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Sample assessment 2020

Question and response book

Physics

Paper 1

Time allowed

- Perusal time — 10 minutes
- Working time — 90 minutes

General instructions

- Answer all questions in this question and response book.
- QCAA-approved calculator permitted.
- QCAA formula sheet provided.
- Planning paper will not be marked.

Section 1 (20 marks)

- 20 multiple choice questions

Section 2 (25 marks)

- 8 short response questions

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Section 1

Instructions

- Choose the best answer for Questions 1–20.
- This section has 20 questions and is worth 20 marks.
- Use a 2B pencil to fill in the A, B, C or D answer bubble completely.
- If you change your mind or make a mistake, use an eraser to remove your response and fill in the new answer bubble completely.

	A	B	C	D
Example:	●	○	○	○

	A	B	C	D
1.	○	○	○	○
2.	○	○	○	○
3.	○	○	○	○
4.	○	○	○	○
5.	○	○	○	○
6.	○	○	○	○
7.	○	○	○	○
8.	○	○	○	○
9.	○	○	○	○
10.	○	○	○	○
11.	○	○	○	○
12.	○	○	○	○
13.	○	○	○	○
14.	○	○	○	○
15.	○	○	○	○
16.	○	○	○	○
17.	○	○	○	○
18.	○	○	○	○
19.	○	○	○	○
20.	○	○	○	○

Section 2

Instructions

- Write using black or blue pen.
- Respond in paragraphs consisting of full sentences.
- If you need more space for a response, use the additional pages at the back of this book.
  - On the additional pages, write the question number you are responding to.
  - Cancel any incorrect response by ruling a single diagonal line through your work.
  - Write the page number of your alternative/additional response, i.e. See page …
  - If you do not do this, your original response will be marked.
- This section has eight questions and is worth 25 marks.

QUESTION 21 (1 mark)

Define the term *baryon*.

QUESTION 22 (3 marks)

A projectile has an initial velocity of 12 m s^{-1} at an angle of 35° above the horizontal.

Calculate the vertical component of the projectile's initial velocity. Show your working.

Velocity = _____ m s^{-1} (to 1 decimal place)

QUESTION 23 (3 marks)

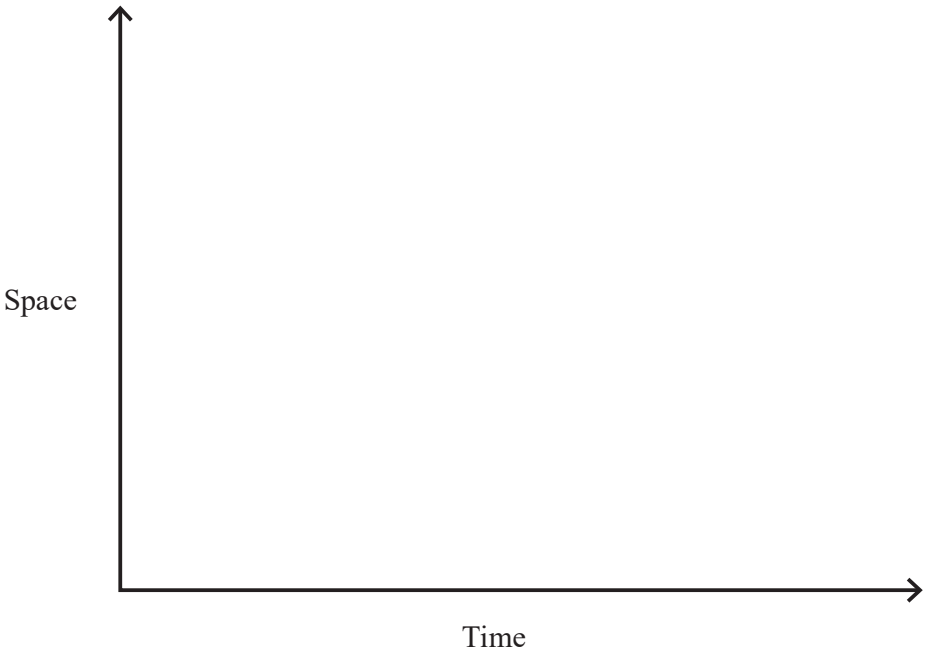
A 5 kg object is experiencing a centripetal force of 80 N and is moving in uniform circular motion with a speed of 8 m s^{-1}.

