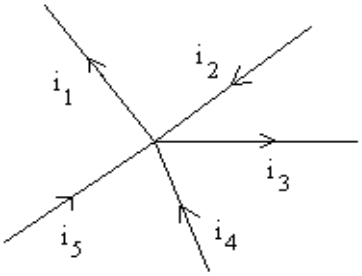
KCL is illustrated below .

Convention

Current flowing **out** of a node is considered positive (+ve)
Current flowing **into** a node is considered negative (- ve)



$$i_1 - i_2 + i_3 - i_4 - i_5 = 0$$

or

$$i_1 + i_3 = i_2 + i_4 + i_5$$

II. Kirchhoff's voltage law [KVL] -

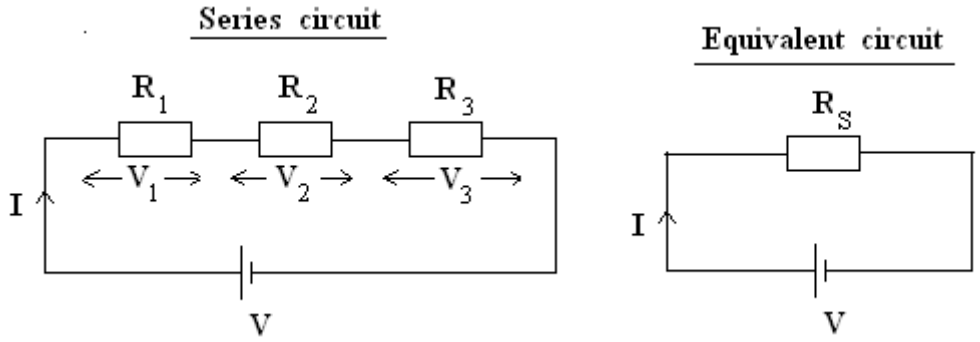
" In any electrical circuit, the algebraic sum of voltage drops of all branches & emf's is zero."

or

" In any electrical network, the algebraic sum of voltage drops of all branches and emf's forming a closed loop is zero."

Series , parallel , series-parallel combination circuits:-

Resistances in series :-



$$V = V_1 + V_2 + V_3$$

14. In the parallel arrangements of resistors shown in the figure (h), the current flowing in the 8Ω resistor is 2.5A. Find the current in other resistors, resistor X and the equivalent resistance.

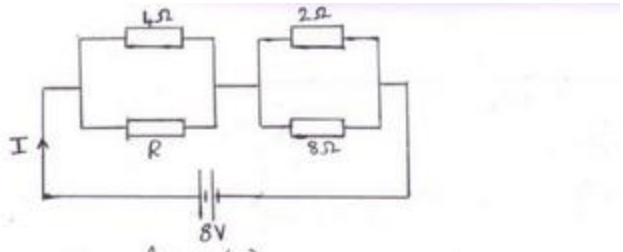


figure (a)

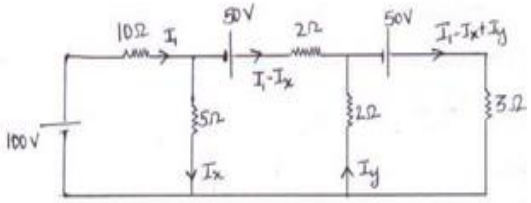


figure (e)

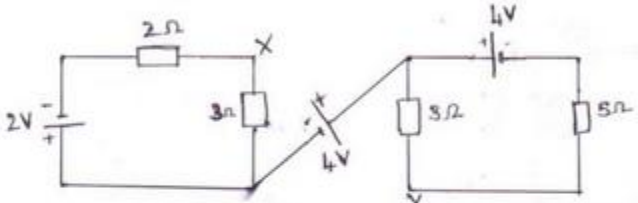


figure (b)

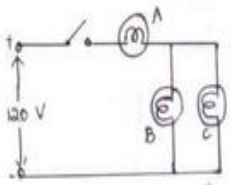


figure (f)

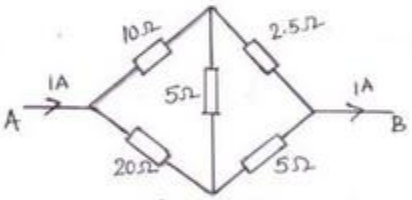


figure (c)

figure (g)

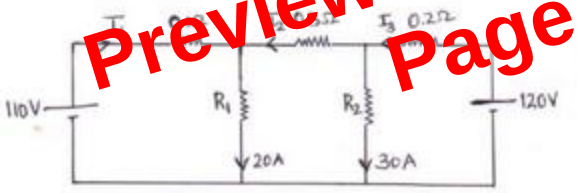


figure (d)

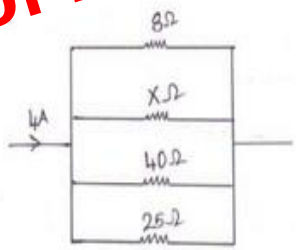


figure (h)

1(b) ELECTROMAGNETISM

1. With examples, clearly differentiate between statically induced emf & dynamically induced emf.(Jan 2013,6M)(June 2014,5M)
2. Explain Fleming's rules & their use in electromagnetism.(Jan 2015,6M)
3. Prove that the co-efficient of mutual inductance between two coils of self-inductances L_1 and L_2 is given by $M = k\sqrt{(L_1L_2)}$, where k is the co-efficient of coupling between the two coils.(Jan 2011,7M)(June 2014,8M)(June 2015,6M)