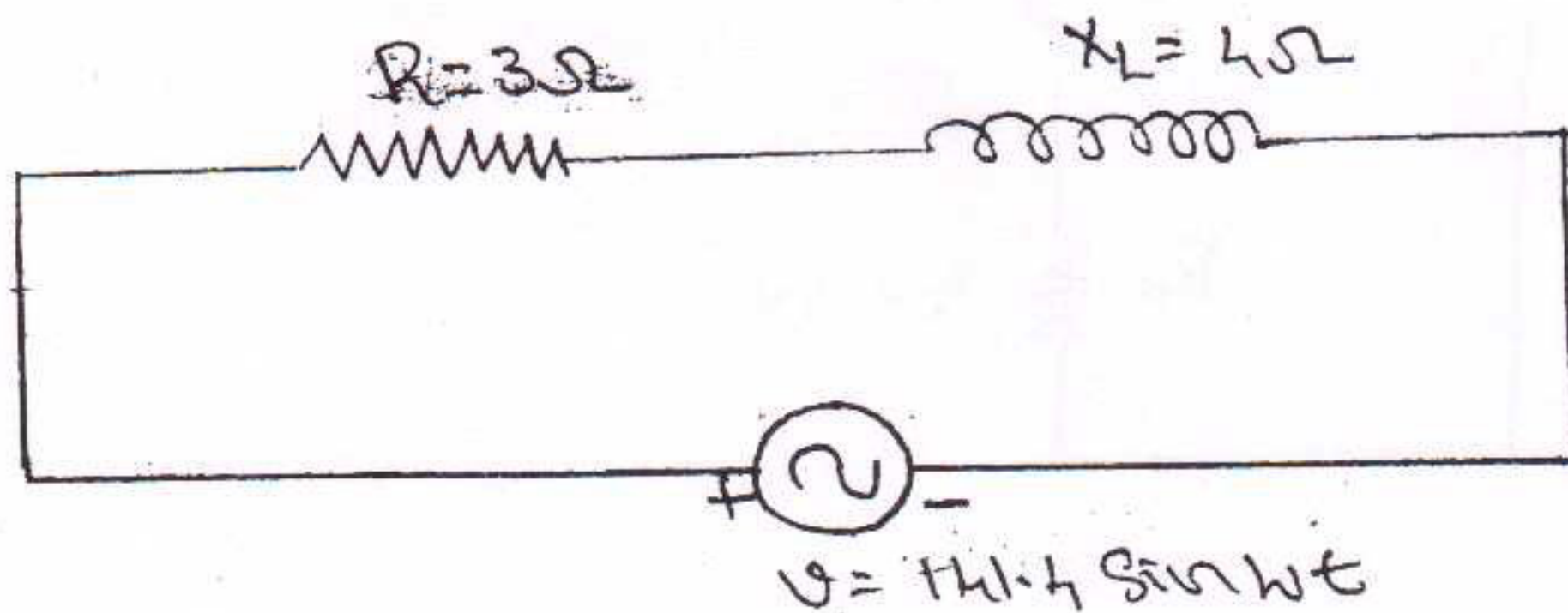
10. A coil having a resistance of 5Ω and an inductance of 6 henry is connected series with a 24 V supply. Calculate the current 2 sec after the circuit is switched on. Also calculate the time constant of the circuit. 5