Calculate the radius of the circular path. Show your working.

Radius = _____ m (to the nearest whole number)

QUESTION 24 (3 marks)

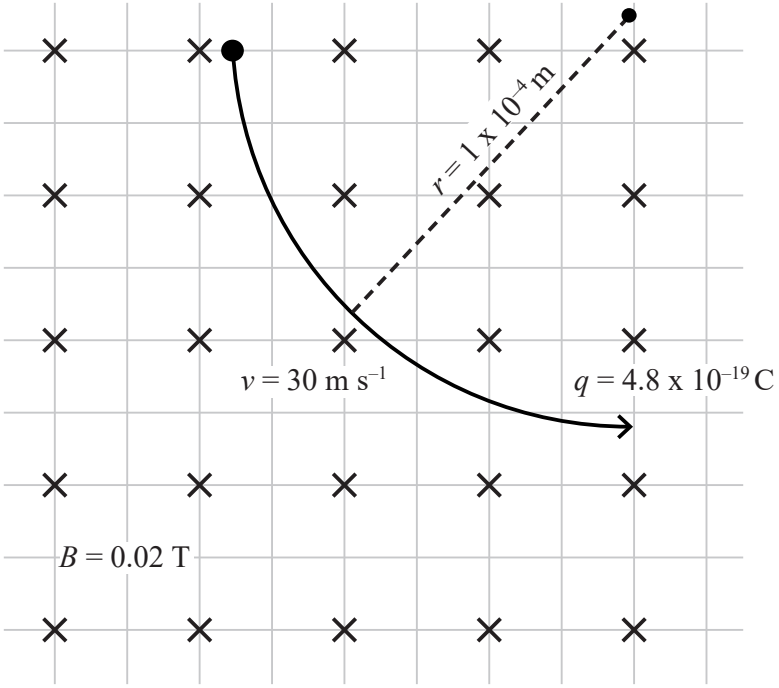
Explain one possible interaction between an electron and a positron. Clearly label the Feynman diagram below to support your answer.



Note: If you make a mistake in the diagram, cancel it by ruling a single diagonal line through your work and use the additional diagram on page 10 of this question and response book.

QUESTION 25 (4 marks)

The diagram below shows a moving charged particle in a magnetic field.



Calculate the mass of the charged particle using the information provided in the diagram above. Show your working. Express the solution using scientific notation.

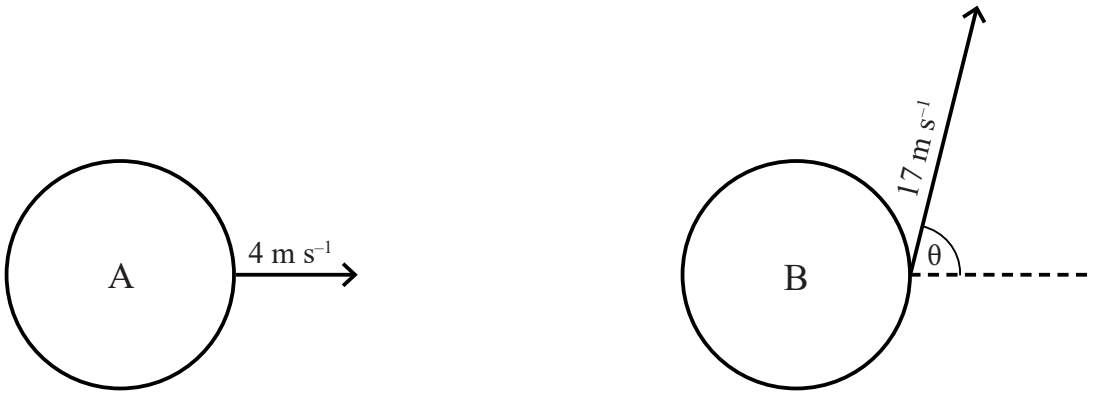
Mass = _____ kg (to 1 decimal place)

QUESTION 26 (2 marks)

Young's double slit experiment provides evidence for the wave model of light. Identify one piece of evidence and explain why this supports the wave model of light.

