

Revision Sheet

Pearson Edexcel · International A-Level · Physics · Unit 1 Mechanics and Materials

24 vocabulary items · 15 marks of exam questions (7 questions)

Part 1 · Vocabulary review (24 items). The terms this unit is examined on most. Mark it yourself from the answer key.

Section A · English dictation

Listen to each word and write it in English. The teacher reads the numbered answer key aloud.

1.

Dictation item 1.

[1]
2.

Dictation item 2.

[1]
3.

Dictation item 3.

[1]
4.

Dictation item 4.

[1]
5.

Dictation item 5.

[1]
6.

Dictation item 6.

[1]
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Dictation item 7.

[1]
8.

Dictation item 8.

[1]
9.

Dictation item 9.

[1]
10.

Dictation item 10.

[1]
11.

Dictation item 11.

[1]
12.

Dictation item 12.

[1]
13.

Dictation item 13.

[1]
14.

Dictation item 14.

[1]
15.

Dictation item 15.

[1]
16.

Dictation item 16.

[1]

17.

Dictation item 17.

[1]
18.

Dictation item 18.

[1]
19.

Dictation item 19.

[1]
20.

Dictation item 20.

[1]
21.

Dictation item 21.

[1]
22.

Dictation item 22.

[1]
23.

Dictation item 23.

[1]
24.

Dictation item 24.

[1]

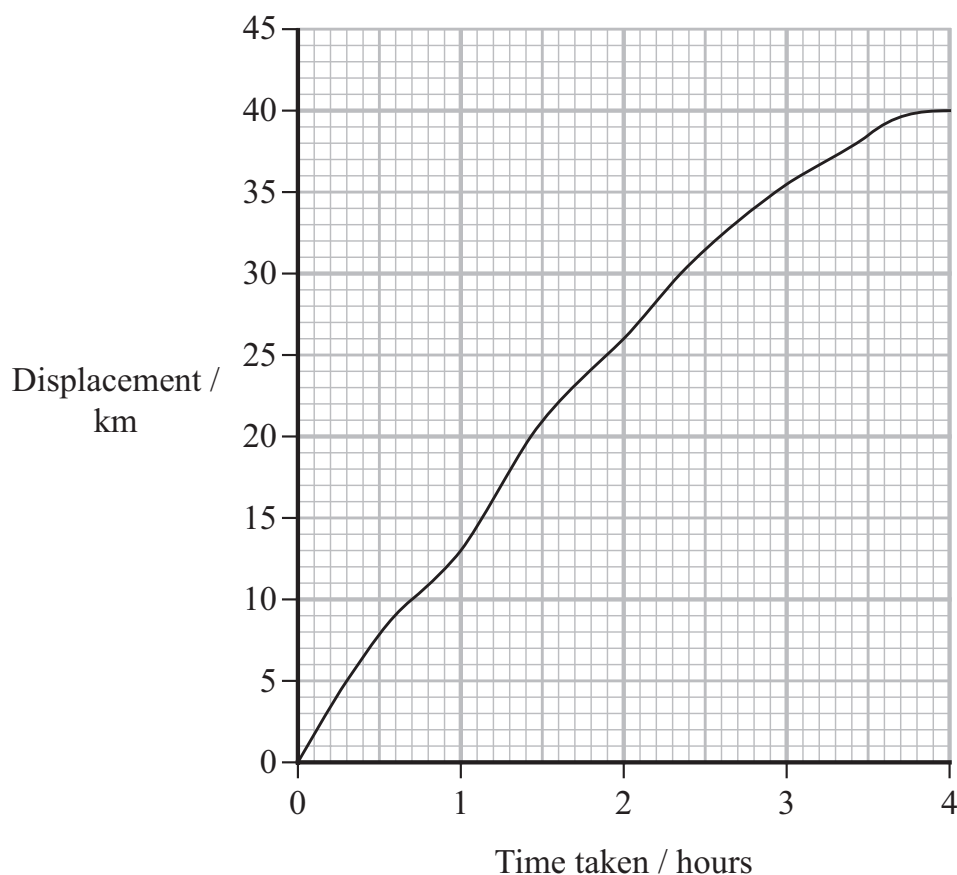
Part 2 · Exam questions (15 marks, 7 questions) begins on the next page. They are ordered easy to difficult and none of them has been set before.

25 Which of the following units is equivalent to the watt?

- ☐ A Nm
- ☐ B Nm^{-1}
- ☐ C Js
- ☐ D Js^{-1}

(Total for Question 25 = 1 mark)

26 The displacement-time graph for a person running a race is shown.

☐

Which of the following gives the average velocity of the person?

- ☐ A area between the curve and the x -axis from 0 hours to 4 hours
- ☐ B gradient of a tangent to the curve at 4 hours
- ☐ C gradient of a tangent to the curve at 2 hours
- ☐ D displacement at 4 hours divided by a time of 4 hours

(Total for Question 26 = 1 mark)

27 Which of the following expressions gives a vector quantity?

- ☐ **A** density $\times$ volume
- ☐ **B** force $\times$ distance moved in direction of force
- ☐ **C** mass $\times$ velocity
- ☐ **D** power $\times$ time

(Total for Question 27 = 1 mark)

28 A box slides down a slope at a constant speed. Weight and resistive forces both act on the box.

Which of the following is a reason why the speed of the box is constant?

