3.5 Mechanics: Kinematics Depth: 10-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A particle P moves in a straight line with velocity $v = 5 - 2t$ m/s. State the initial velocity of P (at $t = 0$).

(Total for Question 1 is 1 mark)

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2 A particle passes point A with speed 6 m/s and accelerates uniformly at 2 m/s^2. Find its speed 5 seconds later, at point B.

(Total for Question 2 is 1 mark)

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3 A ball is thrown vertically upwards from a point 2 m above the ground with speed 12 m/s. Using $g = 9.8$ m/s^2, find the greatest height above the ground reached by the ball, giving your answer to 3 significant figures.

(Total for Question 3 is 2 marks)

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4 Priya cycles from rest along a straight, horizontal cycle path with constant acceleration 1.5 m/s^2 for 8 seconds. Model Priya as a particle.

(a) Find Priya's speed at the end of the 8 seconds. **(2)**

(b) Find the distance Priya travels in these 8 seconds. **(2)**

(Total for Question 4 is 4 marks)

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Mark scheme · 3.5 Mechanics: Kinematics Depth: 10-minute Pack

Question 1

5 cao **B1**

Answer: 5 m/s

Question 2

16 cao **B1**

Answer: 16 m/s

Question 3

use $v^2 = u^2 - 2gs$ with v=0, u=12 to find height risen above the point of projection, then add 2 m **M1**

awrt 9.35 m **A1**

Answer: 9.35 m (3 s.f.)

Question 4

(a) uses v = u + at with u = 0, a = 1.5, t = 8 **M1**

(a) v = 12 (m/s) cao **A1**

(a) Answer: 12 m/s

(b) uses $s = ut + 0.5at^2$ (or equivalent) with correct values **M1**

(b) s = 48 (m) cao **A1**

(b) Answer: 48 m

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