

# Electrical Quantities

## Question Paper 2

|            |  |
|------------|--|
| Level      | IGCSE                                      |
| Subject    | Physics (0625/0972)                        |
| Exam Board | Cambridge International Examinations (CIE) |
| Topic      | General Physics                            |
| Sub-Topic  | Electrical Quantities                      |
| Booklet    | Question Paper 2                           |

**Time allowed:** 19 minutes

**Score:** /15

**Percentage:** /100

### Grade Boundaries:

|      |     |     |     |     |     |     |     |      |
|------|-----|-----|-----|-----|-----|-----|-----|------|
| 9    | 8   | 7   | 6   | 5   | 4   | 3   | 2   | 1    |
| >85% | 75% | 68% | 60% | 55% | 50% | 43% | 35% | <30% |

## Question 1

Some resistors are made using one type of wire. Two different lengths of wire are available. Each length is available in two different diameters.

Which wire has the highest resistance?

- A the wire with the greater length and the larger diameter
- B the wire with the greater length and the smaller diameter
- C the wire with the smaller length and the larger diameter
- D the wire with the smaller length and the smaller diameter

## Question 2

Four students are each given an identical resistor and asked to find its resistance. They each measure the potential difference across the resistor and the current in it.

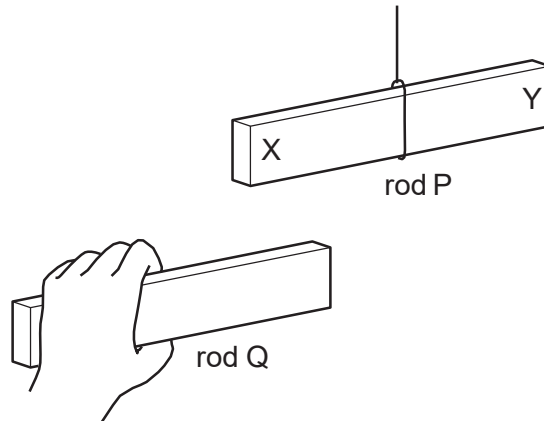
One student makes a mistake.

Which row shows the results of the student that makes a mistake?

|   | potential difference/V | current/A |
|---|------------------------|-----------|
| A | 1.2                    | 0.500     |
| B | 2.4                    | 1.100     |
| C | 1.5                    | 0.625     |
| D | 3.0                    | 1.250     |

### Question 3

Two plastic rods P and Q are both negatively charged. Rod P hangs freely.



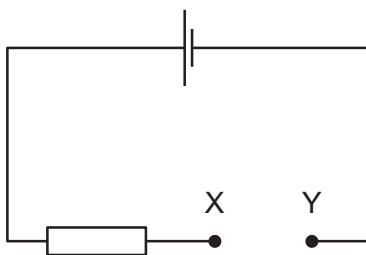
The end of rod Q is brought near to end X of rod P, and then near to end Y of rod P.

What happens to the rods in each position?

|   | near end X   | near end Y   |
|---|--------------|--------------|
| A | they attract | they attract |
| B | they attract | they repel   |
| C | they repel   | they attract |
| D | they repel   | they repel   |

## Question 4

A student has four pieces of resistance wire made of the same material. Each piece is connected in turn between the terminals X and Y in the circuit.



In which wire is the current the largest?

|   | length of wire / m | diameter of wire / mm |
|---|--------------------|-----------------------|
| A | 0.5                | 0.5                   |
| B | 0.5                | 1.0                   |
| C | 1.0                | 0.5                   |
| D | 1.0                | 1.0                   |

## Question 5

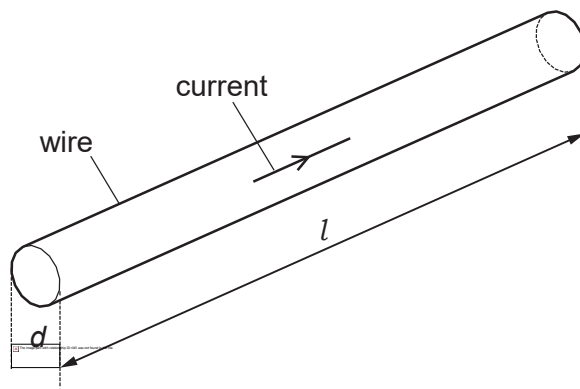
A plastic rod is rubbed with a cotton cloth. This process causes the rod and the cloth to become charged. These charges cause a force between the rod and the cloth.

