Electronic Take Home Exam (e-THE): Dynamics

Due No due date **Points** 35 **Questions** 35 **Time Limit** None
Allowed Attempts Unlimited

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	120 minutes	9 out of 35

Score for this attempt: **9** out of 35
Submitted Jan 5 at 11:24pm
This attempt took 120 minutes.

Question 1 — 0 / 1 pts

The average speed of a moving object during a given interval of time is always:

- one-half its speed at the end of the interval
- orrect Answer — the distance covered during the time interval divided by the time interval
- ou Answered — its acceleration multiplied by the time interval
- the magnitude of its average velocity over the interval

Question 2 — 1 / 1 pts

An object with an initial velocity of 12 m/s west experiences a constant acceleration of 4 m/s^{2}west for 3 seconds. During this time the object travels a distance of:

- 36 m
- Correct! 54 m
- 24 m
- 12 m

Question 3

0 / 1 pts

At a stop light, a truck traveling at 15 m/s passes a car as it starts from rest. The truck travels at constant velocity and the car accelerates at 3 m/s^2. How much time does the car take to catch up to the truck?

- 20 s
- ou Answered 5 s
- orrect Answer 10 s
- 15 s

Question 4

1 / 1 pts

A ball is in free fall. Upward is taken to be the positive direction. The displacement of the ball during a short time interval is:

positive during both ascent and descent

negative during ascent and positive during descent

Correct!

positive during ascent and negative during descent

negative during both ascent and descent

Question 5

1 / 1 pts

From point O, a stone is thrown vertically upward. When the stone reaches a distance 6 m below O, its velocity is double of what it was at 6 m above O. Solve for the maximum height obtained by the stone above O.

20 m

15 m

Correct!

10 m

30 m

Question 6

1 / 1 pts

A stone is thrown vertically upward with a velocity of 19.6 m/s. After 2 seconds, another stone is thrown upwards with a velocity of 9.8 m/s. When will the stones pass each other?

5 s

6 s

3 s

Correct!

4 s

Question 7

1 / 1 pts

The velocity of a projectile equals its initial velocity added to:

a constantly increasing horizontal velocity

Correct!

a constantly increasing downward velocity

a constant horizontal velocity

a constant vertical velocity

Question 8

1 / 1 pts

The airplane shown is in level flight at an altitude of 0.50 km and a speed of 150 km/h. At what distance d should it release a heavy bomb to hit the target X at the ground? Take g = 10 m/s^2.

295 m

150 m

Correct!

420 m

2550m

Question 9

1 / 1 pts

A ball is thrown horizontally from the top of a 20-m high hill. It strikes the ground at an angle of 45◦. With what speed was it thrown?

- 14m/s
- 32m/s
- Correct! 20 m/s
- 28m/s

Question 10

1 / 1 pts

A girl jogs around a horizontal circle with a constant speed. She travels one fourth of a revolution, a distance of 25m along the circumference of the circle, in 5.0 s. The magnitude of her acceleration is:

- 3.9m/s2
- 0.31m/s2
- Correct! 1.6 m/s2
- 1.3m/s2

Question 11

1 / 1 pts

Two objects are traveling around different circular orbits with constant speed. They both have the same acceleration but object A is traveling

twice as fast as object B. The orbit radius for object A is the orbit radius for object B.

Correct!

- (●) four times
- ( ) one-fourth
- ( ) the same as
- ( ) one-half

Unanswered

Question 12

0 / 1 pts

A Ferris wheel with a radius of 8.0m makes 1 revolution every 10 s. When a passenger is at the top, essentially a diameter above the ground, he releases a ball. How far from the point on the ground directly under the release point does the ball land?

- ( ) 8.0m
- ( ) 0

orrect Answer

- ( ) 9.1 m
- ( ) 1.0m

Unanswered

Question 13

0 / 1 pts

A newton is the force:

- ( ) that gives a 1 g body an acceleration of 1 cm/s2
- ( ) that gives a 1 kg body an acceleration of 9.8m/s2

of gravity on a 1 g body

orrect Answer that gives a 1 kg body an acceleration of 1 m/s2

Unanswered

Question 14

0 / 1 pts

A 25-kg crate is pushed across a frictionless horizontal floor with a force of 20 N, directed 20◦below the horizontal. The acceleration of the crate is:

