Write your name here

Surname	Other names

13+ Scholarship 2026

Subject: Physics

Time: 1 Hour

You must have:	**Total Marks**
Pen Pencil	

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name.
- Answer **all** questions.
- Answer the questions in the spaces provided
  - *there may be more space than you need.*
- Show all the steps in any calculations and state the units.

Information

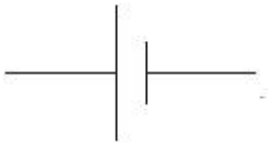
- The total mark for this paper is **60**
- The marks for **each** question are shown in brackets
  - *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Write your answers neatly and in good English.
- Try to answer every question.
- Check your answers if you have time at the end.

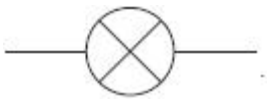
Q1.

Identify the circuit diagram symbols.

(a) 

(1)

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(b) 

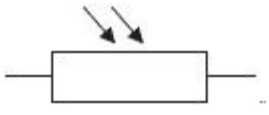
(1)

.....

(c) 

(1)

.....

(d) 

(1)

.....

(Total for question = 4 marks)

Q2.

The passage is about static electricity.

Use words from the box to complete the passage.

Each word may be used once, more than once, or not at all.

(4)

atoms	attract	electrons	friction
negatively	positively	protons	repel

A student combs her hair with a plastic comb. Her hair and the comb become charged.

This happens because of the ..... between her hair

and the comb. The comb becomes positively charged so her hair becomes

..... charged.

The student's hair sticks out because like charges

.....

When the student moves the comb through her hair, she can hear a crackling sound.

This is caused by ..... transferring from the comb to her hair.

(Total for question = 4 marks)

Q3.

(a) Diagram 1 shows the orbit of Mercury and the orbit of the Earth.

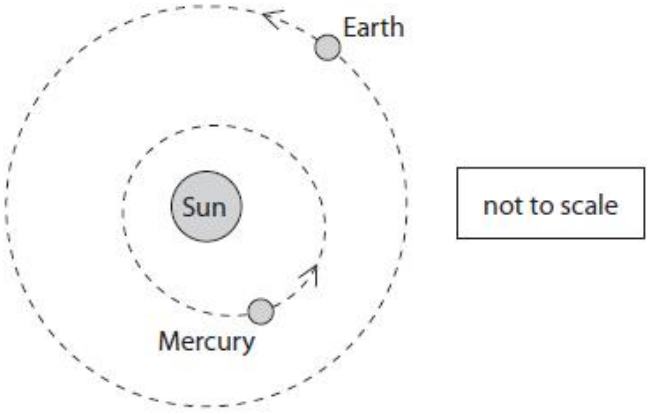


Diagram 1

Describe two differences between the orbit of Mercury and the orbit of the Earth.

Use diagram 1 to help you with your answer.

(2)

1 .....

.....

2 .....

.....

(b) Diagram 2 shows the orbit of a comet and the orbit of the Earth.

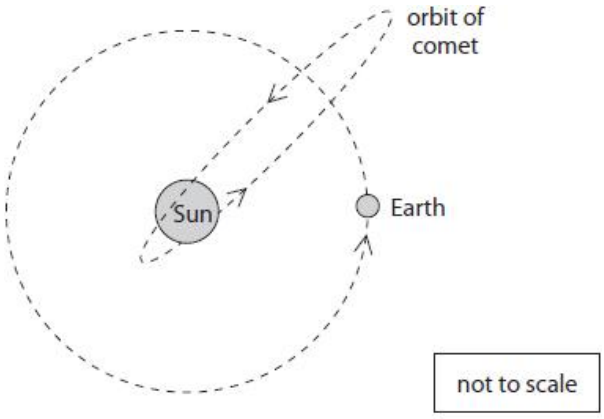


Diagram 2

Describe two differences between the orbit of the comet and the orbit of the Earth.

Use diagram 2 to help you with your answer.

(2)

1 .....

.....

2 .....

.....

(Total for question = 4 marks)

Q4.

The driver of a car sees an obstacle in the road and stops the car as quickly as possible.

The car stops without hitting the obstacle.

State three factors that could have affected the stopping distance of the car.

(3)

1 .....

.....

2 .....

.....

3 .....

.....

(Total for question = 3 marks)

Q5.

A coal-fired power station and a wind turbine both produce electrical power.

The power station produces 1200 MW and the wind turbine produces 1.5 MW.



