This chapter has 60 questions.
Scroll down to see and select individual questions or narrow the list using the checkboxes below.

Select 0 questions at random and keep in order

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- ☐ Topic: Conservation of Energy - (11)
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1. Which of the following is not an energy unit?
   - ○ N·m
   - ○ Joule
   - → ○ Watt
   - ○ calorie
   - ○ kWh

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: Kinetic Energy
Type: Definition

Multiple Choice Question
MC Which of the following is not an energy unit...

2. If work was done on an object, the object must have
   - ○ changed only its direction of motion.
   - ○ accelerated.
   - ○ experienced a frictional force.
   - → ○ changed its position.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Simple Machines, Work, and Power
Type: Conceptual

Multiple Choice Question
MC If work was done on an object, the object mu...

3. A brick slides across a horizontal rough surface and eventually comes to a stop. What happened to the kinetic energy of the brick?
   - ○ Nothing; it is still in the brick but is now called potential energy.
   - → ○ It was converted to other energy forms, mostly heat.
   - ○ It was converted to a potential energy of friction.
   - ○ It was simply destroyed in the process of stopping.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Conservation of Energy
Type: Conceptual

Multiple Choice Question
MC A brick slides across a horizontal rough sur...

4. Which of the following is possessed by a moving object, but not by a stationary object?
   - ○ Energy
   - ○ Mass
   - ○ Inertia
   - → ○ Kinetic energy

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Kinetic Energy
Type: Conceptual
Type: Definition

Multiple Choice Question
MC Which of the following is possessed by a mov...

5. The power of an engine is a measure of
   - → ○ the rate at which it can perform work.
   - ○ its volume.
   - ○ its ability to outperform a horse.
   - ○ the total amount of work it can perform.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Simple Machines, Work, and Power
Type: Conceptual
Type: Definition

Multiple Choice Question
MC The power of an engine is a measure of

Select

6. Which has the greater kinetic energy—a 1-ton car moving at 30 m/s or a half-ton car moving at 60 m/s?
   - → ○ The half-ton car

○ The 1-ton car
○ Both have the same kinetic energy.
○ It cannot be determined because the mass of the cars can't be found.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC Which has the greater kinetic energy...
Type: Numerical

7. A 20 N ball and a 40 N ball are dropped at the same time from a height of 10 meters. Air resistance is negligible. Which of the following statements is accurate?

○ After 1 second has elapsed, both balls have the same kinetic energy, since they have the same acceleration.
○ The heavy ball has a greater acceleration and falls faster.
→ ○ Both balls hit the ground at the same time but gravity does more work on the heavy ball than on the light ball.
Select ○ The light ball has a greater speed, since it can accelerate faster than the heavy ball.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Potential Energy
MC A 20 N ball and a 40 N ball are dropped at t...
Type: Conceptual

8. When work is done by a force on an object, then which of the following is true?

○ The speed of the object must change.
○ The object does an equal amount of work on the force.
→ ○ The work done is equal to the change of total kinetic energy of the object plus any energy appearing as heat, light, or sound.
Select ○ The object must change height above the ground.
○ The force cannot take energy away from the object.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Conservation of Energy
MC When work is done by a force on an object, t...
Type: Conceptual

9. A block sits on a slight incline, held at rest by the frictional force between the block and the incline. Which of the following statements is true?

→ ○ The frictional force performs no work, since there is no motion of the block.
○ The work by the frictional force is equal to the gravitational potential energy of the block.
○ The work done by the frictional force is negative, since the force of friction opposes the direction that the block is being tugged by gravity.
Select ○ The work done by gravity is entirely converted into heat because of the friction present.
○ None of these is true.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC A block sits on a slight incline, held at re...
Type: Conceptual

10. Initially, a blue automobile has twice the kinetic energy that a red automobile has. Both are braked to a stop; both have the same amount of braking force. The red auto will stop in _____ as the blue auto.

→ ○ half the distance
○ the same distance
○ twice the distance
○ four times the distance
Select ○ one fourth the distance

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC Initially, a blue automobile has twice the k...
Type: Conceptual

Select 11. A mass hangs from a spring that is fixed to the ceiling. The mass is now pulled down and released so the mass oscillates up and down. Which of the following statements is true?

