

Knowledge Questions for AQA Electricity for GCSE Physics and Combined Science (Higher and Foundation)

These questions are the specification for electricity turned into questions. This means that if you understand the answers then you will have complete coverage of the content that you need to know.

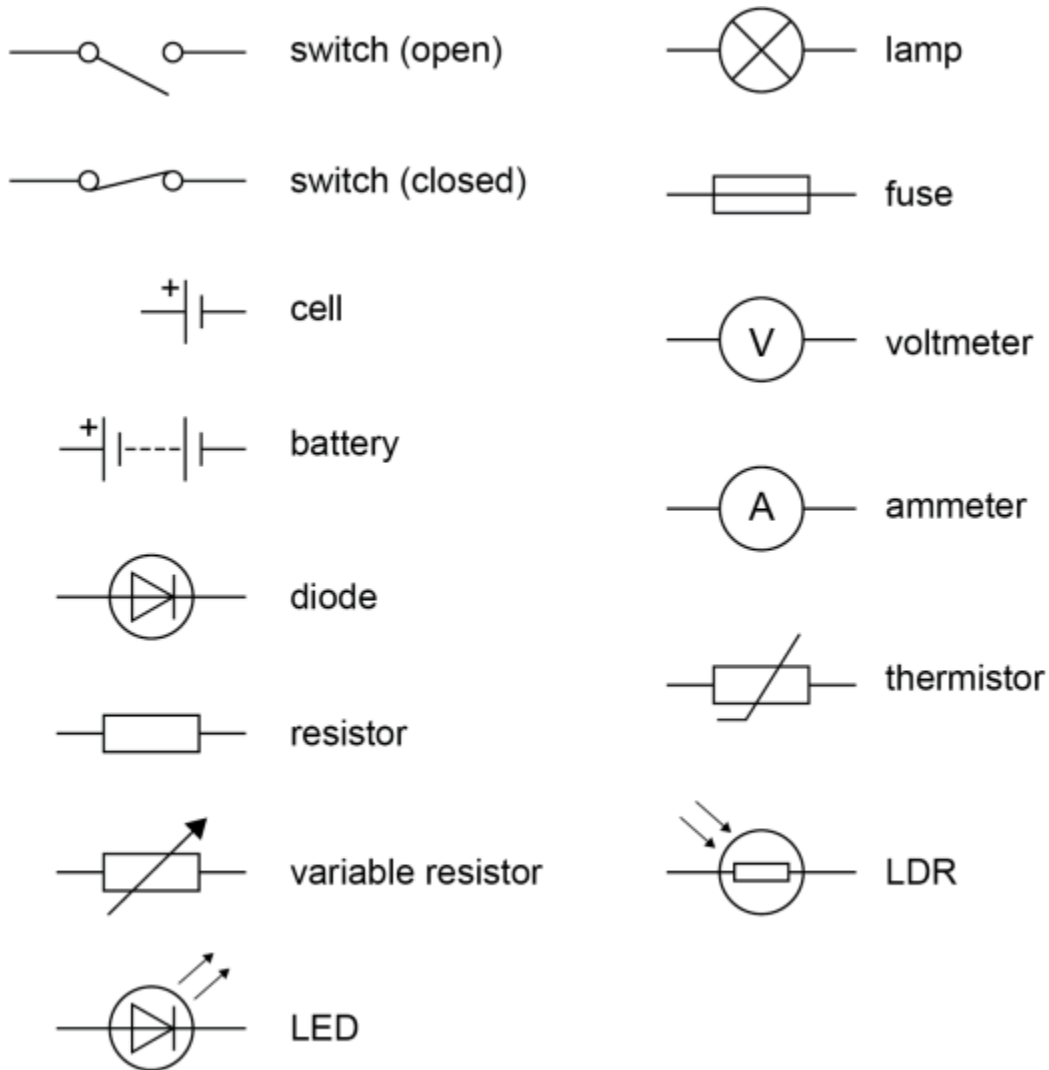
All this material must be known for higher and foundation students.

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Standard Circuit Symbols

Make sure that you can draw out the following symbols



I have also made a circuit symbol audio quiz here

<https://specificationfocusquestions.com/2022/04/27/circuit-symbols-physics/>

Electric Charge and Current

What must there be in order for an electrical charge to flow through a component?

What is an electric current a flow of?

What does the rate of flow of electrical charge tell us?

State the equation that links charge flow, current and time.

What are the units of charge, time and current?

What can you say about the size of current at any point in a single closed loop circuit?

Current, Resistance and Potential Difference

What two things does the current through a component depend on?

What letter is used to represent resistance?

What letter is used to represent current?

What letter is used to represent potential difference?

Give another name for potential differences.

