A Level · OCR · Physics

4 mins 4 questions

Multiple Choice Questions

Circular Motion

Radians / Time period & Frequency / Angular Velocity / Centripetal Force / Linear Speed / Centripetal Acceleration / Investigating Circular Motion

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Total Marks /4

1 A toy car is travelling in a circular path. The toy car completes 18 revolutions in 3 s.

Which of the following gives the angular velocity, in rad s^{-1}, of the toy car?

A. $\frac{3 \times \pi}{18}$

B. $\frac{3 \times 2\pi}{18}$

C. $\frac{18 \times \pi}{3}$

D. $\frac{18 \times 2\pi}{3}$

(1 mark)

2 A scientist states: "The radius of the orbit of the Earth around the Sun is decreasing by a small amount each year, however, the time period of the orbit remains constant."

Which row of the table is correct if the statement is true?

	Angular velocity of Earth	**Speed of Earth**
A	decreasing	decreasing
B	decreasing	constant
C	constant	constant
D	constant	decreasing

(1 mark)

3 A metal ball of mass 0.55 kg is swung round on the end of a string so that the ball moves in a horizontal circle of radius 1.5 m.

The ball travels at a constant speed of 6.2 m s^{-1}

What is the time taken (seconds) for the string to turn through an angle of 200°?

A. 0.24 s

B. 0.44 s

C. 0.64 s

D. 0.84 s

(1 mark)

4 Saturn and its moon may be considered to be isolated in space with their masses concentrated at their centres. The orbit of the moon around Saturn is circular with a radius of 4.84×10^5 km. The period of the orbit is 29.3 days.

What is the angular velocity of the Moon in its orbit around Saturn?

A. 2.48×10^{-6} rad s^{-1}

B. 3.48×10^{-6} rad s^{-1}

C. 4.48×10^{-6} rad s^{-1}

D. 5.48×10^{-6} rad s^{-1}

(1 mark)