11. Find the branch currents in the following circuit using node voltage method. 5



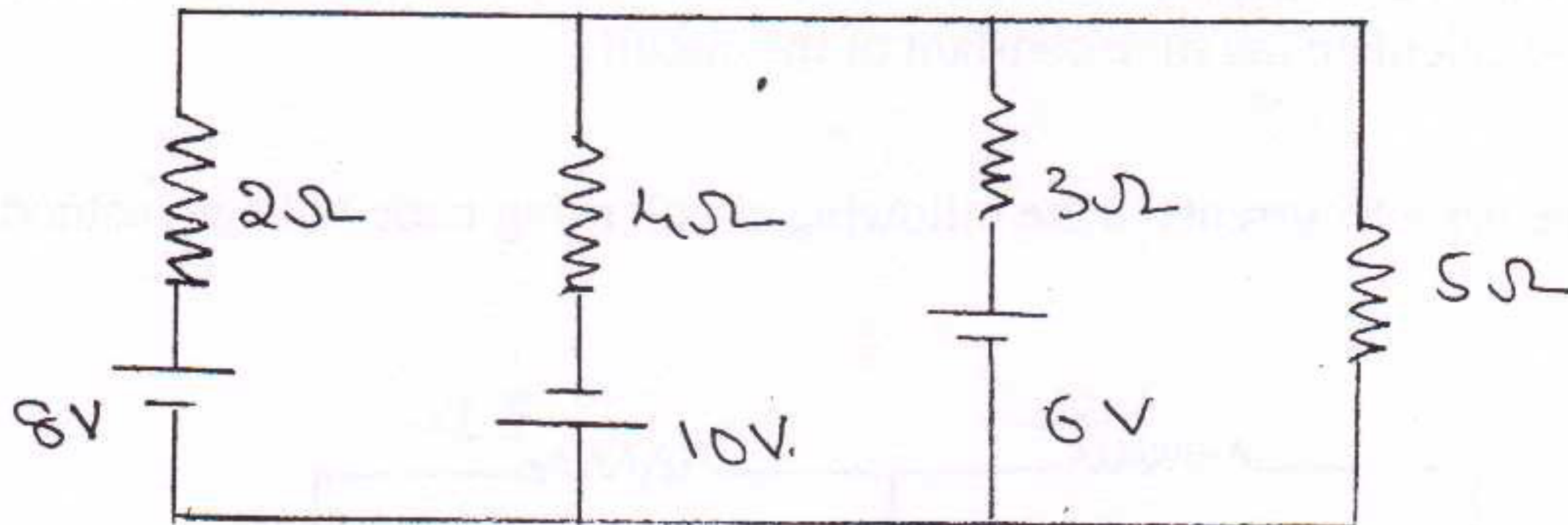
12. A series resonance circuit consists of $L = 100\ \mu\text{H}$, $R = 20\ \Omega$, $C = 50\ \text{PF}$ and $f = 1\ \text{KHz}$. Calculate impedance, and phase angle. 5