(a) Give **one** advantage of using wind turbines instead of a coal-fired power station to produce electricity.

(1)

.....

.....

(b) Coal-fired power stations are still in general use.

Explain why wind turbines have not replaced them.

(4)

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(Total for question = 5 marks)

Q6.

A student needs to find the mass of a large steel bolt but does not have access to a balance.



The student knows the density of steel.

Describe how he can accurately find the mass of the bolt using its density.

You may draw a diagram to help your answer.

(5)

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(Total for question = 5 marks)

Q7.

A student investigates ice, water and steam.

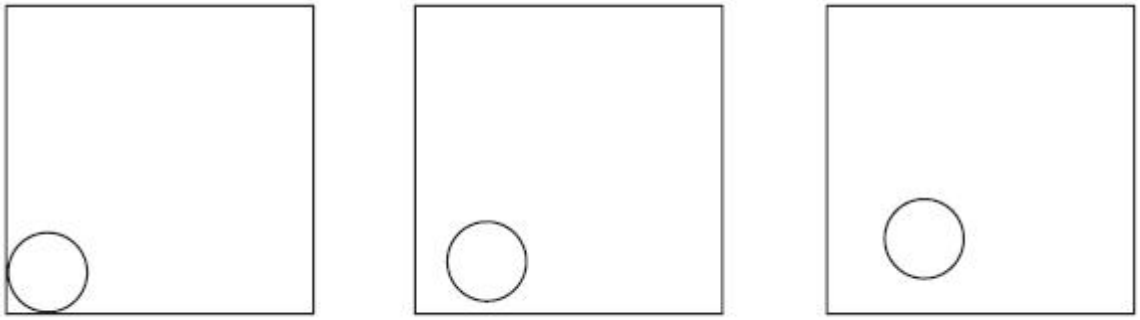
She heats up a sample of ice.

When it has all melted, she carries on heating until the water has all boiled to steam.

(a) Complete the diagram to show how the particles are arranged in ice, water and steam.

One particle in each box has been drawn for you.

(4)



(b) Complete the table by describing how the particles move in ice, water and steam.

(3)

Substance	How the particles move
ice	
water	
steam	

(Total for question = 7 marks)

Q8.

A student measures the diameter of a coin.

She uses the digital caliper shown in the photograph.



The digital caliper gives readings to the nearest 0.01 mm.

(a) The student measures the diameter of the coin eight times.
Her readings are shown below.



(i) Circle the anomalous reading.

(1)

(ii) Calculate the average diameter of the coin.

(3)

Average = ... mm

(b) The student wants to find the thickness of a coin.
She takes several similar coins and measures them together as shown.



She says:



If I measure all the coins at once and divide this value by the number of coins it will be more accurate.

Do you agree with the student?
Explain why.

(2)

.....

.....

.....

.....

.....

(c) The student wants to find the density of the coin.
She uses her values for the diameter and thickness of the coin to calculate its volume.
What else must she do to find the density of the coin?

(3)

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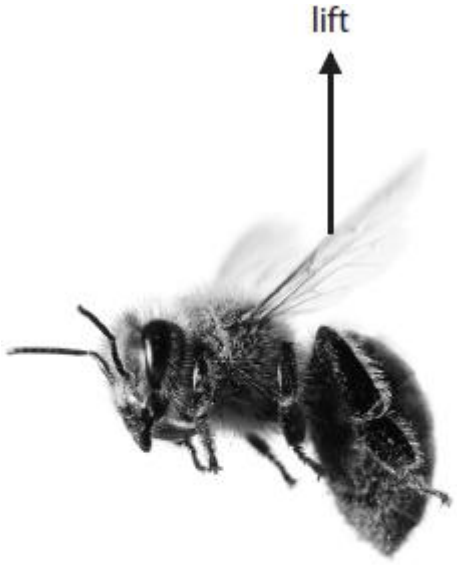
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(Total for question = 9 marks)

Q9.

This question is about a small flying insect called a bee.

(a) The photograph shows a bee accelerating vertically upwards.