○ The kinetic energy of the oscillating mass is a constant.
○ Adding mass to the spring will make it oscillate faster.
○ The restoring force of the spring is equal to the weight of the mass.
○ The gravitational force on the mass oscillates at the same frequency as the mass.
→ ○ None of these is true.

Multiple Choice Question
MC A mass hangs from a spring that is fixed to ...
Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic

Topic: Springs and Simple Harmonic Motion
Type: Conceptual

12. Jim exerts a force of 500 N against a 100-kg desk that does not move. Virgil exerts a force of 400 N against a 60-kg desk that moves 2 m in the direction of the push. Mik exerts a force of 200 N against a 50-kg desk that moves 5 m in the direction of the push. The most work is done by
    - ○ Jim.
    - ○ Virgil.
    - → ○ Mik.
    - ○ Virgil and Mik, who do equal amounts of work.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC Jim exerts a force of 500 N against a 100-kg...
Type: Numerical

13. Suppose you climb the stairs of an eight-story building, about 24 m high, and your mass is 70 kg. The gravitational potential energy you gain is about
    - ○ 16,500 calories.
    - ○ 40 calories.
    - → ○ 16,500 Joule.
    - ○ 40 Joule.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Potential Energy
MC Suppose you climb the stairs of a ten-story ...
Type: Numerical

14. Virgil rides a skateboard (combined mass 100 kg) at 4 m/s, and Jill rides a bicycle (combined mass 64 kg) at 5 m/s.
    - ○ Virgil has the greater kinetic energy.
    - ○ Jill has the greater kinetic energy.
    - → ○ Virgil and Jill have equal kinetic energies.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC Virgil rides a skateboard (combined mass 100...
Type: Numerical

15. An object with a kinetic energy of 40 J is stopped in a distance of 0.01 m. The average force that stops the object is
    - ○ 40,000 N.
    - → ○ 4,000 N.
    - ○ 400 N.
    - ○ 40 N.
    - ○ 0.4 N.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC An object with a kinetic energy of 50 J is s...
Type: Numerical

16. A quarterback of mass 85 kg is running at 10 m/s. Also, a tackle of mass 100 kg is running at 9 m/s.
    - ○ The tackle has the greater kinetic energy.
    - ○ The quarterback and the tackle have equal kinetic energies.
    - → ○ The quarterback has the greater kinetic energy.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC A quarterback of mass 85 kg is running at 10...
Type: Numerical

17. For a 0.1-kg frog to jump to a height of 1.0 meter requires an energy of about
    - ○ 10 Joule.
    - → ○ 1.0 Joule.
    - ○ 0.5 Joule.
    - ○ 0.1 Joule.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Potential Energy
MC For a 0.1-kg frog to jump to a height of 1.0...
Type: Numerical

Select

18. A 3.0-kg cat runs to the left at 10 m/s and a 10-kg dog runs to the right at 4.0 m/s. The total kinetic energy is
    - ○ -35 Joule.

○ 0.
○ -70 Joule.
○ 146 Joule.
→ ○ 230 Joule.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC A 3.0-kg cat runs to the left at 10 m/s and ...
Type: Numerical

19. A child riding on a swing rises to a height 1.0 m above the lowest point. Another child of equal mass whose speed at the lowest point is twice as great will rise

○ to a height which depends on the mass.
○ to the same height.
○ twice as high.
Select → ○ four times as high.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Conservation of Energy
MC A child riding on a swing rises to a height ...
Type: Numerical

20. A box is moved 10 m across by a floor a force of 25 N acting along the direction of motion. The work done by the force is

→ ○ 250 J.
○ 125 J.
○ 35 J.
○ 25 J.
Select ○ 2.5 J.