- ☐ **A** The component of the weight parallel to the slope is equal to the sum of the resistive forces.
- ☐ **B** The component of the weight parallel to the slope is greater than the sum of the resistive forces.
- ☐ **C** The component of the weight perpendicular to the slope is equal to the sum of the resistive forces.
- ☐ **D** The component of the weight perpendicular to the slope is greater than the sum of the resistive forces.

(Total for Question 28 = 1 mark)

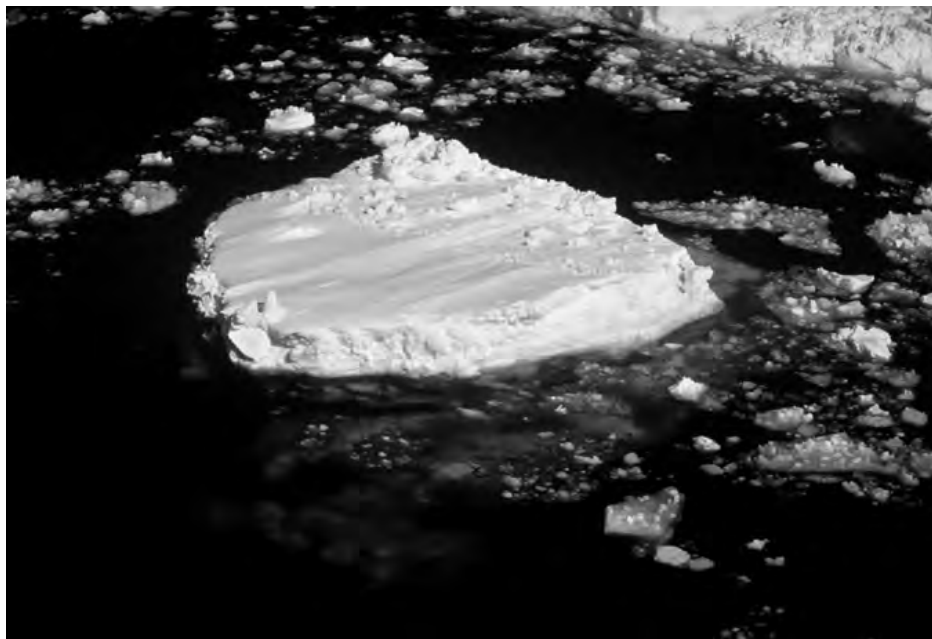
29 A student applies a force to stretch a thin metal wire.

Which of the following describes the wire at the elastic limit?

- ☐ ☐ ☐ ☐
- ☐ **A** The wire is elastically deformed.
 - ☐ **B** The wire is plastically deformed.
 - ☐ **C** The wire is at its maximum extension.
 - ☐ **D** The wire snaps.

(Total for Question 29 = 1 mark)

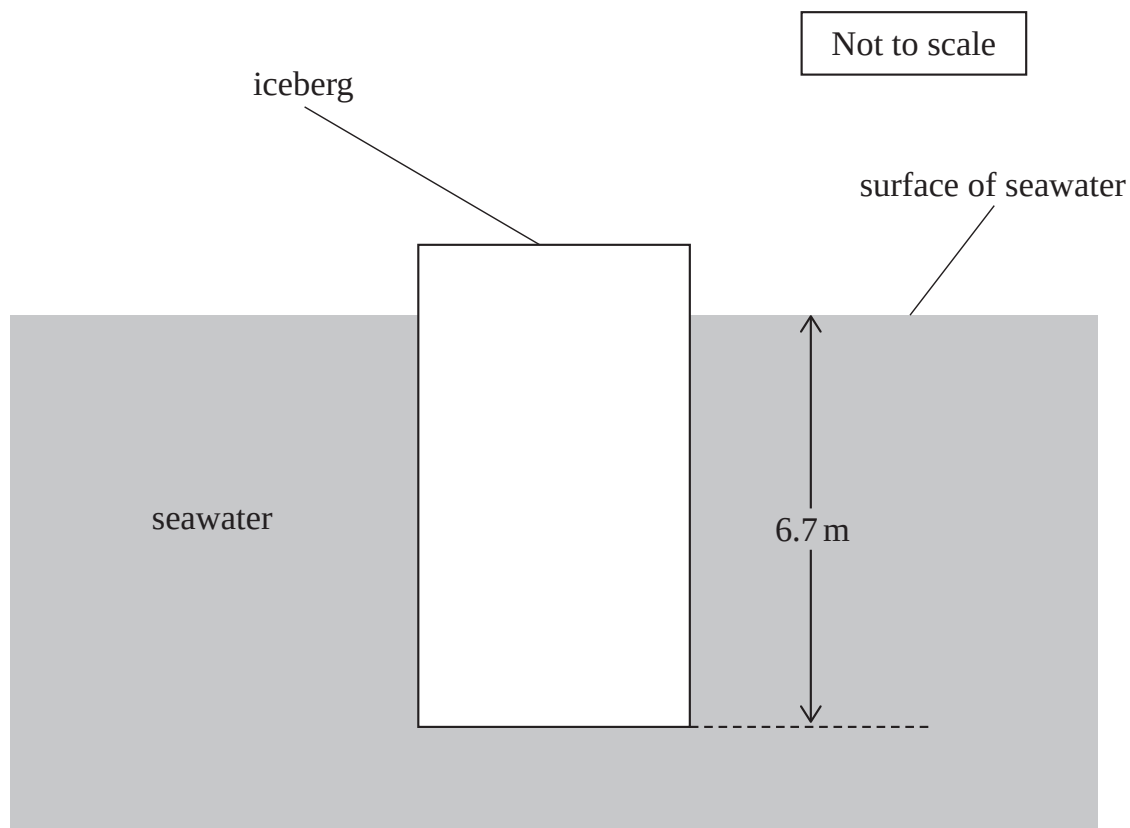
- 30** An iceberg is a large mass of ice that floats in seawater with most of its volume below the surface of the seawater. The photograph shows a typical iceberg.