13. In the given circuit find the current impedance and phase angle. 5





14. Using Millman's theorem. Find the values of current through 5Ω Resistor in the given circuit.



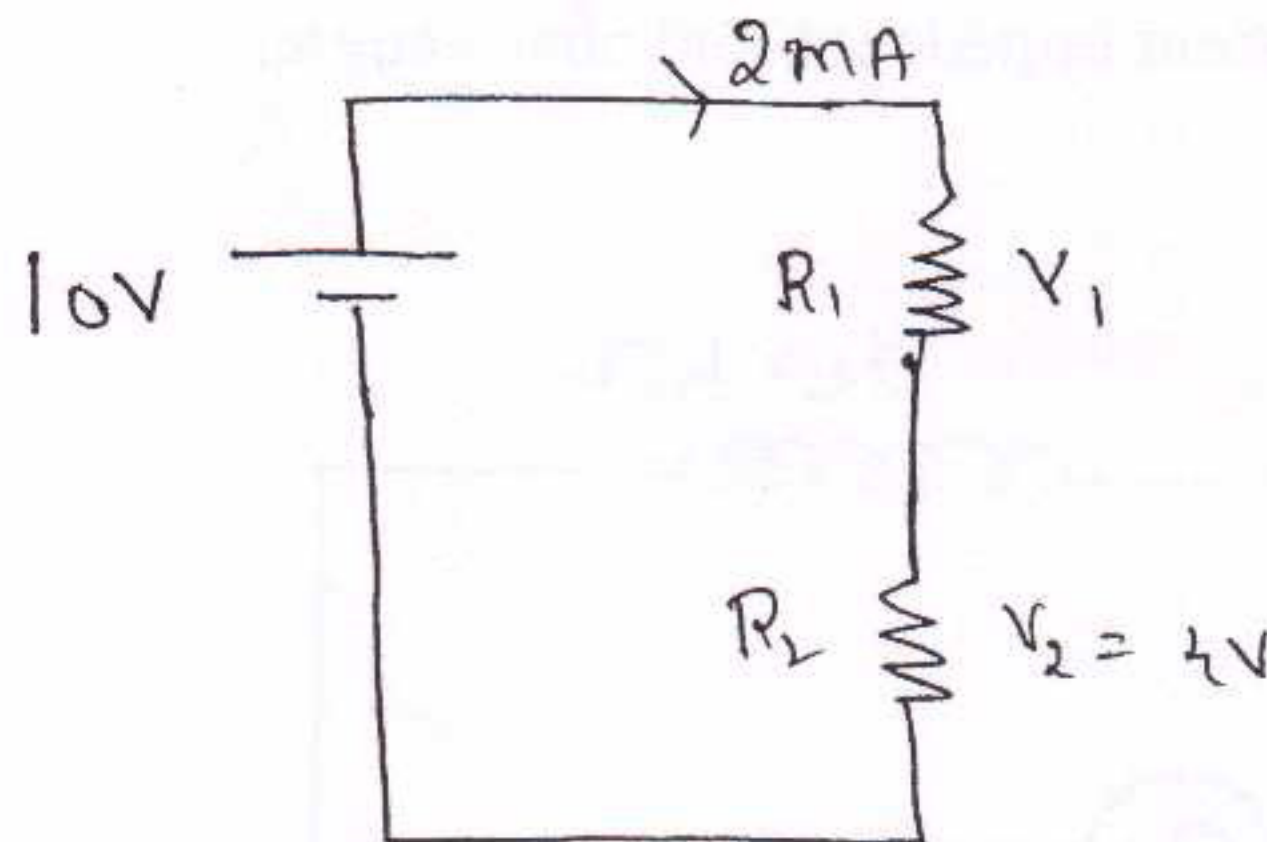
PART - C

Answer any five questions :

(5×2=10)

15. a) Can we use the oscilloscope to measure current ? Justify.
 b) Calculate the value of R_1 and R_2 for a given circuit.

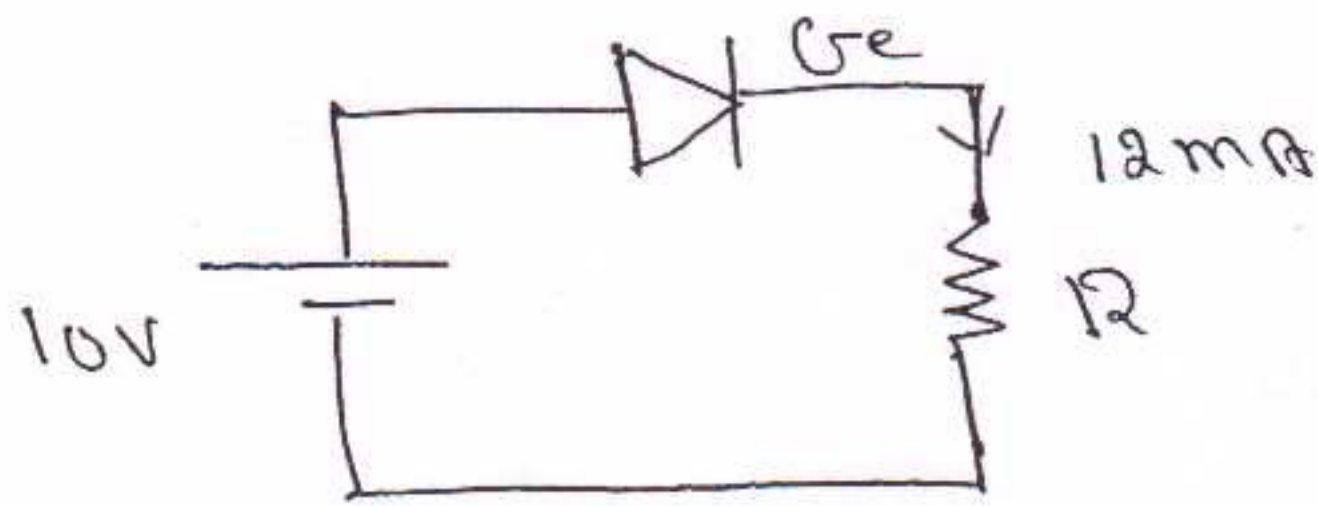
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- c) Why series resonance circuit is called acceptor circuit ?

