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Q1. Ohm's law
Q2.
Unit of electrical resistance is ohm. Its symbol is Ω.
Q3. Electric resistance.
Q4. Insulators.
Q6. Strength of electric current flowing in a given conductor depends on
(i) potential difference across the ends of the conductor
(ii) resistance of the conductor.
Q7. Thick wire.
Q8.

$$V = IR$$

$$I = \frac{V}{R}$$

Keeping V constant, $I \propto \frac{1}{R}$

So, when R is halved, I also becomes double.

Q9. Potential difference, V = 20V
Resistance, R = 5ohms
Current, I = ?
We know that
V=IR
20 = I x 5
I = 20/5 = 4 A
Q10. R = 20ohms
I = 2amp
We know that
V = IR
Thus,
V = 2 x 20
V = 40V
Q11.
I = 5amp
p.d., V = 3V
We know that
V=IR
Thus,
3 = 5 x R
R = 3/5 = 0.6 ohm
Q12. current.
Q13. Those substances which have very low electrical resistance are called as good conductors. E.g., copper and aluminium.
Those substances which have comparatively high resistance than conductors are known as resistors. E.g., nichrome and manganin.
Those substances which have infinitely high electrical resistance are called insulators. E.g., rubber and wood.
Q14. Conductor: mercury, aluminum, iron, metal coin
Resistor: manganin, nichrome
Insulator: rubber, polythene, wood, bakelite, paper, thermocol

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Q15. Ohm's law gives a relationship between current (I) and potential difference (V). According to ohm's law: At constant temperature, the current flowing through a conductor is directly proportional to the potential difference across its ends.
If I is the current flowing through a conductor and V is the p.d. across its ends, then according to the ohm's law:

$I \propto V$

or, $V \propto I$

or, $V = RI$

or $R = \frac{V}{I}$

where, R is a constant called "resistance" of the conductor.
The unit of resistance is ohm.

If V = 1 volt and I = 1 amp, then $R = \frac{1}{1} = 1$ ohm.

Thus, 1 ohm is the resistance of a conductor such that when a potential difference of 1 volt is applied to its ends, a current of 1 amp flows through it.

Q16. (a) The property of a conductor due to which it opposes the flow of current through it is called resistance of the conductor.
Work done = Potential difference x charge moved.
(b) V = 12volt, I = 2.5×10^{-3} A
We know that
V = IR
R = V/I
$R = 12/(2.5X10^{-3})$
$R = 4.8X10^{3}$ ohm = 4800 ohm.
Q17. (a) 1 ohm is the resistance of a conductor such that when a potential difference of 1 volt is applied to its ends, a current of 1ampere flows through it.
(b) Its resistance will increase.
(c)

$V = IR$

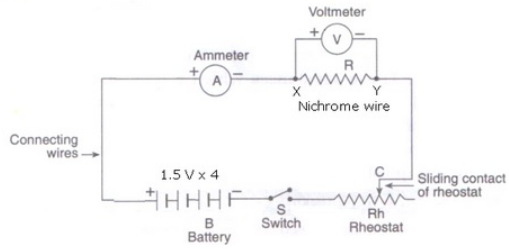
$I = \frac{V}{R}$

Keeping V constant, $I \propto \frac{1}{R}$

So, when R is doubled, I becomes half.

Q18. (a) Electricians wear rubber hand gloves while working with electricity because rubber is an insulator and protects them from electric shocks.
(b) I = 6amp, R = 40ohm
We know that
V = IR
V = 6 x 40 = 240 V.
Q19.

(i)



(ii) Since the graph is a straight line passing through the origin, so current is directly proportional to the potential difference.
Hence, the ration $\frac{V}{I}$ remains constant.

From graph, when V=1.5 volt, I=0.6 amp

So, $\frac{V}{I} = = \frac{1.5}{0.6} = 2.5\Omega$

For p.d. 0.8V, 1.2v and 1.6V, the value of $\frac{V}{I}$ ratio remains the same i.e., 2.5 ohm.

(iii) The resistance of the wire is equal to the ratio of potential difference applied and the current passing through it.

$R = \frac{V}{I} = 2.5\Omega$

Q20. (a) The ratio of potential difference and current is known as resistance.
(c) Ohm's law
(d) Potential difference = Current x Resistane
(e) V = 240 volt, I = 5amp
We know that
V=IR
240 = 5 x R
R = 240/5 = 48 ohm.

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Q30. In first case,
I = 2.4 amp, V = 120 volt
V = IR
120 = 2.4 x R
R = 120/2.4 = 50 ohm
In second case,
V = 240 volt, R = 50 ohm
V = IR
240 = I x 50
I = 4.8 amp.
Q31. Resistance.
Q32. (a) Ohm's law
(b) Temperature.
Q33. In first case,
I = 0.02 amp, V = 10 volt
V=IR
10 = 0.02 x R
R = 10/0.02 = 500 ohm
In second case,
$I = 250 \times 10^{-3}$ amp, R = 500 ohm
V = IR
$V = 250 \times 10^{-3} \times 500$
V = 125 volt.
Q34. I = 200mA = 0.2 A
$R = 4 \times 10^{3}$ohm = 4000 ohm
We know that
V=IR
V = 0.2 x 4000
V = 800 volt.

********** END **********