

- 3

(a)

[5]

①

[illegible]

(b) Find the time when P next goes through O . [2]

[illegible]

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(a)

[4]

It is given that $U = 10$, $k = 0.04$ and $\mu = 0.2$.

- (b)** Find the distance P moves before coming to rest. [4]

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- (c) Find the average speed of P over the period it is moving. [2]

[illegible]

Additional page

If you use the following page to complete the answer to any question, the question number must be clearly shown.

[illegible]

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- 5

A particle P of mass m kg is projected vertically upwards from a point O with an initial speed of 20 m s^{-1} and moves under gravity. There is a resistive force of magnitude $0.025mv^2 \text{ N}$, where $v \text{ m s}^{-1}$ is the speed of P at time t s after projection. The displacement of P from O is x m at time t s after projection.

- (a)**

[5]

[illegible]

(b) Find an expression for v in terms of t , while P is moving upwards.

[4]

Handwriting practice lines (dotted lines) for the letter '7'.

- 1

This image shows a blank sheet of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting or typing. There are no margins, text, or other markings on the page.

- (b)

[illegible]

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It is given that $k = 0.025$ and that $U = 20$.

(b) Find the time taken for the ball to reach its maximum height.

[4]

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