

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Pearson Edexcel
International
Advanced Level

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--	--

Thursday 20 June 2019

Morning (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 (Blue), 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.
- Inexact answers should be given to three significant figures unless otherwise stated.

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 ►

P55876A

©2019 Pearson Education Ltd.

1/1/1/1/




Pearson

Answer ALL questions. Write your answers in the spaces provided.

1. A truck of mass 800 kg is moving on a straight road that is inclined at an angle α to the horizontal, where $\sin \alpha = \frac{1}{10}$. When the truck is moving up the road at a constant speed of 12 m s^{-1} , the engine of the truck is working at a constant rate of 15 kW. The resistance to the motion of the truck from non-gravitational forces is modelled as a constant force of magnitude R newtons.

(a) Find the value of R . **(4)**

The truck now moves down the same road. The resistance to the motion of the truck is now modelled as a constant force of magnitude 500 N. The engine of the truck is again working at a constant rate of 15 kW.

(b) Find the acceleration of the truck at the instant when it is moving at 12 m s^{-1} . **(3)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



Leave blank

Question 1 continued

A series of horizontal lines for writing.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



Question 2 continued

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

Lined writing area for the answer to Question 2.

(Total 10 marks)

Q2



3. A particle P of mass 0.4 kg is moving with velocity $u\mathbf{i}\text{ m s}^{-1}$, where u is a positive constant. The particle receives an impulse $(3\mathbf{i} + 6\mathbf{j})\text{ N s}$.

Immediately after receiving the impulse, the speed of P is $2u\text{ m s}^{-1}$.

Find the value of u .

(5)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



