3.1 Equations of Motion

Question Paper

Course	CIE A Level Physics (9702) 2019-2021
Section	3. Kinematics
Topic	3.1 Equations of Motion
Difficulty	Easy

Time allowed: **10**

Score: **/10**

Percentage: **/100**

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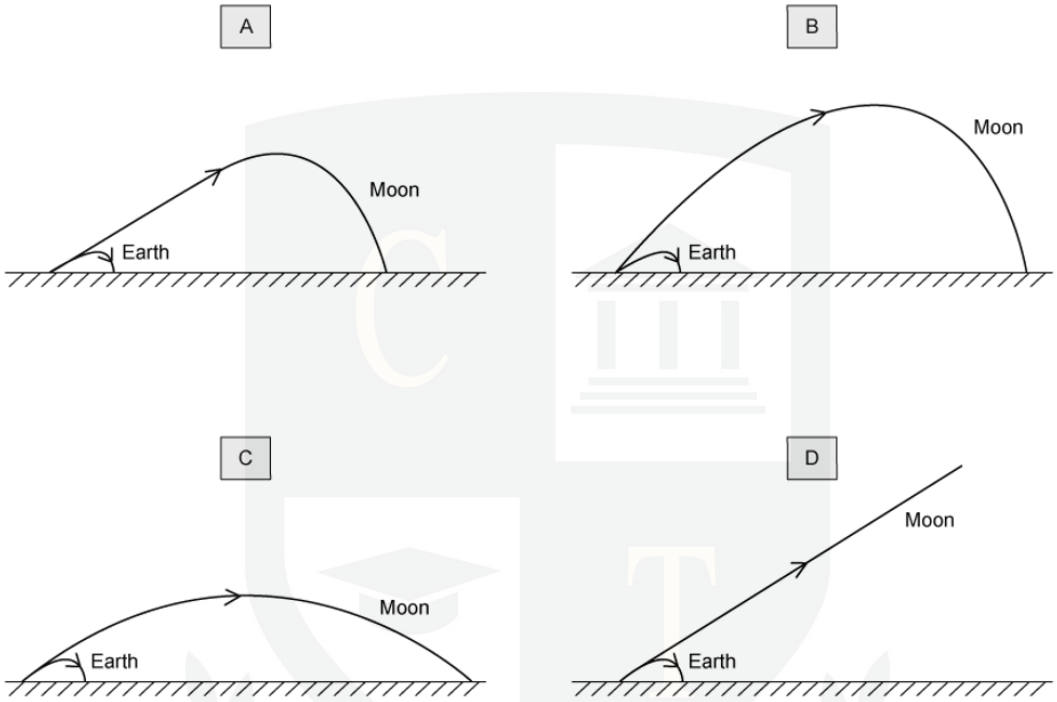
Question 1

A golf ball is hit with the same force and direction on the Earth and on the Moon.

Which diagram best represents the shapes of the paths taken by the golf ball?



[1 mark]

Question 2

On a particular railway, a train driver applies the brake of the train at a yellow signal, a distance of 1.0km from a red signal, where the train stops.

The maximum deceleration of the train is 1.1 m s^{-2}

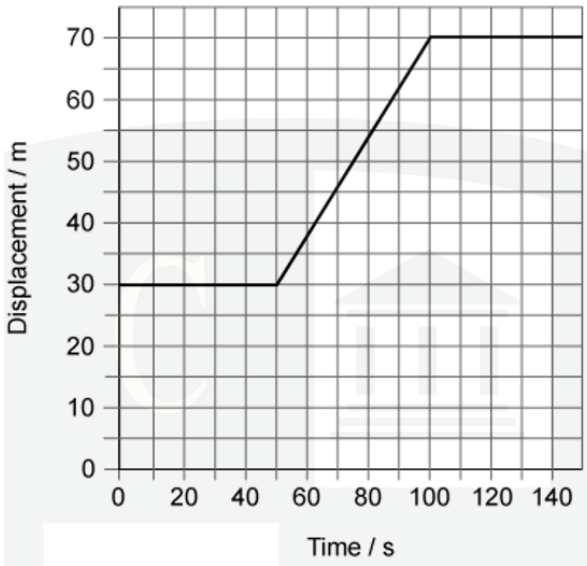
Assuming uniform deceleration, what is the maximum safe speed of the train at the yellow signal?

A 2.2 m s^{-1} **B** 20 m s^{-1} **C** 47 m s^{-1} **D** 220 m s^{-1}

[1 mark]

Question 3

A car at rest in a traffic queue moves forward in a straight line and then comes to rest again. The graph shows how the car's displacement varies with time



What is its speed while it is moving?

A 0.70 m s^{-1} **B** 0.80 m s^{-1} **C** 1.25 m s^{-1} **D** 1.40 m s^{-1}

[1 mark]

Question 4

An insect jumps with an initial vertical velocity of 1.5 m s^{-1}, reaching a maximum height of 4.5 × 10^{-2} m. Assume the deceleration is uniform.