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC A box is moved 10 m across by a floor a forc...
Type: Numerical

21. A box is moved 20 m across a smooth floor by a force making a downward angle with the floor, so that there is effectively a 10 N force acting parallel to the floor in the direction of motion and a 5 N force acting perpendicular to the floor. The work done is

○ 300 J.
→ ○ 200 J.
○ 100 J.
Select ○ 20 J.
○ 5.0 J.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC A box is moved 10 m across a smooth floor by...
Type: Numerical

22. A box is pushed across a rough horizontal floor by a force acting parallel to the floor in the direction of motion. A force doing negative work on the body is

○ gravity.
○ the applied force.
→ ○ friction.
○ the normal reaction force of the floor upward on the body.
Select ○ a fictitious force.

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC A box is pushed across a rough horizontal fl...
Type: Conceptual

Select 23. A box is pushed across a rough horizontal floor by a force acting parallel to the floor in the direction of motion. A force doing no work during the motion is

○ the applied force.
→ ○ gravity.
○ friction.
○ All of the forces are doing work.

Multiple Choice Question
MC A box is pushed across a rough horizontal fl...
Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic

Topic: Simple Machines, Work, and Power
Type: Conceptual

24. The kinetic energy of a body is correctly given by which of the following expressions? (m=mass, v=speed)

- ○ mv
- ○ $2mv^2$
- ○ mv^2
- → ○ $(½)mv^2$
- ○ $(½)mv$

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Kinetic Energy
Type: Conceptual
Multiple Choice Question
MC The kinetic energy of a body is correctly gi... Type: Definition

25. A refrigerator weighing 1500 N is to be lifted onto a truck bed that is 1.0 m above the ground. When pushed up a slanting ramp 2.0 m in length a force of only 700 N is required to move it at constant velocity. Comparing the work involved in lifting the refrigerator straight up to the work in pushing it along the ramp, there is

- → ○ less work required when the ramp is employed.
- ○ more work required when the ramp is employed.
- ○ an equal amount of work is required in each case.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: Simple Machines, Work, and Power
Multiple Choice Question
MC A refrigerator weighing 1500 N is to be lift... Type: Numerical

26. Which of the following is not a unit of power?

- ○ Watt
- ○ KiloWatt
- ○ Joule/second
- → ○ KiloWatt-hour
- ○ Horsepower

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Simple Machines, Work, and Power
Multiple Choice Question
MC Which of the following is not a unit of powe... Type: Definition

27. If the speed of a car is doubled but the brakes apply the same force, the distance required to stop the car changes by a factor of

- ○ ¼.
- ○ ½.
- ○ 1.
- ○ 2.
- → ○ 4.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Topic: Kinetic Energy
Multiple Choice Question
MC If the speed of a car is doubled but the bra... Type: Numerical

28. A painter of mass 70 kg climbs 3.0 m up a ladder. The painter's potential energy has increased by

- → ○ 2058 J.
- ○ 1029 J.
- ○ 686 J.
- ○ 261 J.
- ○ 210 J.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Potential Energy
Multiple Choice Question
MC A painter of mass 80 kg climbs 3.0 m up a la... Type: Numerical

29. The potential energy of a spring of constant k that has been stretched a distance x is given by

- ○ $(½)k/x$.
- ○ kx.
- ○ $(½)kx$.
- ○ kx^2.
- → ○ $(½)kx^2$.

Select

Difficulty: Easy
Gradable: automatic
Topic: Springs and Simple Harmonic Motion
Multiple Choice Question
Type: Conceptual
MC The potential energy of a spring of constant...
Type: Definition

30. A pendulum swings through 10 cycles in 2 seconds. The frequency of the pendulum is

- ○ 10 Hz.
- → ○ 5 Hz.
- ○ 2 Hz.
- ○ 0.5 Hz.
- ○ 0.1 Hz.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Springs and Simple Harmonic Motion
Multiple Choice Question
Type: Numerical
MC A pendulum swings through 10 cycles in 5 sec...

