Total No. of printed pages = 3
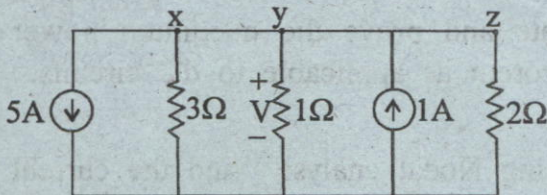
BASIC ELECTRICAL CIRCUITS
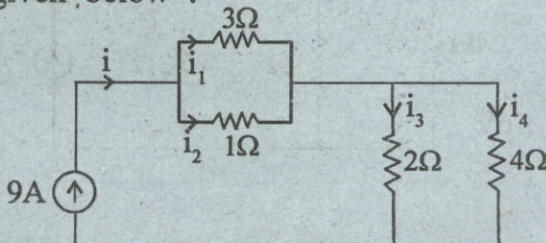
Full Marks – 70

Pass Marks – 28

Time – Three hours

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

Answer any *seven* questions.

1. Find 'V' and the magnitude and direction of the unknown currents in the branches xn, yn and zn in the following circuit :   10
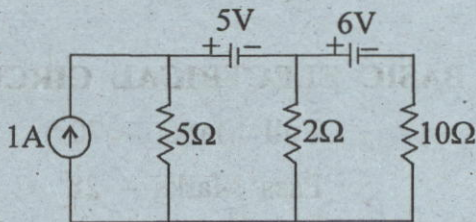

2. (a) Find the currents i_1, i_2, i_3 and i_4 in the circuit given below :   5

[Turn over

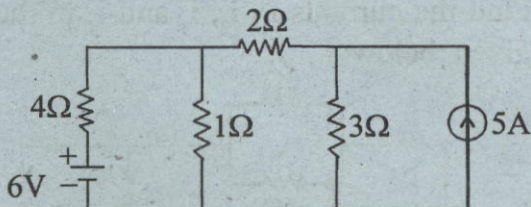(b) Find the current and power dissipated in the 5 Ω resistance. 5

3. (a) State the Kirchoff's laws giving suitable examples. 5
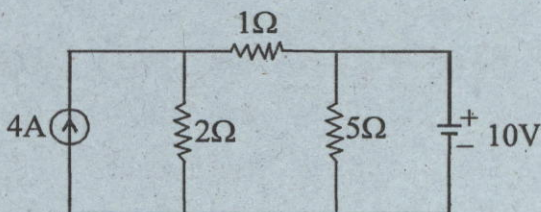
(b) Define the following terms : 5

Branch, Mesh, Loop, Unilateral circuit, Junction.

4. State and prove the maximum power transfer theorem as applicable to d.c circuits. 10

5. Using Nodal analysis, find the current flowing through the 1 Ω resistance. 10

6. Using Thevenin's theorem, find the current flowing through 5 Ω resistance. 10

7. Verify the answer of the previous question (Q.6) using Norton's theorem. 10

8. Write short notes on any *four* : 2.5×4=10

(i) Resonance

(ii) Impedance

(iii) Power factor

(iv) Form factor

(v) Ohm's law.