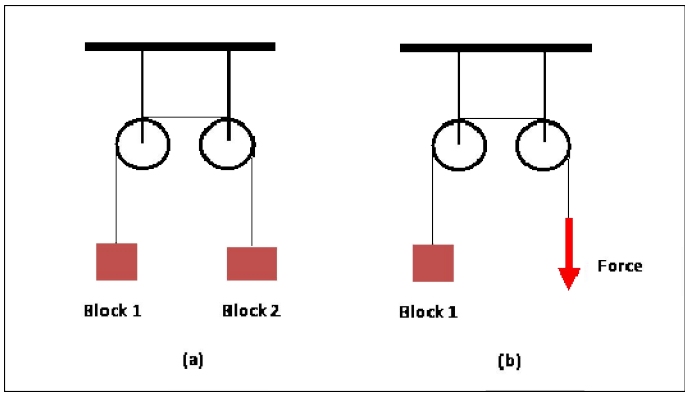
Physics

Choose the best alternative among the given choices for the following 25 questions.

1. A person goes out for a bike ride to a nearby town. A record of the trip is as follows: 30 minutes at 30 km/hour, 15 minutes at 40 km/h, 5 minutes at 0 km/h for a break, and 20 minutes at 15 km/h. What is the distance the person traveled?
   A. 1800km B. 30km C. 300km D. 180km
2. Referring question number 1, what is the average velocity?
   A. 27.5km/h B. 35.5km/h C. 25.7km/h D. 30km/h
3. A car travels up a hill at a constant speed of 37 km/h and returns down the hill at a constant speed of 66 km/h. calculate the average speed for the whole trip.
   A. 47.4km/h B. 51.5km/h C. 40km/hr D. 45km/hr
4. A 8 kg block is at rest on a horizontal floor. If you push horizontally on the 8 kg block with a force of 20 N, it just starts to move.
   A. 0.11 B. 0.022 C. 0.31 D. 0.255
5. Referring question number 4 if a 10.0 kg block is stacked on top of the 8 kg block what is the magnitude F of the force, acting horizontally on the 8 kg block as before, that is required to make the two blocks start to move? (take g = 9.8m/s^2
   A. 45N B. 19.4N C. 3.88N D. 54.68N
6. A car is accelerating at $12m/s^2$. Find its acceleration in km/h^2.
   A. 15520km/hr^2 B. 155520 km/hr^2 C. 12960 km/hr^2 D. None
7. It takes you 9.5 minutes to walk with an average velocity of 1.2 m/s to the north from the bus stop to museum entrance. What is your displacement?
   A. 11.4m B. 72m C. 5415m d. 541.5m
8. Nerve impulses typically travel through the body at about 150 miles/hour. Imagine dropping a brick from one meter onto your big toe. Compare the time it takes for the brick to fall with the time it takes for the signal to get from your toe to your brain. Assume you are 1 meter tall.(take g = 9.8m/s^2)
   A. It takes 17.3 times longer for the brick to fall than it takes for the signal to reach your brain.
   B. It takes 20 times longer for the brick to fall than it takes for the signal to reach your brain.
   C. It takes 15.3 times longer for the brick to fall than it takes for the signal to reach your brain.
   D. None.
9. As part *a of* the drawing shown, two blocks are connected by a rope that passes over a set of pulleys. The block 1 has a weight of

400 N, and the block 2 has a weight of 600 N. The rope and the pulleys are massless and there is no friction. What is the acceleration of the lighter block?



A. 2.5m/s^2 B. 1.96m/s^2 C. 3.96m/s^2 D. 3m/s^2

10. A car is initially traveling due north at 23 m/s. Find the velocity of the car after 4 s if its acceleration is 2m/s^2 due north.
    A. 46m/s B. 36m/s C. 15m/s D. 31m/s

11. For question number 10, Find the velocity of the car after 4 s if its acceleration is instead 2m/s^2 due south
    A. 15m/s B. 31m/s C. 36m/s D. 46m/s
12. If a 5 tons beam is raised 6 meters in 6 seconds, what is the work done?
    A. 1,764,000J B. 294,000J C. 2,940,000J D. 176,400J
13. A tension of 6000 Newtons is experienced by the elevator cable of an elevator moving upwards with an acceleration of 2m/s^2. What is the mass of the elevator? (take g= 9.8m/s^2)
    A. 3000kg B. 12000kg C. 508kg D. 612.25kg
14. A bicycle is moving at 10 m/s. What is the angular speed of its tires if their radius is 30 cm?
    A. 300rad/sec B. 30rad/sec C.9000rad/sec D. 33rad/sec
15. A soccer ball of diameter 35 cm rolls without slipping at a linear speed of 2 m/s. Though how many revolutions has the soccer ball turned as it moves a linear distance of 20 m?
    A. 1400 turns B. 350 turns C. 18 turns D. 180turns
16. A block of mass 5 kg lies on a horizontal table. The block is at rest. The only forces acting on the block are the force due to gravity and the normal force from the table. What is the magnitude of the friction force? (take g= 9.8m/s^2)
    A. 49N B. 10N C. 4.9N D. None
17. A car (m=2000 kg) is parked on a road that rises 20 degrees above the horizontal. What are the magnitudes of (1) the normal force and

(2) the static frictional force respectively that the ground exerts on the tires? (given sine20 = 0.342), and cosine20= 0.939)

A. $1.8X10^4N$, $6.7X10^3N$ B. $6.7X10^3N$, $1.8X10^4N$

C. $3.4X10^4$, $2.8X10^3N$ D. None

18. A child throws a ball downward from a tall building. Note that the ball is thrown, not dropped and disregard air resistance. What is the acceleration of the ball immediately after it leaves the child's hand?
    A. $9.8m/s^2$
    B. the initial velocity of the ball must be known to determine its acceleration
    C. both the initial and final velocities must be known to determine its acceleration
    D. all the mass, the initial and final velocities must be known to determine its acceleration
19. The tips of the blades in a food blender are moving with a speed of 20 m/s in a circle that has a radius of 0.06 m. How much time does it take for the blades to make one revolution?
    A. 0.38sec B. 0.019sec C. 2sec D. 0.2sec

Answers

1. b
2. c
3. a
4. d
5. a
6. b
7. c
8. a
9. b
10. d
11. a
12. b
13. b
14. c
15. d
16. c
17. d
18. a
19. a
20. b