

Leave blank

Answer ALL the questions. Write your answers in the spaces provided.

1. The following substances are either electrical conductors or insulators. Write each of the words in the correct column of the table. One has been done for you.

copper

glass

iron

nylon

rubber

conductors	insulators
	nylon

(Total 4 marks)

Q1



Leave blank

2. Five quantities are shown in the boxes on the left.
Draw one line from each box to the correct description.
One has been done for you.

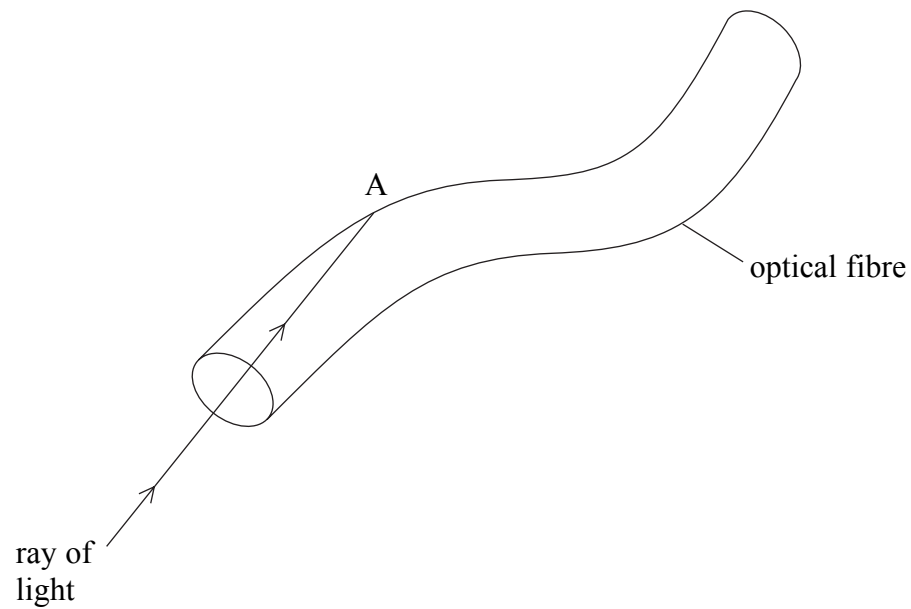
quantity		description
acceleration	—	rate of change of speed
air resistance	•	speed in a stated direction
electric current	•	downward pull of gravity
velocity	•	upward force on a falling object
weight	•	rate of flow of charge

(Total 4 marks)

Q2



3. A ray of light travels along an optical fibre as shown in the diagram.



- (a) All of the light is reflected inside the fibre at A.
What name is given to this effect?

..... (2)

- (b) Continue the line to show the path of the ray of light through the optical fibre. You should use a ruler. (2)