Which row compares the charges on the rod and the cloth, and describes the effect of the force between the rod and the cloth?

|   | charges on rod and cloth | effect       |
|---|--------------------------|--------------|
| A | opposite                 | they attract |
| B | opposite                 | they repel   |
| C | the same                 | they attract |
| D | the same                 | they repel   |

## Question 6

A metal wire of circular cross-section has diameter  $d$  and length  $l$ .



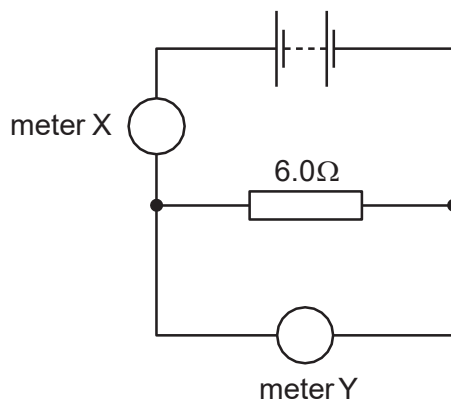
Which pair of changes, if both are carried out, **must** increase the resistance of the wire?

- A decrease  $l$  and decrease  $d$
- B decrease  $l$  and increase  $d$
- C increase  $l$  and decrease  $d$
- D increase  $l$  and increase  $d$

## Question 7

The circuit shown contains a battery, a  $6.0\ \Omega$  resistor and two meters X and Y.

One meter records current and one meter records potential difference.



Which row shows possible values for the readings on the meters?

|   | meter X | meter Y |
|---|---------|---------|
| A | 2.0A    | 12V     |
| B | 2.0 V   | 12A     |
| C | 12 A    | 2.0V    |
| D | 12V     | 2.0A    |



## Question 8

A teacher wishes to show the production of electrostatic charges.

She holds a rod and rubs it with a cotton cloth. A copper rod, a glass rod, a plastic rod and a steel rod are available.

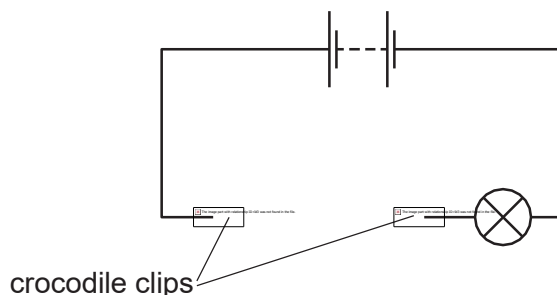
Which two rods would both be suitable to use?

- A a copper rod and a glass rod
- B a glass rod and a plastic rod
- C a plastic rod and a copper rod
- D a plastic rod and a steel rod

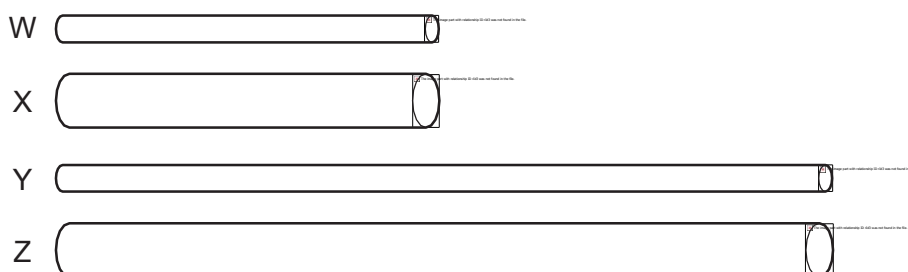
## Question 9

A battery is connected to two crocodile clips and a lamp.

