

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

WME02/01

Mathematics

International Advanced Subsidiary/Advanced Level Mechanics M2

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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2. A particle P of mass 0.5 kg is moving with velocity $(5\mathbf{i} + 3\mathbf{j}) \text{ m s}^{-1}$
The particle receives an impulse $(-2\mathbf{i} + \lambda\mathbf{j}) \text{ N s}$, where λ is a constant.
Immediately after receiving the impulse, the velocity of P is $(x\mathbf{i} + y\mathbf{j}) \text{ m s}^{-1}$
The kinetic energy gained by P as a result of receiving the impulse is 22 J .
Find the possible values of λ .

(7)



6.

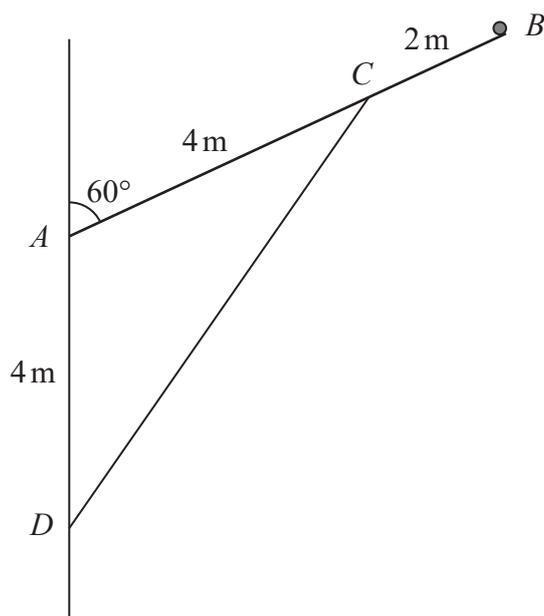


Figure 3

A uniform pole AB , of weight 50 N and length 6 m , has a particle of weight W newtons attached at its end B . The pole has its end A freely hinged to a vertical wall.

A light rod holds the particle and pole in equilibrium with the pole at 60° to the wall.

One end of the light rod is attached to the pole at C , where $AC = 4\text{ m}$.

The other end of the light rod is attached to the wall at the point D .

The point D is vertically below A with $AD = 4\text{ m}$, as shown in Figure 3.

The pole and the light rod lie in a vertical plane which is perpendicular to the wall.

The pole is modelled as a rod.

Given that the thrust in the light rod is $60\sqrt{3}\text{ N}$,

(a) show that $W = 15$

(4)

(b) find the magnitude of the resultant force acting on the pole at A .

(6)



