Electricity

Answers

GCSE science knowledge recall

This topic online

Q	Answer	Remember
1	current	In metal wires the charge is carried by electrons.
2	coulomb	One coulomb passes a point each second when the current is 1 amp.
3	60	Q = I t = 2 × 30 = 60 C. Time must be in seconds.
4	the same	Charge is not used up: whatever flows out of the cell must flow back in.
5	V = I × R	Cover V and you see I × R; cover I and you see V over R.
6	ohm	The symbol Ω is the Greek capital letter omega.
7	4	R = V ÷ I = 12 ÷ 3 = 4 Ω.
8	voltmeter	A voltmeter goes in parallel across a component; an ammeter goes in series.
9	increase	Resistance is directly proportional to length: double the length, double the resistance.
10	straight line	Straight through the origin means current is directly proportional to potential difference.
11	increases	Hot metal ions vibrate more, getting in the way of the electrons.
12	diode	The arrow in the diode symbol points the way current is allowed to flow.
13	decreases	Thermistors are used in thermostats and fire alarms.
14	increase	Dark means high resistance: useful for street lights that switch on at night.
15	10	In series, just add them: $R_{total} = R_1 + R_2$.
16	decrease	A second path lets more current flow, so the total is less than either resistor alone.
17	same	Series shares the potential difference; parallel shares the current.
18	230	230 V at 50 Hz, and it is an alternating supply: two numbers worth knowing by heart.
19	50	50 complete cycles every second; the current reverses direction 100 times a second.
20	brown	Live brown, neutral blue, earth green and yellow stripes.
21	earth	It connects a metal case to the ground so a fault cannot make the case live.
22	The live wire is still at 230 V, so a current would flow through your body to earth, giving an	Your body is at 0 V, so there is a large potential difference between you and the wire.

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Q	Answer	Remember
	electric shock.	
23	1150	P = V I = 230 × 5 = 1150 W.
24	$P = I^2 R$	The current is squared, so doubling it gives four times the heating effect.
25	60	E = Q V = 10 × 6 = 60 J. One volt is one joule per coulomb.
26	A high potential difference means a low current, so less energy is lost heating the cables and the system is more efficient.	Step-up at the power station, step-down near homes to make it safe to use.
27	electrons	Only electrons move when insulators are rubbed; the positive charges stay put.
28	repel	Like charges repel, opposite charges attract, because of the electric field around each charge.
29	positive	The cloth lost exactly the electrons the rod gained, so the charges are equal and opposite.
30	electric field	The field is strongest close to the charge and gets weaker further away.

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