KIRCHHOFF’S LAW

Pronounced kirkoff’s law

The Kirchhoff’s point or junction rule states that the sum of all current coming into a point must be equal to the sum of all current leaving the point.

The Kirchhoff’s loop or circuit rule states that as one traces out a closed circuit, the algebraic sum of the potential changes encountered is zero. In this sum, a potential rise (moving from a lower pd to a higher pd) is positive and a potential drop (moving from a higher pd to a lower one) is negative. Current always flows from high potential to a low potential through a resistor. As one traces through a resistor in the direction of the current, the potential charge is negative because it is a potential drop.

The positive terminal of a pure cell is always the high potential terminal independent of the direction of the current through the emf source.

FROM YOUTUBE

In Kirchhoff’s rule,

i. You pick a point called a junction

ii. You look at the current coming to and going away from the junction

iii. According to Kirchhoff’s rule, the sum of current coming into the junction is equal to the sum of current leaving the joint

iv. According to Kirchhoff’s voltage law, the sum of voltages around the loop or around a closed circle must add to zero

v. When going around a loop, we have to know whether we are going to be using a positive or negative voltage at every point of the loop. Generally, if going in the direction of current, we use negative V and if going opposite to current, we use +V. This is because current moves from positive terminal (or high potential) to negative terminal (low potential).

vi. Pick a loop which will be a circular path which you follow along the electric circuit

vii. In your movement around the loop, if you are going from a negative side of a battery to a positive side of a battery, you use +V and vice-versa. This is irrespective of whether it is in the direction of the current or not.

viii. Find the sum of voltages in each possible loop. After find the sum of voltages

ix. Next you’ll have the sum of voltages. From the junction, you can form an equation for the current coming into and leaving the junction

x. If you get a negative current, then your direction of current was probably wrong