Total No. of printed pages = 5

CAI-401/BEC/4th Sem/2016/N

BASIC ELECTRICAL CIRCUITS

Full Marks – 70

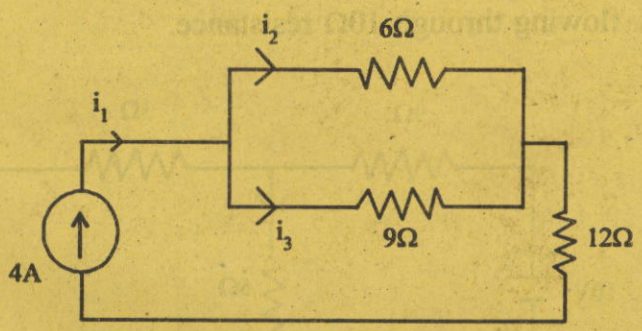
Pass Marks – 28

Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer any *seven* questions.

1. (a) Find the currents in i_1, i_2 and i_3 in the following circuit : 5

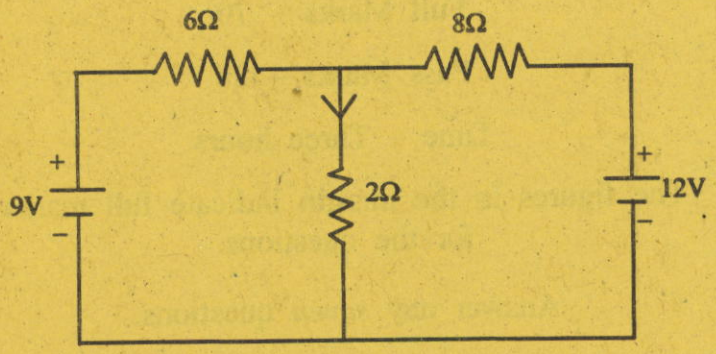


(b) State Kirchoff's laws giving suitable examples. 5

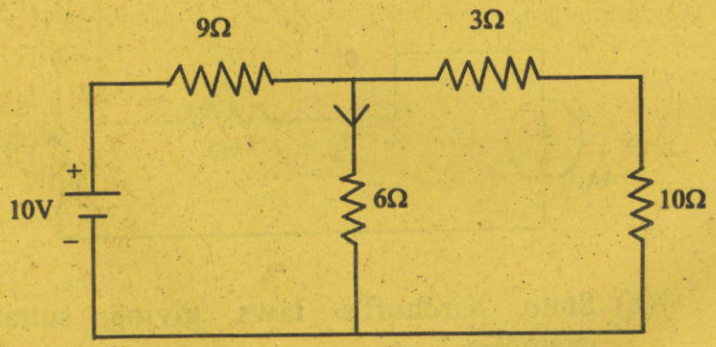
[Turn over

2. State and prove the 'Maximum Power Transfer Theorem' as applicable to d.c circuits. 10

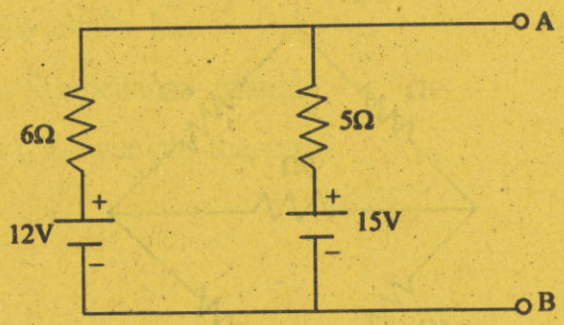
3. Using Nodal analysis find the current flowing through 2Ω resistance. 10



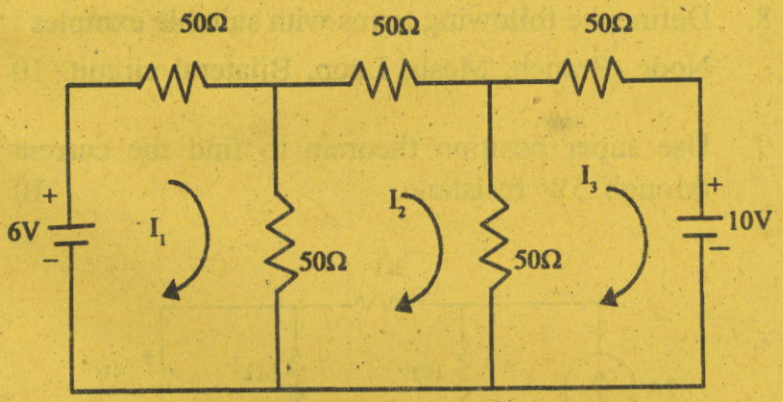
4. Using Thevenin's theorem find the current flowing through 10Ω resistance. 10



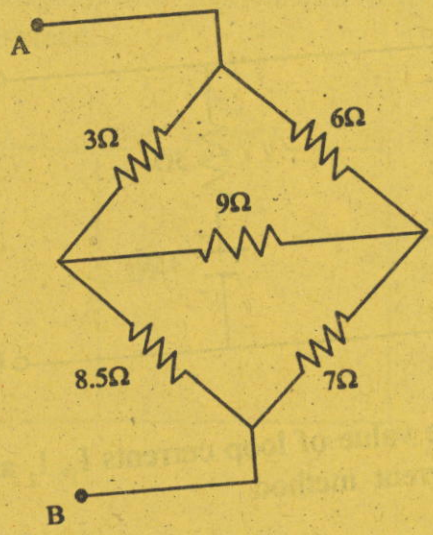
5. Simplify the following circuit to an equivalent circuit containing one current source and one resistance. 10



6. Find the value of loop currents I_1, I_2 and I_3 using loop-current method. 10



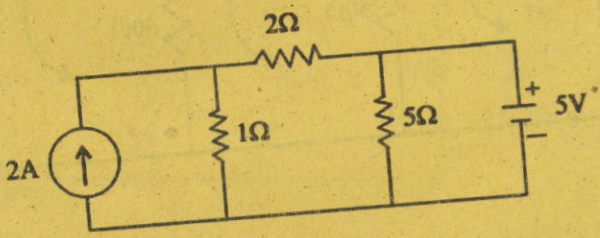
7. Using $\Delta - \lambda$ transformation, find the equivalent resistance between terminals A and B. 10



4.

8. Define the following terms with suitable exmples : Node, Branch, Mesh, Loop, Bilateral circuit. 10

9. Use super position theorem to find the current through 5W resistane. 10



10. Write short notes on any *four* : 10

(i) Resonance

(ii) Form factor

(iii) Ohm's law

(iv) Impedance triangle

(v) Thevenin's theorem.