

Please write clearly in block capitals.

Centre number

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Candidate number

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Surname

Forename(s)

Candidate signature

I declare this is my own work.

AS FURTHER MATHEMATICS

Paper 2 Mechanics

Thursday 14 May 2020

Afternoon

Time allowed: 1 hour 30 minutes

Materials

- You must have the AQA formulae and statistical tables booklet for A-level Mathematics and A-level Further Mathematics.
- You should have a scientific calculator that meets the requirements of the specification. (You may use a graphical calculator.)
- You must ensure you have the other optional Question Paper/Answer Book for which you are entered (**either** Discrete **or** Statistics). You will have 1 hour 30 minutes to complete **both** papers.

Instructions

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer each question in the space provided for that question. If you require extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do **not** write outside the box around each page.
- Show all necessary working; otherwise marks for method may be lost.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 40.

Advice

- Unless stated otherwise, you may quote formulae, without proof, from the booklet.
- You do not necessarily need to use all the space provided.

For Examiner's Use	
Question	Mark
1	
2	
3	
4	
5	
6	
7	
8	
TOTAL	



Answer **all** questions in the spaces provided.

1 In this question use $g = 10 \text{ m s}^{-2}$

A particle of mass 2 kg is attached to one end of a light elastic string of natural length 0.5 metres and modulus of elasticity 100 N. The other end of the string is attached to the point O .

Find the extension of the elastic string when the particle hangs in equilibrium vertically below O .

Circle your answer.

[1 mark]

0.01 m

0.1 m

0.2 m

0.4 m

2 An object moves under the action of a single force F newtons.

It is given that $F = 6x^2$, where x represents the displacement in metres from the initial position of the object.

Find the work done by F in moving the object from $x = 1$ to $x = 2$

Circle your answer.

[1 mark]

12 J

14 J

18 J

42 J



7 (b) By considering energy find the distance that the rocket rises.

[2 marks]

7 (c) In order to win a prize in the competition, the rocket must reach a point which is 15 cm vertically above its starting position.

With reference to the assumptions you have made, determine if Jo-Jo wins a prize or not.

Fully justify your answer.

[3 marks]

Turn over ►



There are no questions printed on this page

*Do not write
outside the
box*

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**



