Page no - 1

Q1) State and Explain Kirchhoff's law with an example

Ans Kirchoff's law consists of two separate statement, Kirchhoff's point of law or Kirchhoff's current law (KCL) and Kirchhoffes mesh law or Kirchhoff's voltage law (KVL) These two laws universal application in the treatment of Electrical networks.

Kirchhoff's law is divided into two law's;

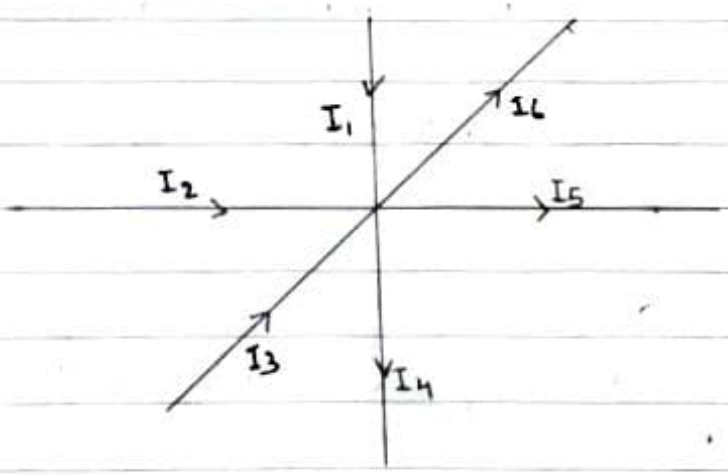
i) Kirchoff's current law;
ii) Kirchoff's voltage law

i) Kirchoff's current law (KCL) :- The algebric sum of currents meetting at any point in a network is zero. i.e; incoming currents are equal to the outgoing currents at any point in the network.

$$I_1 + I_2 + I_3 + (-I_4) + (-I_5) + (-I_6) = 0$$

In coming currents = Outgoing current.

$$\boxed{I_1 + I_2 + I_3 = I_4 + I_5 + I_6}$$



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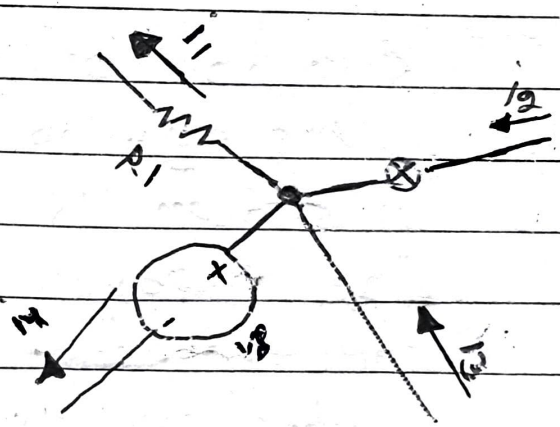
Answer:- Kirchhoff's current law (KCL)
This law is also called kirchhoff's first law kirchhoff's point rule or kirchhoff's junction rule (or node rule)

The principal of conservation of electric charge implies that.

At any node (junction) in an electrical circuit. the sum of current flowing into that node is equal to the sum of currents the algebraic some of currents in a network.
of conductors meeting at a point is zero.



The current entering any junction is equl to the current leving that.

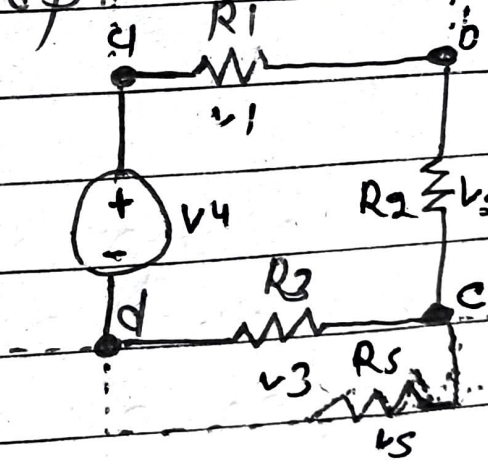
Junction $i_2 + i_3 = i_1 + i_4$

Kirchhoff's voltage law (KVL)

This law is also called kirchhoff's loop (or mesh) rule. and kirchhoff's second rule.

- The directed sum of the electrical potential differences (voltage) around one closed network is zero. or

- The algebraic sum of the products of the resistance of the conductors and the currents in them in a closed loop is equal to the total emf available in that loop.



This sum of all the around a loop is equal to zero.

$V_1 + V_2 + V_3 - V_4 = 0$