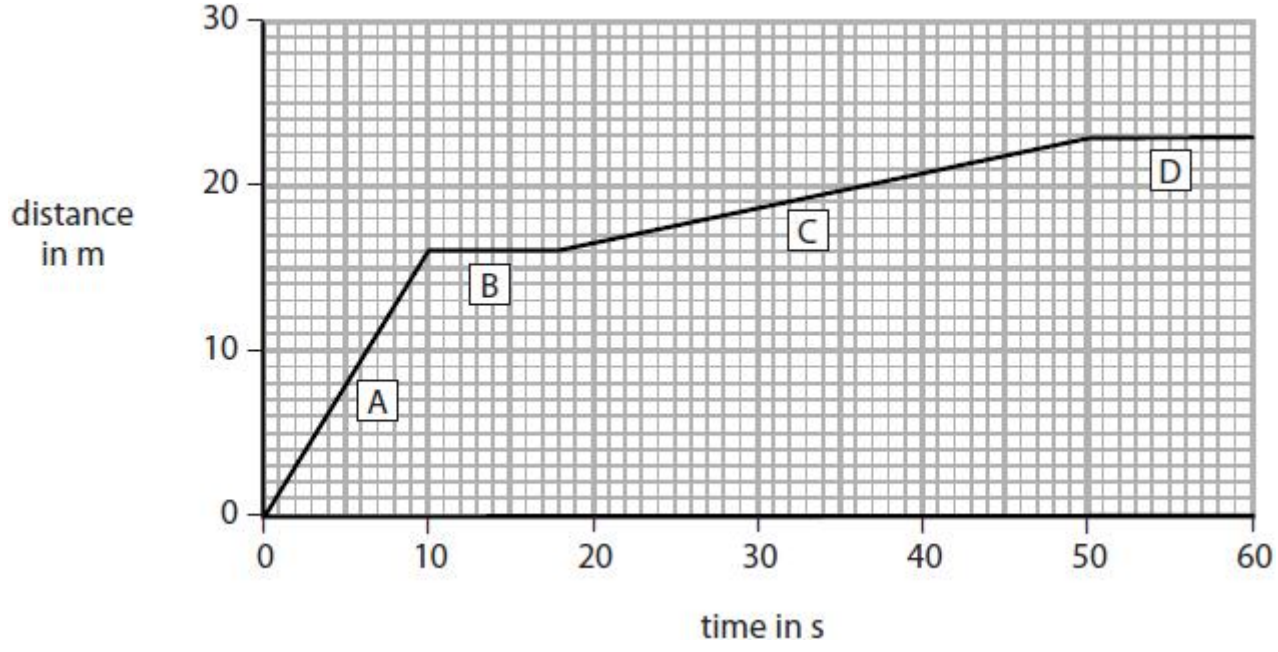
© Friends of the Honey Bee

Complete the diagram by adding another labelled force arrow.

(2)

(b) The graph shows a 60-second journey made by the bee.

During this time, the bee stops at some flowers to feed.



(i) Which stage of the graph shows the bee stopping at a flower for the shortest period of time?

(1)

☒ **A** ☒ **B** ☒ **C** ☒ **D**

(ii) Which stage of the graph shows the bee moving at the fastest speed?

(1)

☒ **A** ☒ **B** ☒ **C** ☒ **D**

(iii) State the equation linking average speed, distance moved and time taken.

(1)

(iv) Calculate the average speed of the bee during the first 35 seconds of its journey.

(2)

average speed = ... m/s

(Total for question = 7 marks)

Q10.

A student investigates how the surface area of water affects how quickly it cools down.

He puts warm water into different shaped containers.

The photograph shows two of the containers.



This is the student's plan.

I will use four different containers and work out the surface area of water in each one.

I will heat some water and pour the same volume into each container.

I will put a thermometer into each container and measure the water temperatures.

After 15 minutes I will measure the temperatures again.

(a) State the independent variable in this investigation.

(1)

.....

(b) (i) State one variable that the student plans to control.

(1)

.....

(ii) Explain why it is important to control this variable.

(2)

.....

.....

.....

.....

(c) Suggest a safety precaution for this investigation.

(1)

.....

.....

(d) The table shows the student's results.

Surface area in cm^2	Starting temperature in °C	Temperature after 15 minutes in °C	Temperature difference in °C
600	85	54	
400	95	55	
300	88	60	
150	85	60	

(i) Complete the table by inserting the missing temperature differences.

(2)

(ii) The student wants to display the data on a graph.
Give suitable labels for the axes of his graph.

(3)

x-axis

.....

y-axis

.....

(iii) The student realises that it was a mistake to have different starting temperatures.
Suggest how he could change his method to correct this mistake.

(2)

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.....

(Total for question = 12 marks)

***** End of Paper *****