0.80m/s2

170m/s2

0.27m/s2

orrect Answer 0.75 m/s2

Unanswered

Question 15

0 / 1 pts

A 1000-kg elevator is rising and its speed is increasing at $3m/s^2$. The tension force of the cable on the elevator is:

9800N

1000N

orrect Answer 12800N

3000N

Unanswered

Question 16

0 / 1 pts

"The acceleration of a particular body is directly proportional to the resultant force acting on it and inversely proportional to its mass" is a statement of

- Newton's Laws of Motion
- Correct Answer: Newton's Second Law of Motion
- Newton's Third Law of Motion
- Newton's First Law of Motion

Unanswered

Question 17

0 / 1 pts

A 5-kg block is suspended by a rope from the ceiling of an elevator as the elevator accelerates downward at 3.0m/s^2. The tension force of the rope on the block is:

- 15 N, up
- 34 N, down
- 64 N, up
- Correct Answer: 34 N, up

Unanswered

Question 18

0 / 1 pts

You stand on a spring scale on the floor of an elevator. Of the following, the scale shows the highest reading when the elevator.

moves upward with decreasing speed

moves downward with increasing speed

remains stationary

orrect Answer

moves downward with decreasing speed

Unanswered

Question 19

0 / 1 pts

A car moves horizontally with a constant acceleration of $3m/s^2$. A ball is suspended by a string from the ceiling of the car. The ball does not swing, being at rest with respect to thecar. What angle does the string make with the vertical?

orrect Answer

17◦

35◦

52◦

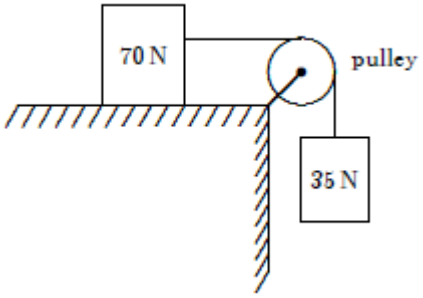
73◦

Unanswered

Question 20

0 / 1 pts

A 70-N block and a 35-N block are connected by a string as shown. If the pulley is massless and the surface is frictionless, the magnitude of the acceleration of the 35-N block is:



orrect Answer

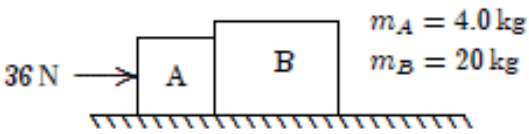
- 3.3 m/s2
- 1.6m/s2
- 6.7m/s2
- 4.9m/s2

Unanswered

Question 21

0 / 1 pts

Two blocks (A and B) are in contact on a horizontal frictionless surface. A 36-N constant force is applied to A as shown. The magnitude of the force of A on B is:



orrect Answer

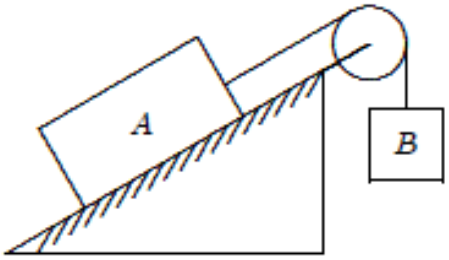
- 30 N
- 15N
- 36N
- 29N

Unanswered

Question 22

0 / 1 pts

Block A, with a mass of 10 kg, rests on a 30◦incline. The coefficient of kinetic friction is 0.20. The attached string is parallel to the incline and passes over a massless, frictionless pulley at the top. Block B, with a mass of 3.0 kg, is attached to the dangling end of the string. The acceleration of B is:



- 0.20m/s2, down
- Correct Answer — 0.20 m/s2, up
- 2.8m/s2, down
- 2.8m/s2, up

Unanswered

Question 23

0 / 1 pts

A 2-kg object is moving at 3m/s. A 4-N force is applied in the direction of motion and then removed after the object has traveled an additional 5m. The work done by this force is:

