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Candidate surname					Other names				
Centre Number					Candidate Number				
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Pearson Edexcel International Advanced Level

Tuesday 7 May 2024

Afternoon (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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Question 5 continued

Lined writing area for the answer to Question 5.

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Question 6 continued

Lined writing area for the answer to Question 6.

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Question 6 continued

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Question 7 continued

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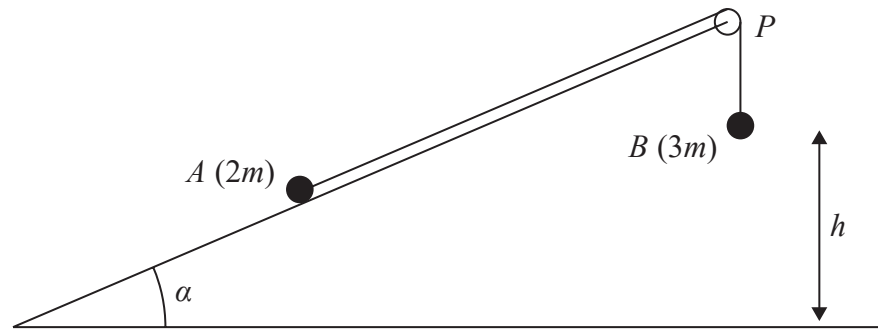


Figure 4

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 $3m$. Particle A is held at rest on a rough plane which is inclined to horizontal ground at an angle α , where $\tan \alpha = \frac{5}{12}$

The string passes over a small smooth pulley P which is fixed at the top of the plane. Particle B hangs vertically below P with the string taut, at a height h above the ground, as shown in Figure 4.

The part of the string between A and P lies along a line of greatest slope of the plane. The two particles, the string and the pulley all lie in the same vertical plane.

The coefficient of friction between A and the plane is $\frac{11}{36}$

The particle A is released from rest and begins to move up the plane.

(a) Show that the frictional force acting on A as it moves up the plane is $\frac{22mg}{39}$ (3)

(b) Write down an equation of motion for B . (2)

(c) Show that the acceleration of A immediately after its release is $\frac{1}{3}g$ (4)

In the subsequent motion, A comes to rest before it reaches the pulley.

(d) Find, in terms of h , the total distance travelled by A from when it was released from rest to when it first comes to rest again. (6)

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Question 8 continued

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Question 8 continued

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