

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

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Pearson Edexcel International Advanced Level

Time 1 hour 30 minutes

Paper

reference

WME01/01

Mathematics

International Advanced Subsidiary/Advanced Level Mechanics M1

You must have:

Mathematical Formulae and Statistical Tables (Yellow), calculator

Total Marks

Candidates may use any calculator permitted by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear. Answers without working may not gain full credit.
- Whenever a numerical value of g is required, take $g = 9.8 \text{ m s}^{-2}$, and give your answer to either 2 significant figures or 3 significant figures.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- There are 8 questions in this question paper. The total mark for this paper is 75.
- 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.
- Try to answer every question.
- Check your answers if you have time at the end.
- If you change your mind about an answer, cross it out and put your new answer and any working underneath.

Turn over ►

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Pearson

Question 1 continued

Handwriting practice area with 30 horizontal lines.

DO NOT WRITE IN THIS AREA



DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

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Question 1 continued

Lined area for writing the answer to Question 1.



Question 1 continued

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DO NOT WRITE IN THIS AREA

Q1

(Total 6 marks)



- (b) State clearly the direction of motion of P immediately after the collision. (1)

The coefficient of friction between Q and the plane is μ .

- (c) Find the value of μ . (6)

Question 2 continued

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Question 2 continued

Lined area for writing the answer to Question 2.



Question 2 continued

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Lined area for writing the answer to Question 2.

Q2

Grading boxes for Q2.

(Total 10 marks)



- (4)

Question 3 continued

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Question 3 continued

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Lined area for writing the answer to Question 3.

Q3

Grading box for Q3.

(Total 10 marks)



- (b) Find the values of t for which the distance of P from O is 2.5 m. (5)

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Question 4 continued

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Question 4 continued

Lined area for writing the answer to Question 4.



Question 4 continued

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Q4

(Total 8 marks)



Question 5 continued

Handwriting practice area with 30 horizontal lines.

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Question 5 continued

Lined area for writing the answer to Question 5.



Question 5 continued

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Lined area for writing the answer to Question 5.

Q5

(Total 10 marks)



Question 6 continued

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Q6

(Total 5 marks)



P 6 6 6 4 9 A 0 2 3 3 2

7.

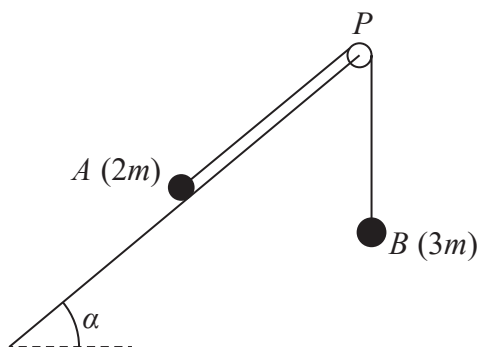


Figure 4

One end of a light inextensible string is attached to a particle A of mass $2m$. The other end of the string is attached to a particle B of mass $3m$. The string passes over a small, smooth, light pulley P which is fixed at the top of a rough inclined plane. The plane is inclined to the horizontal at an angle α , where $\tan \alpha = \frac{3}{4}$

Particle A is held at rest on the plane with the string taut and B hanging freely below P , as shown in Figure 4. The section of the string AP is parallel to a line of greatest slope of the plane.

The coefficient of friction between A and the plane is $\frac{1}{2}$

Particle A is released and begins to move up the plane.

For the motion before A reaches the pulley,

- (a) (i) write down an equation of motion for A ,
(ii) write down an equation of motion for B , (4)
- (b) find, in terms of g , the acceleration of A , (5)
- (c) find the magnitude of the force exerted on the pulley by the string. (4)
- (d) State how you have used the information that P is a smooth pulley. (1)



Question 7 continued

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P 6 6 6 4 9 A 0 2 5 3 2

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Question 7 continued

Lined area for writing the answer to Question 7.



Question 7 continued

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Lined area for writing the answer to Question 7.

Q7

Grading box for Q7.

(Total 14 marks)



- (d) Find the position vector of the ship when it is due south of the lighthouse. (4)

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Question 8 continued

Handwriting practice area with 25 horizontal lines.

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Question 8 continued

Lined area for writing the answer to Question 8.



Question 8 continued

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11

END

TOTAL FOR PAPER: 75 MARKS