- 12 J
- Correct Answer — 20 J
- 15 J

18 J

Unanswered

Question 24

0 / 1 pts

The amount of work required to stop a moving object is equal to:

the velocity of the object

the mass of the object times its acceleration

the mass of the object times its velocity

orrect Answer

the kinetic energy of the object

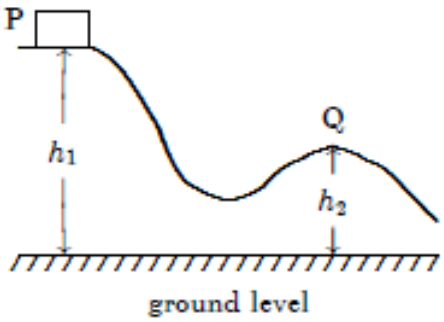
Unanswered

Question 25

0 / 1 pts

A block is released from rest at point P and slides along the frictionless track shown. At point

Q, its speed is:



2g √(h1-h2)

orrect Answer

√(2g(h1-h2))

(h1-h2)/2g

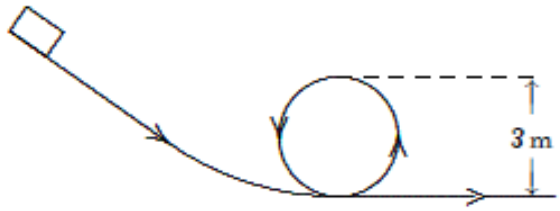
2g(h1-h2)

Unanswered

Question 26

0 / 1 pts

A small object slides along the frictionless loop-the-loop with a diameter of 3m. What minimum speed must it have at the top of the loop?



1.9 m/s

Correct Answer

3.8 m/s

5.4 m/s

15 m/s

Unanswered

Question 27

0 / 1 pts

We want to slide a 12-kg crate up a 2.5-m-long ramp inclined at 30^{o}. A worker, ignoring friction, calculates that he can do this by giving it an initial speed of 5.0 m/s at the bottom and letting it go. But friction is not negligible: the crate only slides 1.6 m up the ramp, stops and slides back down. Find the magnitude of the friction force acting on the crate, assuming it is constant.

25 N

52 N

orrect Answer

35 N

53 N

Unanswered

Question 28

0 / 1 pts

In the previous problem, determine how fast is the crate moving when it reaches the bottom of the ramp?

orrect Answer

2.5 m/s

1.2 m/s

2.1 m/s

5.2 m/s

Unanswered

Question 29

0 / 1 pts

A 4.0-N puck is traveling at 3.0m/s. It strikes a8.0-N puck, which is stationary. The two pucks stick together. Their common final speed is:

2.3m/s

2.0m/s

1.5m/s

orrect Answer

1.0 m/s

Unanswered

Question 30

0 / 1 pts

A 3.00-g bullet traveling horizontally at 400m/s hits a 3.00-kg wooden block, which is initially at rest on a smooth horizontal table. The bullet buries itself in the block without passing through. The speed of the block after the collision is:

- 12.0m/s
- 1.33m/s

orrect Answer

- 0.40 m/s
- 40.0m/s

Unanswered

Question 31

0 / 1 pts

If a wheel turns with constant angular speed then:

orrect Answer

- the wheel turns through equal angles in equal times
- the angle through which the wheel turns in each second increases as time goes on
- each point on its rim moves with constant acceleration
- each point on its rim moves with constant velocity

Unanswered

Question 32

0 / 1 pts

A flywheel is initially rotating at 20 rad/s and has a constant angular acceleration. After 9.0 s it has rotated through 450 rad. Its angular acceleration is:

- 5.6 rad/s
- 4.4 rad/s
- 3.3 rad/s

orrect Answer

- 6.7 rad/s

Unanswered

Question 33

0 / 1 pts

The rotational inertia of a wheel about its axle does not depend upon its:

- distribution of mass
- mass
- diameter

orrect Answer

- speed of rotation

Unanswered

Question 34

0 / 1 pts

A disk with a rotational inertia of 2.0kg · m2 and a radius of 0.40m rotates on a frictionless fixed axis perpendicular to the disk faces and through its center. A force of 5.0N is applied tangentially to the rim. The angular acceleration of the disk is:

orrect Answer

- 1.0 rad/s2

0.40 rad/s2

0.60 rad/s2

2.5 rad/s2

Unanswered

Question 35

0 / 1 pts

A hoop, a uniform disk, and a uniform sphere, all with the same mass and outer radius, start with the same speed and roll without sliding up identical inclines. Rank the objects according to how high they go, least to greatest.

disk, hoop, sphere

sphere, disk, hoop

orrect Answer

hoop, disk, sphere

sphere, hoop, disk

Quiz Score: **9** out of 35