

- (a) 709 m (b) 809 m (C) 704 m (d) 304 m

(14) A car travelling at 22.4 m/s skids to a stop in 2.5 seconds. Determine the skidding distance.

- (a) 20 m (b) 28.6 m (C) 39 m (d) 16.6 m

(15) An antelope is capable of jumping to a height of 2.62 m. Determine the takeoff speed of the Antelop.

- (a) 7.17 m/s (b) 8.18 m/s (C) 4.2 m/s (d) 3.2 m/s

(16) If Akeem Olajuwon has a vertical leap of 1.29 m, then what is his takeoff speed and his hang time (total time to move upwards to the peak and then return to the ground).

- (a) 5.9 m/s, 4 s (b) 4.03 m/s, 2 s (C) 5.03 m/s, 1.03 s (d) 6.03 m/s, s

(17) A bullet leaves a rifle with a muzzle velocity of 521 m/s. While accelerating through the barrel of the rifle, the bullet moves a distance of 0.840 m. Determine the acceleration of the bullet (assuming a uniform acceleration).

- (a) 1.62×10^5 m/s (b) 3.0×10^5 m/s (C) 4.4×10^5 m/s (d) 3.2×10^5 m/s

(18) A baseball is propped straight up into the air and has a hang-time of 6.25s. Determine the height to which the ball rises before it reaches its peak. (note: the time to rise to the peak is one-half the total hang-time).

- (a) 119.3 m (b) 320.2 m (C) 430 m (d) 48 m

(19) The observation desk of tall skyscraper is 370 m above the street. Determine the time required for a penny to free fall from the deck to the street below.

- (a) 8.23 s (b) 9.93 s (C) 8.69 s (d) 7.2 s

(20) A bullet is moving at a speed of 367 m/s when it embeds into a lump of moist clay. The bullet penetrates for a distance of 0.0621 m. Determine the acceleration of the bullet while moving into the clay. (Assume a uniform acceleration).

- (a) 1.08×10^6 m/s² (b) 2.08×10^6 m/s² (C) 4.08×10^6 m/s² (d) 2.28×10^6 m/s²

(21) A stone is dropped into a deep well and is heard to hit the water 3.41 s after being dropped. Determine the depth of the well.

- (a) 65 m (b) -55.0 m (C) -47.3 m (d) 42 m

(22) It was once recorded that a Jaguar left skid marks that were 290 m in length. Assuming that the Jaguar skidded to a stop with constant acceleration of -3.90 m/s^2 , determine the speed of the Jaguar before it began to skid.

- (a) 40.1 m/s (b) 30.7 m/s (C) 56.3 m/s (d) 47.6 m/s

(23) A plane has a takeoff speed of 88 m/s and requires 1365 m to reach that speed. Determine the acceleration of the plane and the time required to reach this speed.

- (a) 2.86 m/s^2 , 30.8 s (b) 3.86 m/s^2 , 30.8 s (C) 4.86 m/s^2 , 36.8 s (d) 28.6 m/s^2 , 10.8 s

Phy 101 tutorial

(1) The Cartesian coordinates of a point xy- planes are $(x,y) = (3.50\text{m}, 2.50\text{m})$, Find the polar coordinates of the point.

- (a) $R < \theta = 5.30 < 55.5^\circ$ (b) $R < \theta = 2.30 < 25.5^\circ$ (C) $R < \theta = 4.30 < 35.5^\circ$ (d) $R < \theta = 3.30 < 45.5^\circ$

(2) The branch of classical mechanics which describes the motion of points, bodies (objects) and systems of bodies (group of Objects) without consideration of the causes of motion.

- (a) Heat (b) Light (C) kinematics (d) relativity

(3) The average velocity of an object is defined as the displacement of an object divided by the total time

- (a) True (b) false (c) none of the above (d) all of the above.

(4) If a car is travelling at a speed of 28.0m/s , Is the driver exceeding the speed limit of 55miles/hour .

- (a) No , 52.6mi/h (b) Yes , 62.6mi/h (c) Yes, 51.8mi/h (d) Yes, 70mi/h

(5) The traffic light turns green and the driver of a high performing car slams the accelerator to the floor. The accelerometer registers 22.0m/s^2 . Convert this reading to km/min^2 .

- (a) 50.2km/min^2 (b) 60.1km/min^2 (c) as (d) 20km/min^2 .

(6) An airplane accelerated down a runway at 3.20m/s^2 for 32.8s until its finally lifts off the ground. Determine the distance travelled before takeoff.

- (a) 1730 m (b) 1740 m (C) 1750 m (d) 1720 m

(7) A car starts from rest and accelerates uniformly over a time of 5.21 seconds for a distance of 110m . Determine the acceleration of the car.

- (a) 8.10 m/s^2 (b) 8.20 m/s^2 (C) 9.10 m/s^2 (d) 2.10 m/s^2

(8) Charles is riding the Giant Drop at America. If Charles free falls for 2.6 seconds , what will his final velocity and how far will he fall.

- (a) $-33.3\text{ m}, -26\text{ m/s}$ (b) $-33.1\text{ m}, -2.5.5\text{ m/s}$ (C) $-31.3\text{ m}, -26\text{ m/s}$ (d) $-43.3\text{ m}, -26.1\text{m/s}$

(9) A race car accelerates uniformly from 18.5 m/s in 2.47 seconds . Determine the acceleration of the car and the distance travelled.

- (a) 11.5 m/s^2 , 89.8 m (b) 11.4 m/s^2 , 80 m (C) 11.2 m/s^2 79.8 m (d) 21.2 m/s^2 , 11 m

(10) A feather is dropped on the moon from a height of 1.40 metres . The acceleration of gravity on the moon is 1.67m/s^2 . Determine the time for the feather to fall to the surface of the moon.

- (a) 1.29 s (b) 1.29 s (C) 1.40 s (d) 2.0 s

(11) Rocket powered sleds are used to test the human response to acceleration. If a rocket-powered sled is accelerated to a speed of 444m/s in 1.83 seconds , then what is the acceleration distance that the sled travels.

- (a) 406 m (b) 506 m (C) 606 m (d) 607 m

(12) A bike accelerates uniformly from rest to a speed of 7.10 m/s over a distance of 35.4m . Determine the acceleration of the bike.

- (a) 0.812 m/s^2 (b) 0.512 m/s^2 (C) 0.612 m/s^2 (d) 0.712 m/s^2

(13) An engineer is designing the runway for an airport. Of the planes that will use the airport, the lowest acceleration rate is likely to be 3 m/s^2 . The takeoff speed for this plane will be 65 m/s . Assuming this is the minimum acceleration, what is the minimum allowed length of the runway?

(24) A dragster accelerates to a speed of 112 m/s over a distance of 298 m. Determine the acceleration (assume uniform) of the dragster.

- (a) 1.8 m/s^2 (b) 5.8 m/s^2 (C) 15.8 m/s^2 (d) 14.8 m/s^2

(25) With what speed in miles/hr ($1\text{m/s} = 2.23 \text{ mi/hr}$) must an object be thrown to reach a height of 91m (equivalent to one football field)? Assume negligible air resistance.

- (a) 53 m/s, 6 mi/hr (b) 42.3 m/s, 94.4 mi/hr (C) 3 m/s, 6.9mi/hr (d) 5 m/s, 16 mi/hr