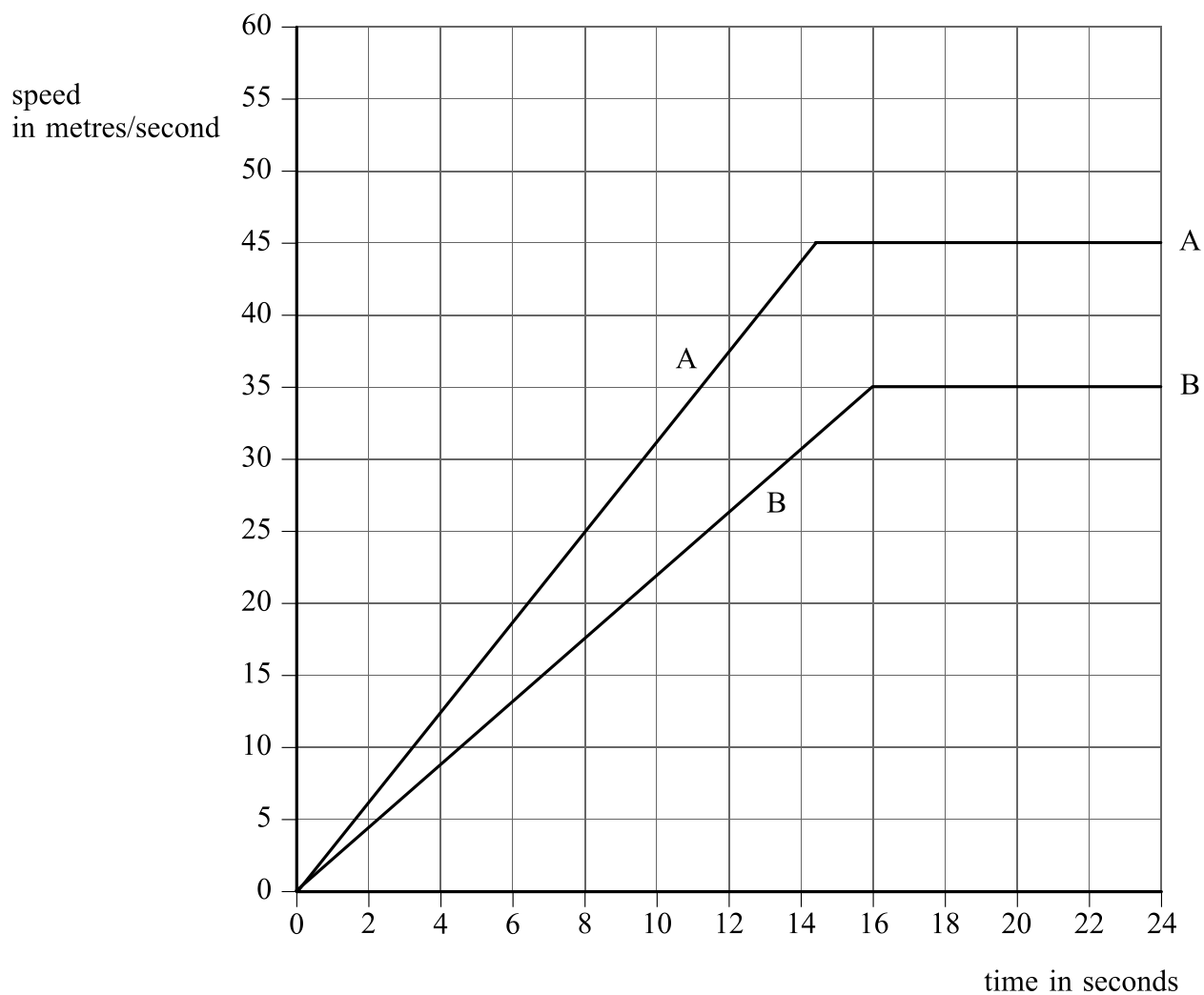
(Total 4 marks)

Q3



4. Anna is interested in buying a new car. She looks at a road test that compares two cars, A and B.

Some road test information is shown in the graph below.



(a) (i) What is the top speed of car B? m/s
(1)

(ii) What is the speed of car A after 8 seconds? m/s
(1)

(b) Anna has seen a car that has a greater acceleration and a higher top speed than either car A or car B.

Draw a line on the graph to show the information about this car.

(2)

(Total 4 marks)