(Source: © Doug Allan/Science Photo Library)

An iceberg can be modelled as a rectangular block of ice.

A particular iceberg has 6.7 m of its total height below the surface of the water, as shown.



The block of ice has a horizontal cross-sectional area of 3500 m^2 .

- (a) Calculate the weight of the block of ice.

density of seawater = $1.03 \times 10^3 \text{ kg m}^{-3}$

(3)

Weight of block = ...

- (b) An identical block of ice floats in water of a lower density than the seawater in (a). A larger volume of this block is below the surface of the water.

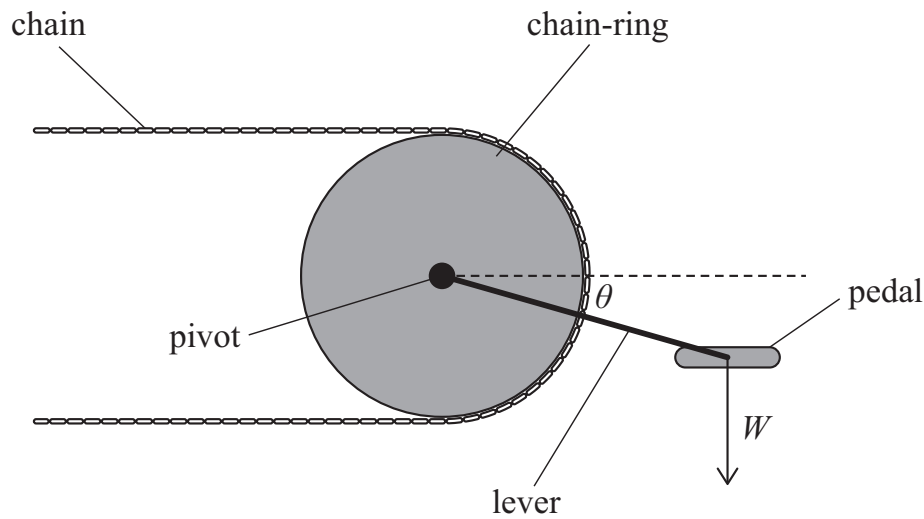
Explain why.

(2)

(Total for Question 30 = 5 marks)

31 A bicycle pedal is connected to a circular ‘chain-ring’ by a lever. A person of weight W stands on the pedal.

The lever is at an angle θ to the horizontal, as shown.



(a) Determine the moment of W about the pivot when θ is 24° .

$W = 580\text{ N}$
length of lever = 0.21 m

(3)

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.....

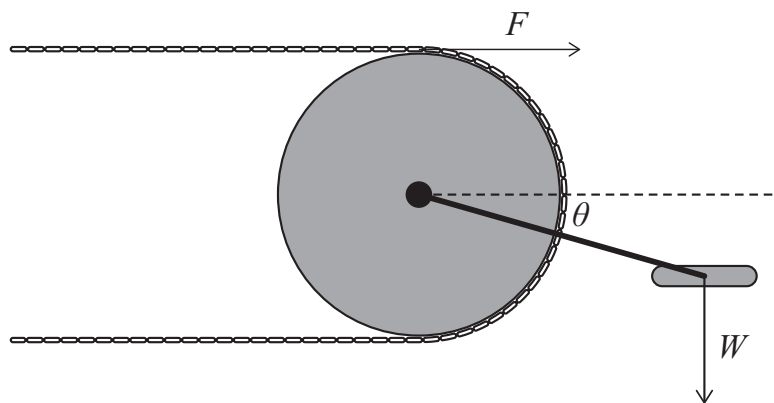
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Moment = ...

(b) The chain-ring exerts a force F on the chain, as shown.



F is proportional to the moment of W about the pivot.

Explain how F changes as θ increases from 0° to 90° .

You do not need to do any calculations.

(2)

(Total for Question 31 = 5 marks)