31. A grandfather clock that is regulated by a pendulum is taken to the Moon, where the acceleration of gravity is less. Compared to an identical clock on Earth, the grandfather clock on the Moon will

- ○ run fast.
- ○ keep time at the same rate.
- → ○ run slow.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A grandfather clock that is regulated by a p...
Type: Conceptual

32. A mass hangs on a spring held in a physicist's hand. When the mass is pulled down and then released, it oscillates with a period of 2.0 s. This system is taken to the Moon, where the acceleration of gravity is less. The spring on the Moon is held in an astronaut's hand, and the mass, when pulled down and released, will

- ○ oscillate with a longer period.
- → ○ oscillate with an unchanged period.
- ○ oscillate with a shorter period.
- ○ not oscillate at all.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A mass hangs on a spring held in a physicist...
Type: Conceptual

33. A grandfather clock that is regulated by a pendulum is orbiting the Earth aboard the space station. Compared to an identical clock on Earth, the grandfather clock aboard the space station will

- ○ run fast.
- ○ keep time at the same rate.
- ○ run slow.
- → ○ not run at all.

Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A grandfather clock that is regulated by a p...
Type: Conceptual

34. A mass hangs on a spring held in a physicist's hand. When the mass is pulled down and then released, it oscillates with a period of 2.0 s. This system is taken to the space station orbiting the Earth. The spring is held in an astronaut's hand, and the mass, when pulled down and released, will

- ○ oscillate with a longer period.
- ○ oscillate with a shorter period.
- → ○ oscillate with an unchanged period.
- ○ not oscillate at all.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A mass hangs on a spring held in a physicist...
Type: Conceptual

Select

35. In order for a body to exhibit simple harmonic motion there must be

- ○ a constant force pushing the body away from the center.
- ○ a constant force drawing the body toward the center.
- ○ a force pushing the body away from the center and increasing with distance away from the center.
- → ○ a force drawing the body toward the center and increasing with distance away from the center.
- ○ a force drawing the body toward the center and decreasing with distance away from the center.

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Springs and Simple Harmonic Motion
Multiple Choice Question
Type: Conceptual
MC In order for a body to exhibit simple harmon...
Type: Definition

36. A ball at the end of a string is swinging as a simple pendulum. Assuming no loss in energy due to friction, we can say for the ball that

→ ○ the potential energy is maximum at each end of the motion.
○ the mechanical energy changes and is maximum where the kinetic energy is minimum.
○ the mechanical energy changes and is maximum where the kinetic energy is maximum.
Select ○ the kinetic energy does not change but the potential energy does.

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A ball at the end of a string is swinging as...
Type: Conceptual

37. A body is suspended from a spring hanging vertically. The body is then pulled downward so the spring stretches. Consider the change in the elastic potential energy (EPE) of the spring and the change in gravitational potential energy (GPE) as the body is pulled down.

→ ○ The GPE decreases while the EPE increases.
○ The GPE decreases but the EPE is unchanged.
○ The EPE increases but the GPE is unchanged.
Select ○ The GPE increases along with the EPE.
○ Both the GPE and the EPE decrease.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A body is suspended from a spring hanging ve...
Type: Conceptual

38. A bullet of mass 0.010 kg and speed of 500 m/s is brought to rest in a wooden block after penetrating a distance of 0.10 m. The work done on the bullet by the block is

→ ○ -1250 J.
○ 1250 J.
○ -2.5 J.
Select ○ 2.5 J.
○ zero.

Accessibility: Keyboard Navigation
Difficulty: Hard
Gradable: automatic
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC A bullet of mass 0.010 kg and speed of 100 m...
Type: Numerical

39. On a frictionless tabletop, a force is applied to an object: the object's velocity is horizontal and the force is perpendicular to the tabletop. Which of the following is true?

○ The applied force is friction.
→ ○ The total energy of the object does not change.
○ There cannot be more than one force on the object.
Select ○ The force does work on the object.

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Conservation of Energy
MC On a frictionless tabletop, a force is appli...
Type: Conceptual

40. A worker in a warehouse uses a rope passing through some pulleys to lift a heavy crate. The worker exerts a force five times less than the weight of the crate but has to move the rope four times as far as the crate moves. This situation

○ can happen because the extra distance traveled makes up for the smaller force applied.
○ can happen because there is friction in the pulleys so the work done by the worker will not equal the work done on the crate.
○ cannot happen because a crate that heavy would lift the worker, rather than the worker lifting the crate.
Select → ○ cannot happen because the work done by the worker is less than the work done on the crate.

