**Прочитать текст, сделать краткий конспект, ответить на вопросы :**

Q.1: What is a resistor?

Q.2: What is Ohm’s law?

Q.3: How do the resistors work?

**Какие из слов имеют смысл**

Value of current, series circuit, voltage conductors, different schemes, different values, value of scheme, voltage source, current flow, parallel value, any law, value of conductor.

**Resistor**

A resistor is an element or component which reduces the electrical [current](https://www.toppr.com/guides/physics-formulas/electric-current-formula/) and supply the electricity to the electrical or electronic goods in a controlled manner. It also saves these goods from the damage that may occur due to excessive supply of electricity. These resistors are analogous to the water supplying pipes. A resistor is like a thin pipe which reduces the water flow.

There are different types of resistors in the market and their resistances define the resistors. There are two types of resistors, namely, fixed resistors and variable resistors. Fixed types of resistors have static resistance to electricity and their usage give a constant supply of reduced electricity to the components. On the other hand, usage of variable resistors provides electrical fluctuation like volume control or fan regulators.

Resistor

**Basic Concepts about Resistors**

1. Electricity flows in any material through electrons, a negatively charged very small particle in the [atom](https://www.toppr.com/guides/chemistry/structure-of-atom/introduction-to-structure-of-atom/). In metals, this concept describes the functioning where electrons are easily available to carry out the electricity. Therefore, metals are good conductors of electricity. In metals, electricity flows easily in comparison to non-metallic materials as they put little resistance to the flow of electrons through it and therefore metals, especially gold, silver and copper, are largely in use for making electrical or electronic goods.
2. Resistors are categorised by their degree of resistance. Ohm Ω is a unit of measurement for resistance. The behaviour of a resistor is given by the relationship defined by Ohm’s law.

[Ohm’s law](https://www.toppr.com/guides/physics/electricity/ohms-law-and-resistance/) states that the voltage (V) across a resistor is proportional to the current (I) and the constant of proportionality is Resistance (R). In other words, 1 Ohm Ω is the resistance between two points where 1V (volt) of potential energy is required to transfer 1 A (ampere) current. Mathematically, we can represent it as below:

V = I.R, where R is the resistance.

1. Resistors are useful to block the potential energy and this blockage of energy appears as heat. Sometimes, this generated heat is wastage. There are numbers of equipment which are made up to use this waste energy. For example, old-fashioned light bulb, in which a very thin filament is fastened on two terminals and when current passes through this filament, the filament becomes so hot to produce light. On the same concept, other equipment like electric kettles, electric radiators, geysers, toasters, coffee makers etc. work. These resistors are fixed types of resistors.
2. Variable resistors are also available which are useful in volume knobs of TVs, radios, loudspeakers. Another use of variables resistors is in regulators of ceiling fans.

**How do Resistors Work?**

In the electrical and electronic industries, components require a specific amount of current to operate and function properly and the involvement of a resistor in these components give a precise amount of resistance.

If the resistors are broken down and after the removal of the outer coating, a small ceramic rod will be found running through the middle around which the copper wire wraps. These types of resistors are wire-bound resistors. Precisely, the number of copper wire turns decides the resistance that a resistor produces while in use. More numbers of turns of copper wire higher are the resistance. Another factor which affects the resistance in the resistor is the thinness of the copper wire. Thinner the copper wire, higher will be the resistance. In general, wire-wound resistors give more precise results and are more stable at high operating temperatures. Resistors are worm-like structures with colour strips on the side. These colour strips describe the type of resistor that how much resistivity it can offer to the given circuit.

In some resistors, different types of colour strips appear. These colour strips are the notions for digits. The resistance offered by the resistor can be calculated with these colour strips.

To read the colour codes on a resistor, turn the resistor in such a way that three or more strips are on the left. This arrangement is necessary to read the colour strips.

In a four strip resistor, the first two strips show the digits of the resistor and third strip shows the decimal multiplier, i.e., it tells that how many powers of ten to be multiplied with first two digits. The last strip shows tolerance, i.e., it tells how the resistor is accurate to within plus or minus of that per cent.

For resistors having a higher number of strips, the last colour strip shows the temperature coefficient.

**Use of Resistors**

In every life, the gazettes use the resistors to operate easily without damaging itself. Today’s life depends upon lots of electrical and electronic applications. These applications use resistors in several ways. To heat the water, you need geysers, to watch a movie, the requirement of TVs/mobiles are a must. To do any kind of work in today’s life, electronic gazettes are need of the hour. All these equipment being used are having resistors in some way or other.

In electronic components, sometimes a single resistor does not give the desired result. To get the desirable results, resistors are in use in series or parallel pattern.

To enhance the value of resistance, resistors are in use in the series pattern. When the resistors are arranged in the series pattern, the total resistance of the connected resistors is the summation of individual resistances.

For this arrangement of resistors, the total equivalent resistance RTotal is

RTotal=R1+R2+R3

To reduce the value of resistance, the use of resistors in a parallel pattern is recommended. When the resistors are used in the parallel pattern, the reciprocal total resistance of the connected resistors is the reciprocal summation of individual resistances. For this arrangement of resistors, the total equivalent resistance RTotal is

1RTotal =1R1+1R2+1R3