Cambridge Assessment International Education

Interactive

Interactive Example Candidate Responses

Paper 4 (May / June 2016), Question 3

Cambridge IGCSE™
Physics 0625

Version 2.0

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3 (a) (i) On Fig. 3.1, draw a graph of extension against load for a spring which obeys Hooke's law. [1]

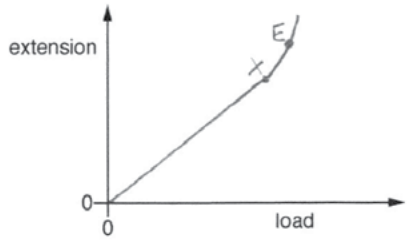

Fig. 3.1

(ii) State the word used to describe the energy stored in a spring that has been stretched or compressed.

Strain energy or elastic potential energy [1]

(b) Fig. 3.2 shows a model train, travelling at speed v, approaching a buffer.

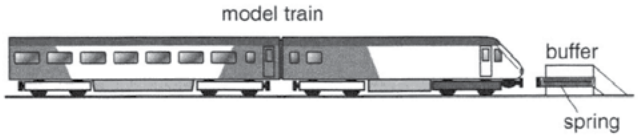

Fig. 3.2

The train, of mass 2.5 kg, is stopped by compressing a spring in the buffer. After the train has stopped, the energy stored in the spring is 0.48 J.

Calculate the initial speed v of the train.

$KE = \frac{1}{2} \times m \times v^2$

$0.48 = \frac{1}{2} \times 2.5 \times v^2$

$v^2 = 0.384$

$v = \sqrt{0.384}$

$v = 0.62$ m/s

$v =$ 0.62 m/s [4]

[Total: 6]

Select page

HIGH MIDDLE LOW

Your Mark

3(a)(i)

3(a)(ii)

3(b)

Q3	Mark scheme
(a)(i)	Straight line through origin
(a)(ii)	Strain (energy) OR elastic (energy)
(b)	Use of $1/2mv^2$ $0.5 \times 2.5 \times v^2 = 0.48$ $v2 = 0.48/(0.5 \times 2.5)$ OR $v2 = 0.384$ $v = 0.62$ m/s

EXAMINER COMMENTS

MARK SCHEME

Select page

HIGH | MIDDLE | LOW

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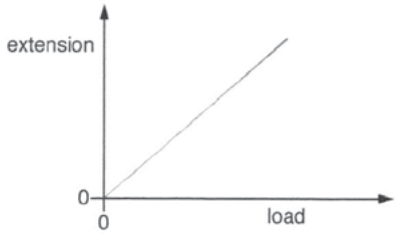

Fig. 3.1

(ii) State the word used to describe the energy stored in a spring that has been stretched or compressed.

Static energy ..... [1]

(b) Fig. 3.2 shows a model train, travelling at speed *v*, approaching a buffer.

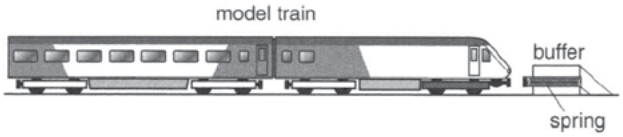

Fig. 3.2

The train, of mass 2.5 kg, is stopped by compressing a spring in the buffer. After the train has stopped, the energy stored in the spring is 0.48 J.

Calculate the initial speed *v* of the train.

Mass: m = 2.5 kg Energy Stored in Spring: 0.48 J

Potential energy: Kinetic energy

$0.48 = \frac{1}{2} mv^2$

$0.48 = \frac{1}{2} \times 0.48 \times v^2$

$0.96 = 0.48 \times v^2$

$\frac{0.96}{0.48} = v^2$

$v^2 = 2$

$v = \sqrt{2}$

$v = 1.4$ m/s

$v =$ 1.4 m/s ..... [4]

[Total: 6]

Your Mark

3(a)(i) ☐

3(a)(ii) ☐

3(b) ☐

Q3	Mark scheme
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EXAMINER COMMENTS | MARK SCHEME

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[1]

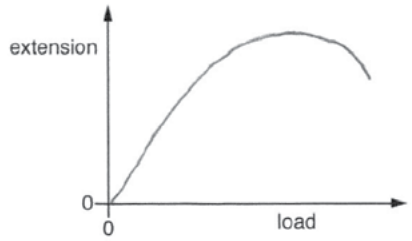

Fig. 3.1

(ii) State the word used to describe the energy stored in a spring that has been stretched or compressed.

Elastic energy [1]

(b) Fig. 3.2 shows a model train, travelling at speed *v*, approaching a buffer.

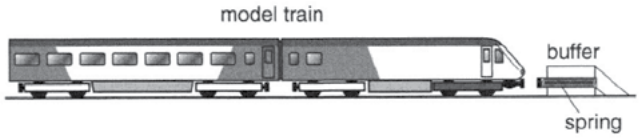

Fig. 3.2

The train, of mass 2.5 kg, is stopped by compressing a spring in the buffer. After the train has stopped, the energy stored in the spring is 0.48 J.

Calculate the initial speed *v* of the train.

$= \frac{1}{2}mv^2$

$= \frac{1}{2} 2.5 \times 0.48^2$

$= 0.288$

v = 0.288 [4]

[Total: 6]

Select page

HIGH MIDDLE LOW

Your Mark

3(a)(i)

3(a)(ii)

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EXAMINER COMMENTS

MARK SCHEME

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