There is a gap between the crocodile clips.



Four cylinders W, X, Y and Z are made of the same metal but have different dimensions. The cylinders are connected in turn, by their ends, between the crocodile clips. The diagrams of the cylinders are all drawn to the same scale.



Which cylinder makes the lamp glow most brightly and which cylinder makes the lamp glow least brightly?

|   | most brightly | least brightly |
|---|---------------|----------------|
| A | W             | Y              |
| B | W             | Z              |
| C | X             | Y              |
| D | X             | Z              |

## Question 10

A plastic rod and a dry cloth are uncharged.

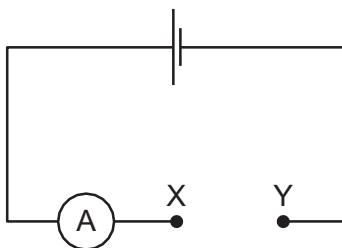
The rod is now rubbed with the cloth and they both become charged. The rod becomes negatively charged because some charged particles move from the cloth to the rod.

What is the charge on the cloth and which particles moved in the charging process?

|   | charge on cloth | particles that moved |
|---|-----------------|----------------------|
| A | negative        | electrons            |
| B | negative        | neutrons             |
| C | positive        | electrons            |
| D | positive        | neutrons             |

## Question 11

The diagram shows an incomplete circuit.



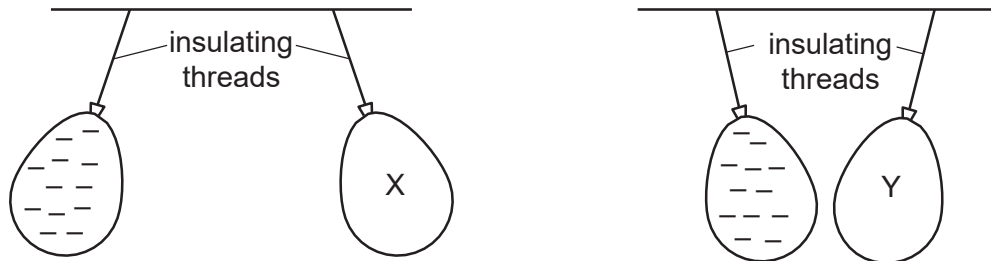
Four wires of different length and thickness are connected in turn between point X and point Y. All four wires are made of the same metal.

Which wire will cause the greatest reading on the ammeter?

- A long and thick
- B long and thin
- C short and thick
- D short and thin

## Question 12

Two balloons, X and Y, are suspended by insulating threads. They are each held near a negatively charged balloon. The balloons hang as shown.



What is the charge on balloon X and what is the charge on balloon Y?

|   | balloon X | balloon Y |
|---|-----------|-----------|
| A | negative  | negative  |
| B | negative  | positive  |
| C | positive  | negative  |
| D | positive  | positive  |

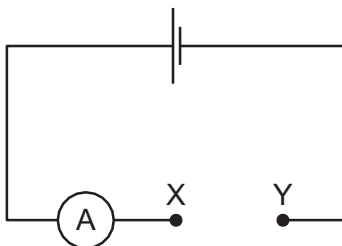
## Question 13

Which quantities is a voltmeter used to measure?

- A current and e.m.f. only
- B current and p.d. only
- C e.m.f. and p.d. only
- D e.m.f., current and p.d

## Question 14

The diagram shows an incomplete circuit.



Four wires of different length and thickness are connected in turn between point X and point Y. All four wires are made of the same metal.

Which wire will cause the greatest reading on the ammeter?

- A long and thick
- B long and thin
- C short and thick
- D short and thin

## Question 15

Which row gives the unit for energy and the unit for electromotive force (e.m.f.)?

|   | energy | e.m.f. |
|---|--------|--------|
| A | J      | N      |
| B | J      | V      |
| C | W      | N      |
| D | W      | V      |