Copy and complete the sentence: The greater the _____ of the component the _____ the current for a given _____ (pd) across the component.

How can the potential difference across a component be calculated using current and resistance?

Resistors

What is meant by an Ohmic Conductor?

What can you say about the resistance of an Ohmic conductor?

What can be said about the temperature of an Ohmic conductor?

Sketch a current/potential difference graph for an Ohmic Conductor?

What is plotted on the x-axis?

What is plotted on the y axis?

Is the resistance constant for the following components as current changes? Lamp, Thermistor, Diode and Light Dependent Resistor.

What happens to the resistance of a filament lamp as the temperature of the filament lamp increases?

Sketch the shape of the current/voltage graph for a filament lamp.

What is a diode and what does it do?

Sketch the shape of the current/voltage graph for a diode.

What happens to the resistance of a thermistor as the temperature of the resistance increases?

State an application of a thermistor?

What happens to the resistance of an LDR as light intensity increases?

State a few applications of an LDR.

Series and Parallel Circuits

State the two ways in which electrical components can be joined together.

For a series circuit, what can you say about the current that flows through each component?

In a series circuit, how does the potential difference behave?

If two components are connected in series how can the total resistance be calculated?

Write down an equation to calculate the total resistance of components connected in series.

What can you say about the potential difference across components in a parallel circuit?

Write a sentence to explain how current behaves in a parallel circuit?

If a two Ohm resistor and a four Ohm resistor are connected in parallel what can you say about the total resistance?

Direct and Alternating Potential Difference

What type of electricity is the mains electricity?

In the United Kingdom, what are the frequency and the potential difference of domestic electricity?

What is the difference between an alternating potential difference and a direct potential difference?

Mains Electricity

How are most electrical appliances connected to the mains?

What colour is the insulation covering on the live, neutral and Earth wire?

What is the purpose of the live wire?

What is the purpose of the Neutral Wire?

What is the purpose of the Earth Wire?

What potential is the Earth wire at?

What is the potential difference between the live and Earth Wire?

What is the potential of the neutral wire?

What is the potential of the Earth wire and when does it carry a current?

Why is the live switch dangerous even if there is an open switch?

Why is it dangerous to make a connection between the Earth and the Live wire?

Electrical Power

Look at these two equations to calculate electrical power.

power = potential difference × current

$$[P = V I]$$

power = (current)² × resistance

$$[P = I^2 R]$$

What is the unit of power?

What is the unit of potential difference?

What is the unit of current?

What is the unit of resistance?

In terms of energy transfer, what does a 100 W light bulb do?

Rearrange the first equation so that $V =$ and $I =$

Rearrange the second equation so that $R =$ and $I =$

Energy Transfers in Everyday Appliances

What are everyday appliances designed to do?

Give two examples of everyday appliances?

What 2 things does the amount of energy transferred by an appliance depend on? One begins with t and the other a p.

Describe the energy transfers that are taking place in an electric fan.

Describe the energy transfers taking place in an electric oven.

What does a.c. stand for (please don't say air conditioning).

What is done when electrical charge flows around a circuit.

Have a look at these two equations.

energy transferred = power × time

$$[E = P t]$$

energy transferred = charge flow × potential difference

$$[E = Q V]$$

Rearrange so that $P =$, $t =$, $Q =$ and $V =$.

What are the units of: –

1. Energy transferred.
2. Power
3. Time
4. Charge flow
5. potential difference?

The National Grid

Copy and complete the following sentence: The National Grid is a system of _____ and _____ linking power stations to consumers.

What is transferred to consumers via the National Grid?

What is the purpose of a step-up transformer in the national grid system?

What is the purpose of a step-down transformer in the national grid system?

Why is the National Grid system is an efficient way to transfer energy?

Static Charge - GCSE Physics Only

What happens to certain insulating materials that are rubbed against each other?

What is rubbed off one material and onto the other?

What happens to the material that gains the negative charge?

What happens to the material that loses the negative charge?

What happens when two electrically charged objects are brought close together?

What can you say about the force when the two objects carry the same type of charge?

What can you say about the force when the two objects carry different types of charge?

attraction and repulsion a contact or a non-contact force?

How does sparking occur?

Electric Fields - GCSE Physics Only

What does a charged object create around itself?

Where is the electric field the strongest?

Where is the electric field the weakest?

What is experienced when a second object is placed in the field.

What happens to the forces if the distance between the two objects is decreased?

Can you draw the electric field pattern for an isolated charged sphere?
See diagram below

Required Practicals

I have collated Youtube videos on the link below detailing all the required practicals that you need to know about for the Electricity Topic.

<https://specificationfocusquestions.com/2022/05/02/required-practicals-for-aqa-gcse-physics-electricity/>