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| **Topic heading** | **Syllabus Ref** | **Idea cluster** | **Question 1** | **Question 2** | **Question 3** | **Question 4** | **Question 5** |
| Electricity | GCSEPE 1 | Electrical charge and current | Electrical current is a measure of what?   1. The amount of energy that is transferred every second in J/sec 2. The amount of charge passing every second in coulombs / sec 3. The amount of energy transferred to each coulomb of charge by a power supply in J / coulomb. 4. How much a component resists the flow of charge in ohms. | Current is measured in amps. 1 amp means what?   1. Each coulomb of charge contains 1 J of energy. 2. 1 J of energy is transferred to each coulomb every second. 3. 1 coulomb of charge flows past a point in the circuit every second. 4. 1 coulomb of charge flows past a point in the circuit every hour. | If a current of 2 amps flows for 1 minute the total charge flowed is:   1. 2 coulombs 2. 0.5 coulombs 3. 120 coulombs 4. 30 coulombs | Which of the following equations **does not** show the relationship between current, time and total charge flow?   1. Q = I / t 2. Q = I x t 3. t = I / Q 4. I = Q / t | Which statement about the current at positions 1, 2 and 3 in the circuit below is true?  1  2  3   1. The current will be greatest at 1 and lowest at 2. 2. The current will be greatest at 2 and lowest at 1. 3. The current at 1 and 2 will be the same and lowest at 3. 4. The current will be the same at all three points. |
|  |  |  | B | C | C | A | D |
|  | GCSEPE 2 | Current, resistance and potential difference | In which situation will the current be greatest?   1. When the power supply has a high voltage and the resistance in the circuit is also high 2. When the power supply has a low potential difference and the resistance in the circuit is also high. 3. When the power supply has a high potential difference and the resistance in the circuit is low 4. When the power supply has a low voltage and the resistance in the circuit is high | Which equation correctly describes the relationship between potential difference, current and resistance?   1. I = V x R 2. R = V x I 3. R = V / ! 4. V = I x R | In a simple series circuit, the potential difference of the power supply is 6V; the total resistance in the circuit is 24 ohms. What current flows?   1. 0.25 A 2. 4 A 3. 144 A 4. 18 A | Which graph below describes a conductor that obeys Ohms Law?  I  V  I  V  I  V  I  V  **A**  **B**  **C**  **D** | In the circuit below the supply potential difference is 6 V. The lamp will blow if a current greater than 0.5 A flows but needs 0.1 A to flow for it to glow. What would be an appropriate resistor to add to the circuit?   1. 6 Ohms 2. 18 Ohms 3. 120 Ohms 4. 6000 Ohms |
|  |  |  | C | D | A | D | B |
|  | GCSEPE 3 | Resistors | Which graph below best describes how current varies with potential difference for an ohmic conductor?    A  B  C  D | Which graph below best describes how current varies with potential difference for a filament lamp?    A  B  C  D | Which graph below best describes how current varies with potential difference for a diode?    A  B  C  D | Which statement about light dependent resistors is accurate?   1. Its resistance drops as the light intensity increases. 2. The current passing through it drops as the light intensity increases. 3. Its resistance increases as the light intensity increases. 4. Its resistance drops as the light temperature increases. | Which statement about thermistors is accurate?   1. Its resistance drops as the temperature decreases. 2. The current passing through it drops as the temperature increases. 3. Its resistance increases as the temperature increases. 4. Its resistance drops as the temperature increases. |
|  |  |  | D | C | B | A |  |
|  | GCSEPE 4 | Series and parallel circuits | What is the total resistance in the circuit below?     1. 11 ohms 2. 3 ohms 3. 19 ohms 4. 0.5 ohms | The circuit below contains two identical resistors; a lamp and a 9 V power supply. The current is 0.5 A. If the resistance of the lamp is 2 ohms what is the resistance of **each** resistor**?**     1. 18 ohms 2. 9 ohms 3. 4.5 ohms 4. 2.25 ohms | What ***could*** the resistance either side of the cell in the circuit below?     1. 1 ohm 2. 2 ohms 3. 7 ohms 4. 4 ohms | Which sum correctly describes the current measured at ammeter A1?     1. A1 = A4 – A3 – A2 2. A1 = A4 + A3 + A2 + A5 3. A4 – A3 – A2 – A5 4. A1 = A4 + A3 + A2 | A series circuit contains a power supply and three resistors. One of the resistors is removed. What will definitely happen to the current?   1. The current will drop by one third. 2. The current will increase by one third. 3. The current will decrease. 4. The current will increase. |
|  |  |  | C | B | A | D | D |
|  | GCSEPE 5 | Direct and alternating current | What type of current is produced when a circuit is connected to a cell?   1. Alternative current 2. Alternating current 3. Direct current 4. Direct and alternating current | Mains current has the following properties:   1. It has a voltage of 230V and a frequency of 230 Hz 2. It has a voltage of 50V and a frequency of 230 Hz 3. It has a voltage of 230V and a frequency of 50 Hz 4. It has a voltage of 50V and a frequency of 50Hz | Which graph of voltage against time best describes how the voltage changes with time in an alternating current circuit?  V  Time  V  Time  V  Time  V  Time  A  B  C  D | Which graph of voltage against time best describes how the voltage changes with time in an alternating current circuit?  V  Time  V  Time  V  Time  V  Time  A  B  C  D | What kind of current is generated at a power station?   1. Alternative current 2. Direct current 3. Direct and alternating current 4. Alternating current |
|  |  |  | C | C | B | A | D |