Accessibility: Keyboard Navigation
Difficulty: Hard
Gradable: automatic
Topic: Conservation of Energy
Multiple Choice Question
Topic: Simple Machines, Work, and Power
MC A worker in a warehouse uses a rope passing ...
Type: Conceptual

Select 41. Work is done on an object to increase its total energy. Which one of the following is true?

→ ○ The total work done must be equal to the energy lost to heat and sound.
○ Both the kinetic energy and potential energy can be larger.
○ If the potential energy increases, then the kinetic energy must decrease.
○ The object must have a larger speed and smaller height above the ground.

Accessibility: Keyboard Navigation
Difficulty: Hard
Gradable: automatic
Multiple Choice Question
Topic: Conservation of Energy
MC Work is done on an object to increase its to...
Type: Conceptual

42. Two springs are hung from a ceiling and carry identical masses. The first spring has a spring constant twice as large as the second spring. The masses on each spring are pulled down from their equilibrium positions the same distance and are then released. The amplitude of the oscillation is

→ ○ the same for both springs.
○ larger for the first spring.
○ larger for the second spring.
Select
○ It is not possible to know which is larger without knowing the mass.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC Two springs are hung from a ceiling and carr...
Type: Conceptual

43. A mass attached to a spring is drawn back 2 cm from equilibrium and released. If a second spring were used that had a smaller spring constant than the first but the mass was the same, which of the following would be larger?

○ Amplitude
○ Frequency
→ ○ Period
Select
○ Initial restoring force

Accessibility: Keyboard Navigation
Difficulty: Hard
Gradable: automatic
Multiple Choice Question
Topic: Springs and Simple Harmonic Motion
MC A mass attached to a spring is drawn back 2 ...
Type: Conceptual

44. If the kinetic energy of an object increases, then

○ the potential energy must decrease.
○ the total energy must increase.
○ there can only be one force on the object.
Select
→ ○ the speed must increase as well.

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Multiple Choice Question
Topic: Kinetic Energy
MC If the kinetic energy of an object increases...
Type: Conceptual

45. If an object has a larger potential energy than kinetic energy,

○ the speed of the object will increase.
○ the speed of the object will not change.
○ the speed of the object will decrease.
Select
→ ○ It is not possible to predict what the speed will be; it depends on the situation.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question
Topic: Conservation of Energy
MC If an object has a larger potential energy t...
Type: Conceptual

46. A simple machine allows you to move _____ masses even though you apply _____.

→ ○ larger; smaller force over a longer distance
○ smaller; kinetic energy spread over the entire path
○ stationary but not moving; many Newtons of force
○ smaller; potential energy deficits
Select

Accessibility: Keyboard Navigation
Difficulty: Easy
Gradable: automatic
Topic: Simple Machines, Work, and Power
Multiple Choice Question
Type: Conceptual
MC A simple machine allows you to move _____...
Type: Definition

Select
47. Can the gravitational force of Earth do positive or negative work on a geosynchronous communication satellite, once it is on its circular orbit?

○ No, because the satellite has zero acceleration.

→ ○ No, because the force is always perpendicular to the orbital path.
○ Yes, because centripetal forces always do positive work.
○ Yes, because its speed is constant.

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question — Topic: Conservation of Energy
MC Can the gravitational force of Earth do posi... — Type: Conceptual

48. When you lift a heavy 5.0 kg crate straight up from ground level to a height of 2.0 m above ground level, then you have changed the crate's gravitational potential energy by
○ 98 m^2/s^2.
→ ○ 98 J.
○ an undetermined amount, because it depends on how fast you lifted it.
○ 98 N.
○ 98 kg m/s.

