3.16 Energy Stores, Transfers and Calculations: 10-minute Pack

AQA 8464 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Conservation of energy is a fundamental principle in physics.

(a) State the principle of conservation of energy. **(1)**

(Total for Question 1 is 1 mark)

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2 A go-kart has a mass of 150 kg and is travelling at a speed of 8 m/s. kinetic energy = 0.5 * mass * $(\text{speed})^2$

(a) Calculate the kinetic energy of the go-kart. **(2)**

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(Total for Question 2 is 2 marks)

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3 A shopping bag of mass 6 kg is lifted from the floor onto a shelf 1.8 m high. gravitational potential energy = mass * g * height. Take g = 9.8 N/kg.

(a) Calculate the gravitational potential energy gained by the bag. **(2)**

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(Total for Question 3 is 2 marks)

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4 Energy can be stored in different ways. Name the energy store most associated with each situation described below.

(a) A stretched elastic band, ready to fire a paper pellet. **(1)**

(b) A cyclist pedalling along a flat road at a constant speed. **(1)**

(c) A fully charged mobile phone battery. **(1)**

(d) A skydiver who has just jumped from a plane at a height of 3000 m, before they start to fall. **(1)**

(Total for Question 4 is 4 marks)

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Mark scheme · 3.16 Energy Stores, Transfers and Calculations: 10-minute Pack

Question 1

(a) energy cannot be created or destroyed, it can only be transferred from one store to another, oe **B1**

(a) Answer: Energy cannot be created or destroyed, only transferred from one store to another.

Question 2

(a) 0.5 * 150 * 8^2 (correct substitution) **M1**

(a) 4800 J cao **A1**

(a) Answer: 4800 J

Question 3

(a) 6 * 9.8 * 1.8 (correct substitution) **M1**

(a) 105.84 J (awrt 106 J) cao **A1**

(a) Answer: 105.84 J (awrt 106 J)

Question 4

(a) elastic potential (energy store) **B1**

(a) Answer: Elastic potential energy store

(b) kinetic (energy store) **B1**

(b) Answer: Kinetic energy store

(c) chemical (energy store) **B1**

(c) Answer: Chemical energy store

(d) gravitational potential (energy store) **B1**

(d) Answer: Gravitational potential energy store

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