Q4

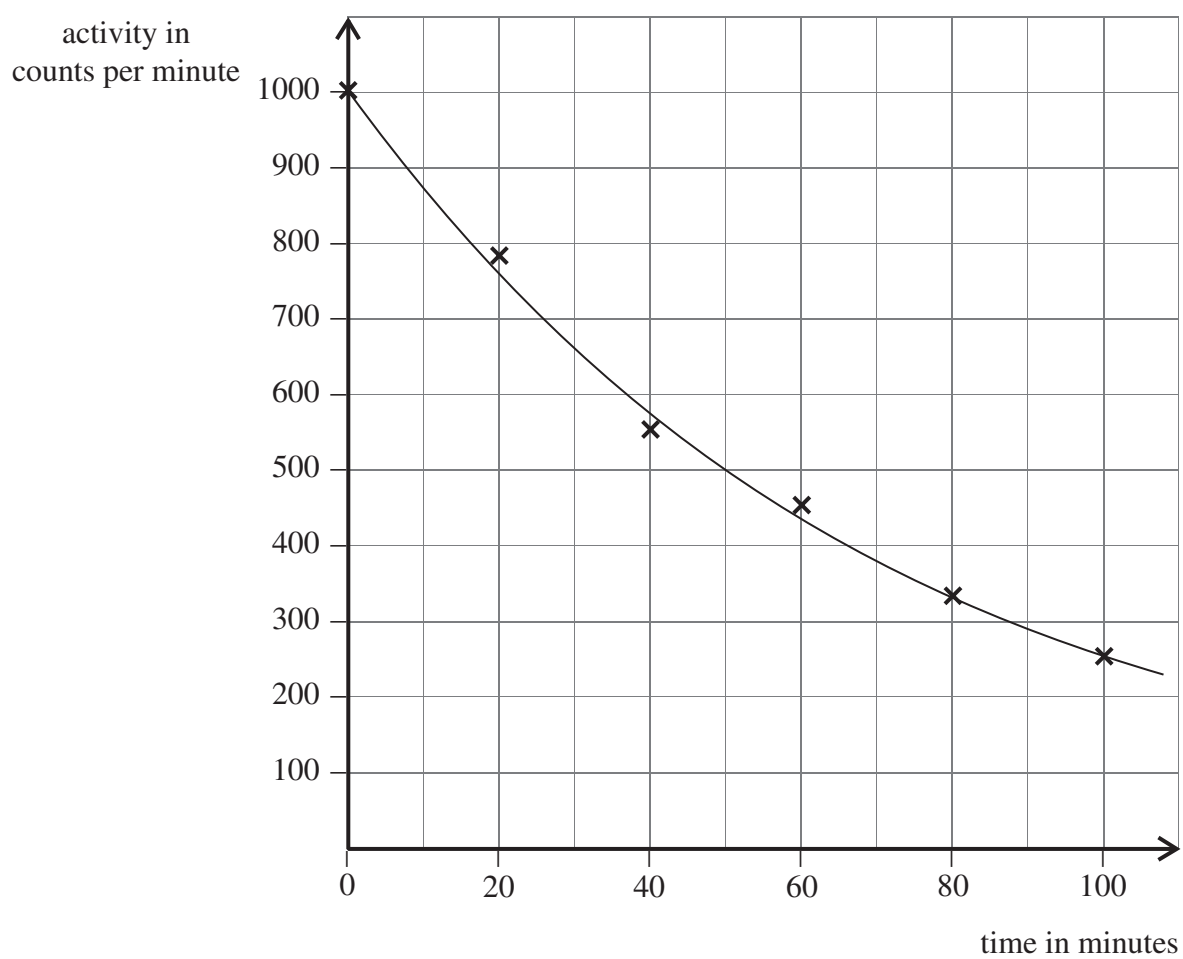


5. (a) What is meant by the term **radioactive half-life**?

.....
.....
(1)

(b) A teacher did an experiment to find the half-life of a radioactive isotope. She measured the activity of the isotope with a Geiger-Müller tube and a counter.

The graph shows her results.



Use the graph to find the half-life of the isotope.

.....
.....
.....
(2)



Leave
blank

(c) A nuclear power station has been dismantled.

- Scientists find that the ground contains radioactive waste.
- They discover that the half-life of the radioactive isotope in the ground is 30 years.
- A sample of the waste has an activity of 8 Bq.
- Builders hope that the ground will be completely safe after 60 years.

(i) What activity would the sample have after 60 years?

.....
.....

(1)

(ii) Explain why people may not want to live in houses built where the nuclear power station used to be, even after 60 years.

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.....
.....
.....

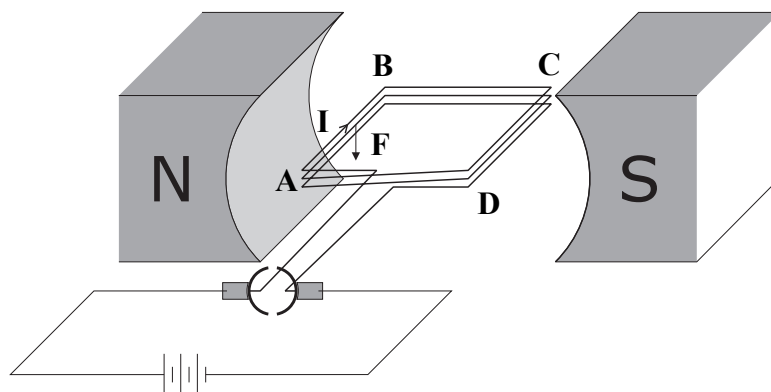
(2)

Q5

(Total 6 marks)



6. The diagram shows part of an electric motor connected to a battery.
 The current **I** is marked along side **AB**.
 The force **F** is also marked on side **AB**.



- (a) On the diagram add:
- (i) an arrow showing the direction of the current on side **CD** of the coil – label this current **X**,
 - (ii) an arrow showing the direction of the force on side **CD** of the coil – label this force **Y**.
- (2)**

- (b) Describe changes that could be made to the equipment that would make the motor spin in the opposite direction.



.....

(3)

- (c) The motor is connected to a 6 V battery.
 The current carried by the wire is 0.5 A.
 Calculate the electrical power supplied to the motor.
 State the unit.

.....

(3)

Q6

(Total 8 marks)

TOTAL FOR PAPER: 30 MARKS

END