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question — Topic: Potential Energy
MC When you lift a heavy 5.0 kg crate straight ... — Type: Numerical

49. The potential energy of a spring is 0.3 J when it is compressed 0.04 m to the left of its equilibrium position. At this point it comes to its leftmost position. What is its kinetic energy at this point?
○ -0.3 J
→ ○ zero
○ 0.3 J
○ 375 N/m

Select

Accessibility: Keyboard Navigation
Difficulty: Medium
Gradable: automatic
Multiple Choice Question — Topic: Potential Energy
MC The potential energy of a spring is 0.25 J w... — Type: Numerical

50. The potential energy of a spring is 0.3 J when it is compressed 0.04 m to the left of its equilibrium position. At this point it comes to its leftmost position. What is its kinetic energy when it returns to the equilibrium point?
→ ○ 0.25 J and moving to the right
○ zero
○ -0.25 J and moving to the left
○ 0.25 J and at rest

Select

Accessibility: Keyboard Navigation
Difficulty: Hard
Gradable: automatic
Multiple Choice Question — Topic: Potential Energy
MC The potential energy of a spring is 0.25 J w... — Type: Numerical

51. A spring wound clock makes use of _____ energy to drive the mechanism.
elastic potential

Select

Difficulty: Easy
Gradable: automatic
Fill-in-the-Blank Question — Topic: Springs and Simple Harmonic Motion
FB A spring wound clock makes use of _____... — Type: Conceptual

52. A horizontal force acts on a block that is initially at rest but free to move across a smooth horizontal surface. The work done by this force _____ (increases; does not change; decreases) the kinetic energy of the block.
increases

Select

Difficulty: Easy
Gradable: automatic
Fill-in-the-Blank Question — Topic: Kinetic Energy
FB A horizontal force acts on a block that is i... — Type: Conceptual

53. In pole-vaulting, in addition to gravitational potential energy there is potential energy in the bent pole which is analogous to potential energy stored in a _____ under compression.
spring

Select

Difficulty: Easy
Gradable: automatic
Fill-in-the-Blank Question — Topic: Potential Energy
FB In pole-vaulting, in addition to gravitation... — Type: Conceptual

Select 54. Other things being equal, the pole-vaulter having the greatest _____ energy prior to going into the jump should jump the highest.
kinetic

Fill-in-the-Blank Question
FB Other things being equal, the pole-vaulter h...

Difficulty: Medium
Gradable: automatic
Topic: Kinetic Energy
Type: Conceptual

55. A small radio-controlled car's motor rated at 6 watts output is capable of performing _____ Joules of work in 15 seconds.
90

Select

Difficulty: Easy
Gradable: automatic

Fill-in-the-Blank Question
FB A small radio-controlled car's motor rate...

Topic: Simple Machines, Work, and Power
Type: Numerical

56. The _____ of a pendulum is the amount of time the pendulum takes for one full swing.
period

Select

Difficulty: Easy
Gradable: automatic
Topic: Springs and Simple Harmonic Motion

Fill-in-the-Blank Question
FB The _____ of a pendulum is the amount o...

Type: Conceptual
Type: Definition

57. When a force acts in a direction opposite to the motion, _____ work is said to be done on the object.
negative

Select

Difficulty: Easy
Gradable: automatic
Topic: Simple Machines, Work, and Power

Fill-in-the-Blank Question
FB When a force acts in a direction opposite to...

Type: Conceptual
Type: Definition

58. A ball of mass 5 kg attached to a string is swung in a horizontal circle of radius 0.5 m. If the tension in the string is 10 N, the work done by the tension in one revolution is _____ J.
zero

Select

Difficulty: Medium
Gradable: automatic

Fill-in-the-Blank Question
FB A ball of mass 5 kg attached to a string is ...

Topic: Conservation of Energy
Type: Numerical

59. Total mechanical energy of a system is conserved when there are only _____ forces doing work on the system.
conservative

Select

Difficulty: Easy
Gradable: automatic
Topic: Conservation of Energy

Fill-in-the-Blank Question
FB Total mechanical energy of a system is conse...

Type: Conceptual
Type: Definition

60. The conversion of the initial potential energy of a person on a sled on a smooth icy slope into kinetic energy at the bottom is an example of the principle of conservation of _____.
energy

Select

Difficulty: Easy
Gradable: automatic

Fill-in-the-Blank Question
FB The conversion of the initial potential ener...

Topic: Conservation of Energy
Type: Conceptual