QUESTION 27 (3 marks)

Object A has an initial horizontal velocity of 4 m s^{-1}.

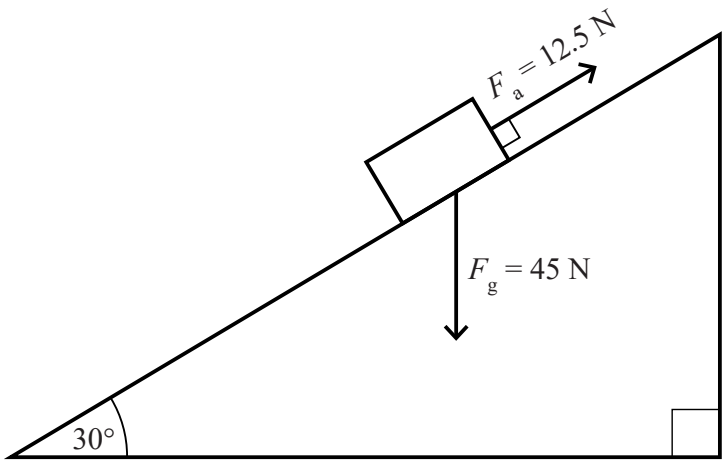


Calculate the angle at which Object B needs to be projected if it has an initial speed of 17 m s^{-1}, but the same initial horizontal velocity as Object A. Show your working.

Angle = _____ ° (to the nearest degree)

QUESTION 28 (6 marks)

The diagram below shows an object, initially at rest, on a frictionless inclined plane.



Calculate the time it will take for the object to slide 10 m along the slope. Show your working.

Time = _____ s (to the nearest whole number)

END OF PAPER

ADDITIONAL PAGE FOR STUDENT RESPONSES

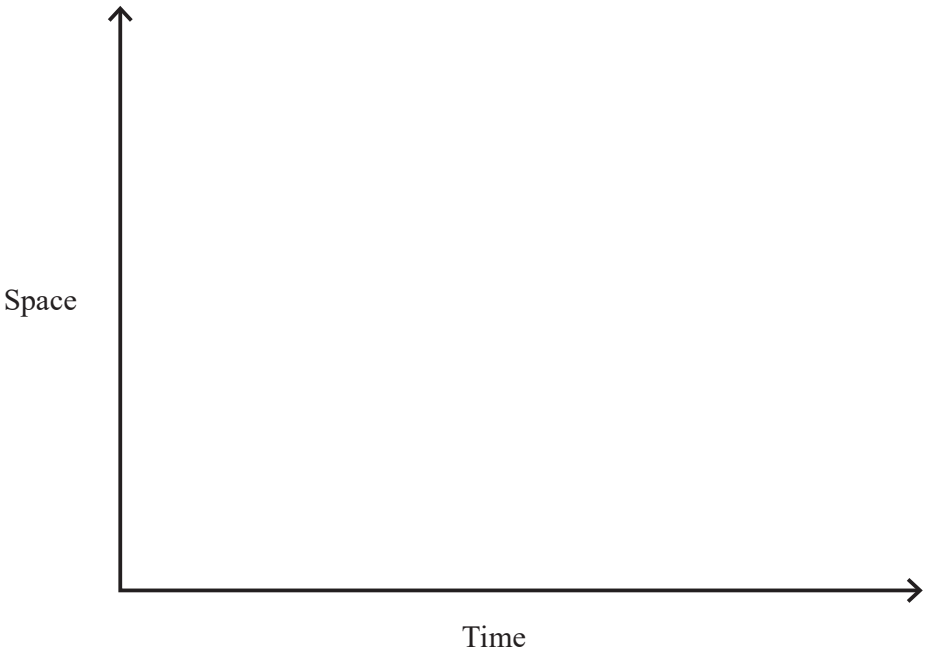
Write the question number you are responding to.

ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

ADDITIONAL RESPONSE SPACE FOR QUESTION 24

If you want this diagram to be marked, rule a diagonal line through the diagram provided on page 4.



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