|  | GCSEPE 6 | Mains electricity, insulation, fuses and circuit breakers | Three core electrical cables use colours to show what the wires are for. The correct colours are:   1. Brown = live wire, blue = neutral wire and green and yellow stripes = earth wire. 2. Blue = live wire, brown = neutral wire and green and yellow stripes = earth wire. 3. Brown = live wire, green and yellow stripes= neutral wire and blue = earth wire. 4. Green and yellow stripes= live wire, blue = neutral wire and brown = earth wire. | What is the role of the earth wire?   1. To carry the alternating current from the supply. 2. To complete the circuit. 3. To act as a fuse 4. To stop the appliance becoming love. | The potential difference between the live wire and the earth is?   1. 240 V 2. 50 Hz 3. 230 V 4. 40 Hz | Sometimes appliances do not have earth connections. This is usually if?   1. They are made of metal 2. They are double insulated 3. They are broken 4. They use mains electricity | How are fuse wires are different from wires in the circuit?   1. Fuse wires are much stronger so they don't burn out. 2. They are thinner and burn out more easily than the wires in the circuit. 3. They are the same but aren't insulated. 4. Fuse wires only allow current to pass in one direction. |
|  |  |  | A | D | C | B | B |
|  | GCSEE 6 | Power | Which of the following equations shows an incorrect relationship between power, voltage and current   1. P = V x I 2. V = P / I 3. V = I / P 4. P = I x V | Which of the following equations describes how power, current and resistance are related?   1. P = I x R 2. P = I2 x R 3. P = I x R2 4. P = I / R | 0.1 A passes through a device connected to the mains supply. What is the power of the device?   1. 23 W 2. 230 W 3. 2300 W 4. 0.0004 W | A 23 kW machine is connected to the mains. What current would flow?   1. 230 W 2. 529 W 3. 0.1 A 4. 100 A | Power is measured in watts. 1 W means?   1. 1 J of energy is transferred in total 2. 1 J of energy is transferred every second 3. 1 J of energy is transferred every minute 4. 1 j of energy is transferred for ever m of wire. |
|  |  |  | C | B | A | D | B |
|  | GCSEPE 7 | Energy transfer in everyday appliances | Which equation shows the total amount of energy transferred by a device of power rating P in time t?   1. E = P x t 2. E = P / t 3. E = t x P 4. E = P2 / t | A 1 kW hair dryer is used for 2 minutes. How much work was done?   1. 120 J 2. 120 kJ 3. 60 J 4. 60 kJ | In the equation E = Q x V, what does Q mean?   1. The current 2. The charge per second 3. The total number of coulombs. 4. The potential difference | A circuit was connected to a 9 V power supply and the total charge that flowed was 100 C. How much work was done?   1. 900 J 2. 900 W 3. 900 A 4. You can’t tell unless you know how long the current flowed for | In which situation was the energy transfer greatest?   1. 2 kW hairdryer on for 1 minute 2. A 30 W electric bulb on for 100 minutes. 3. A 10 kW fan heater for 10 seconds 4. A 10 W torch for 10000 seconds |
|  |  |  | A | B | C | A | B |
|  | GCSEPE 8 | The National Grid | Step up transformers do the following:   1. They increase V and I 2. They decrease V and I 3. They increase V and decrease I 4. They decrease V and increase I | Step-up transformers are used to increase the potential difference from the power station to the transmission cables because?   1. Power cables can’t manage low voltages 2. Too much energy is transferred from power cables at high currents. 3. Electricity travels faster at high voltages. 4. Low voltages cause problems for birds | What is the correct description of how the national grid uses transformers?   1. Step up upon going from power station to transmission cables and step down upon entering homes and factories. 2. Step up upon going from power station to transmission cables and step up upon entering homes and factories. 3. Step down upon going from power station to transmission cables and step down upon entering homes and factories. 4. Step down upon going from power station to transmission cables and step up upon entering homes and factories. | The system of cables and transformers linking power stations to consumers is called what?   1. Powrgen 2. The international Grid 3. National Power 4. The National Grid |  |
|  |  |  | C | B | A | D |  |
|  | GCSEPE 9 | Static Charge | What is transferred when an object gains a static charge?   1. Electrons 2. Voltage 3. Atoms 4. Protons | A spark can leap from an object with a static charge to another object if?   1. The other object is a metal 2. The other object is an insulator 3. If the potential difference between the two objects is high enough. 4. If a wire is placed between the two objects | Two identical insulators gained static charges when rubbed by identical clothes. The two objects were brought close to each other. What might be observed?   1. A spark would jump between the two objects. 2. The two objects would attract each other 3. The two objects would attract each other and a spark might jump between them. 4. The two objects would repel each other | Very different clothes rubbed two identical balloons. When brought close to each other the balloons were attracted to each other. Which statement is correct about the two balloons?   1. Both balloons have positive charges 2. Both balloons have negative charges 3. Both balloons transferred electrons to their cloths/ 4. Only one balloon transferred electrons to its cloth. |  |
|  |  |  | A | C | D | D |  |
|  | GCSEPE 9 | Electric fields | The area around a charged object where other charged objects will be attracted or repelled is called what?   1. An electric field 2. A magnetic field 3. An electric current 4. A magnet | The attractive and repulsive forces between electric fields are examples of what?   1. Contact forces 2. Magnetic forces 3. Non-contact forces 4. Gravitational forces | Which picture best describes the electric field around a positively charged ball?  +  -  +  -  A  B  D  C |  |  |
|  |  |  | A | C | A |  |  |