What is the magnitude of the deceleration?

A 6.8 m s^{-2} **B** 9.8 m s^{-2} **C** 25 m s^{-2} **D** 50 m s^{-2}

[1 mark]

Question 5

An object is thrown with velocity 7.1 m s^{-1} vertically upwards on the Moon. The acceleration due to gravity on the Moon is 1.62 m s^{-2}

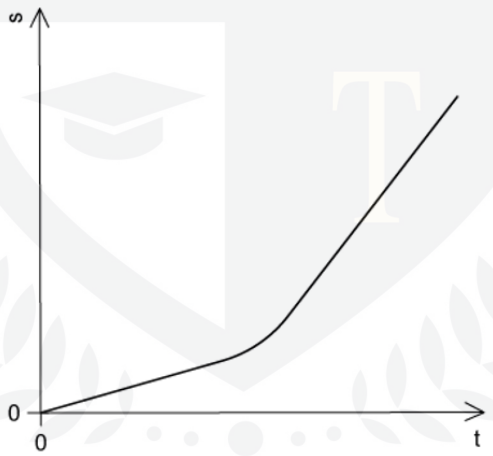
What is the time taken for the object to return to its starting point?

A 3.5 s **B** 4.4 s **C** 6.5 s **D** 8.8 s

[1 mark]

Question 6

The variation with time t of the distance s moved by a body is shown below.



What can be deduced from the graph about the motion of the body?

A it accelerates continuously

B it starts from rest

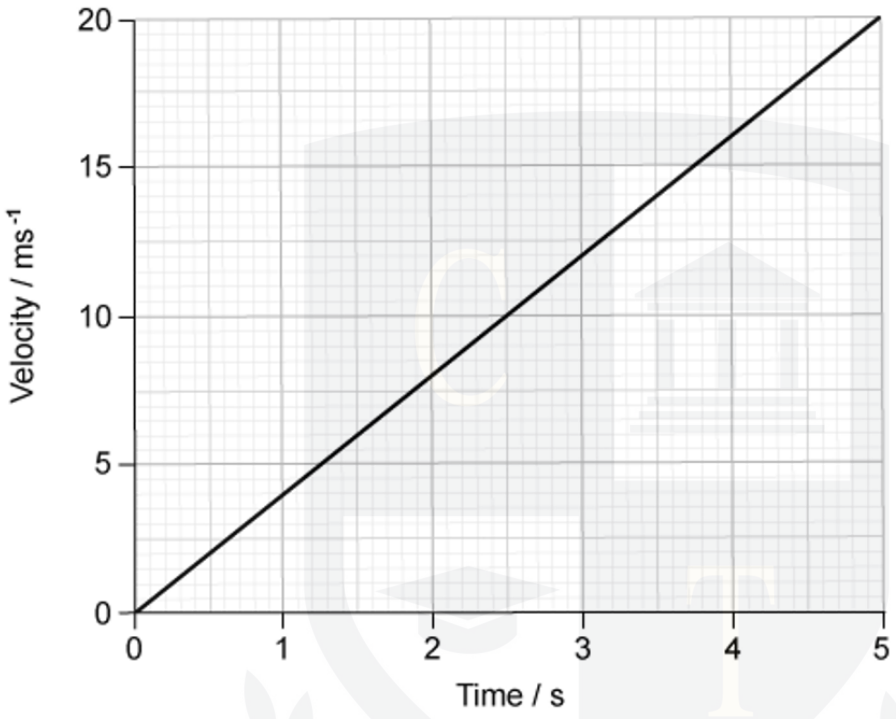
C the distance is proportional to time

D the speed changes

[1 mark]

Question 7

The velocity of an object during the first five seconds of its motion is shown on the graph



What is the displacement of the object in this time?

A 4 m **B** 20 m **C** 50 m **D** 100 m

[1 mark]

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Question 8

Which feature of a graph allows acceleration to be determined?

A the area under a displacement-time graph

B the area under a velocity-time graph

C the slope of a displacement-time graph

D the slope of a velocity-time graph

[1 mark]

Question 9

An experiment is done to measure the acceleration of free fall of a body from rest.

Which measurements are needed?

A the height of fall and the time of fall

B the height of fall and the weight of the body

C the mass of the body and the height of fall

D the mass of the body and the time of fall

[1 mark]

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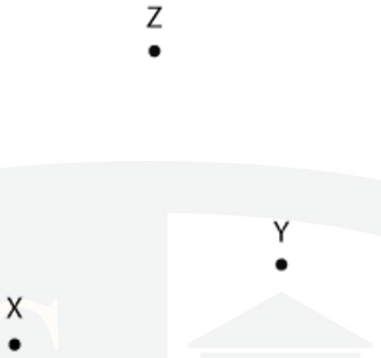
Question 10

An object moves directly from X to Z



In a shorter time, a second object moves from X to Y to Z.

Which statement about the two objects is correct for the journey from X to Z?

A they have the same average speed

B they have the same average velocity

C they have the same displacement

D they travel the same distance

[1 mark]

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