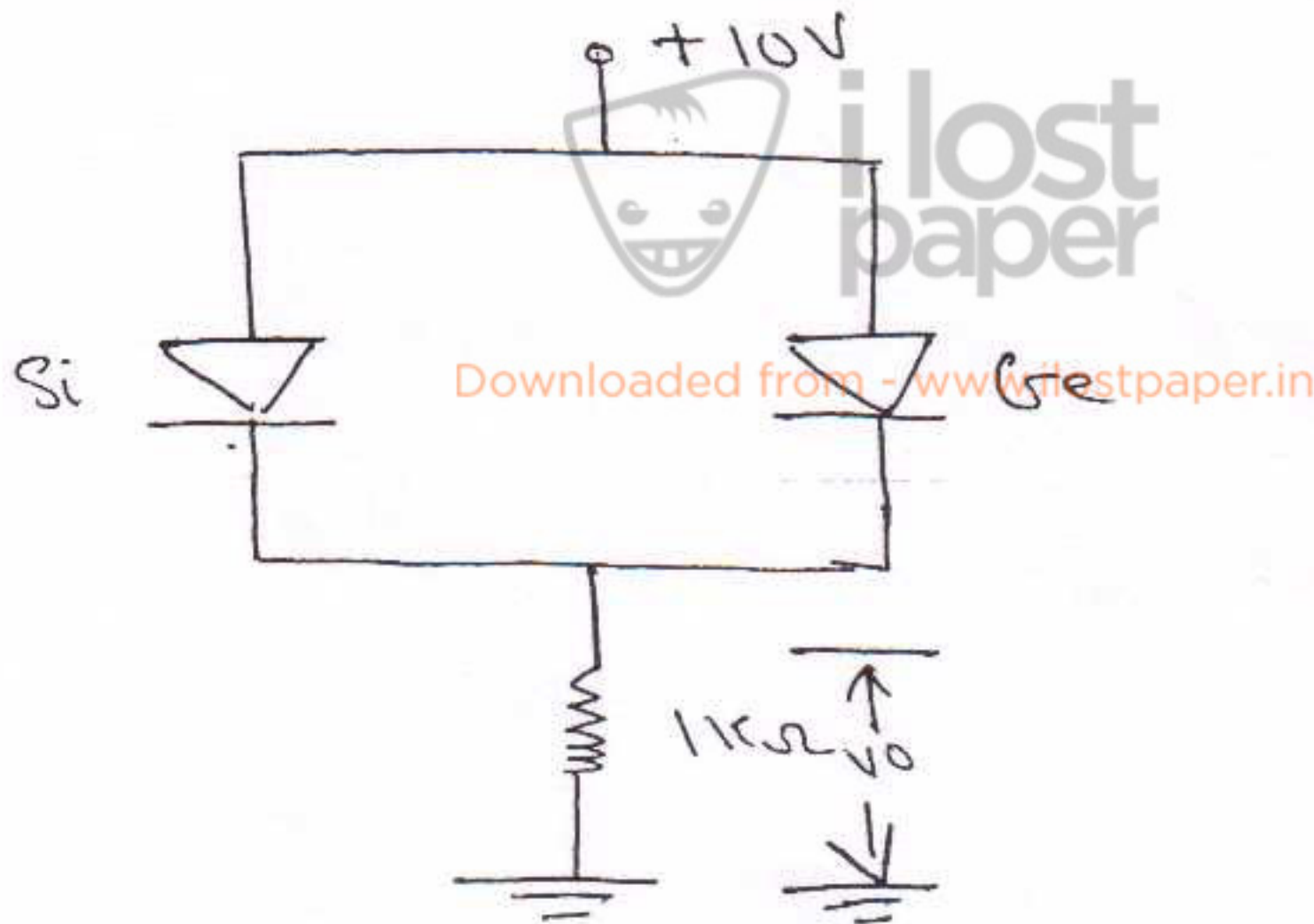


d) Calculate the value of 'R' for a given circuit.



e) Write a equivalent circuit for an ideal p-n Junction.

f) What is the output voltage of the following circuit ?



g) What is the knee voltage of silicon and germanium diodes ?
