csd2300s24-csd2301s24-meta.sg

Started on	Thursday, 14 March 2024, 9:10 AM
State	Finished
Completed on	Thursday, 14 March 2024, 10:10 AM
Time taken	59 mins 56 secs

Question **1**
Incorrect
Marked out of 1.00
Flag question

A marble with mass m is travelling on a frictionless, horizontal floor with velocity v. It then travels up a slope and come to a stop at a vertical height of h, before travelling backwards. If instead, another marble of mass 3m with a velocity v travels up the same slope, what would be the vertical height for it to stop before travelling backwards? You may neglect air resistance.

Select one:
- a. 3h
- b. h/3 ✗
- c. h
- d. h/2
- e. 2h

Question **2**
Correct
Marked out of 1.00
Flag question

A 0.5 kg book with initial velocity 2.0 m/s slides on a rough horizontal surface for 4.0 m before coming to a stop. Calculate the coefficient of kinetic friction between the surface and the book.

Select one:
- a. 0.535
- b. 0.152
- c. 1.000
- d. 0.251
- e. 0.051 ✓

Question **3**
Incorrect
Marked out of 1.00
Flag question

On the energy diagram, when the corresponding *F*-*x* graph shows a value of F(x) = 0, which statement best describes the object at that position?

Select one:
- a. It is in unstable equilibrium
- b. It is in stable equilibrium.
- c. It is not in equilibrium.
- d. It could either be in stable equilibrium, unstable equilibrium, or neutral equilibrium.
- e. It is in neutral equilibrium. ✗

Question **4**
Incorrect
Marked out of 1.00
Flag question

A 60 kg man fall from a height of 4.3 m onto a trampoline. Neglect air resistance and assume that the trampoline is a spring with spring constant 627.4 N/m, what is the maximum compression of the trampoline in metres?

Select one:
- a. 1.51
- b. 1.23
- c. 2.33
- d. 3.93
- e. 2.84 ✗

Question **5**
Incorrect
Marked out of 1.00
Remove flag

A boy is playing with a toy car of mass 0.85 kg. The toy car has an internal spring which stores energy when the toy car is pulled back against a surface. The boy pulls back the toy car and releases it upwards on a slope with an inclination of 15 degrees. Just before release, the spring has stored an energy of 5.9 J. As the toy car travels, there is a constant friction force of 0.50 N between the toy car and the slope surface. How far will the toy car travel before coming to a stop? You may assume that the toy car is a point mass.

Select one:
- a. 1.8 m ✗
- b. 0.69 m
- c. 2.7 m
- d. 2.2 m
- e. 0.73 m

Question **6**
Correct
Marked out of 1.00
Remove flag

Energy is to be stored in a big 90.0 kg metal ring in the shape of a uniform thin cylindrical shell with radius R=1.20 m. The maximum allowed radial acceleration of any point is 3400 m/s^2. What is the maximum kinetic energy that can be stored in the ring?

Select one:
- a. 123.2 kJ
- b. 133.9 kJ
- c. 183.6 kJ ✓
- d. 162.6 kJ
- e. 173.6 kJ

Question **7**
Correct
Marked out of 1.00
Flag question

What is the moment of inertia of a thin spherical shell of radius *r* with mass m, about the axis *r*/3 from its centre?

Select one:
- a. (3/5) mr^2
- b. (7/9) mr^2 ✓
- c. (13/20) mr^2
- d. (2/7) mr^2
- e. (5/9) mr^2

Question **8**
Correct
Marked out of 1.00
Remove flag

A rotating object is to lose 480 J of kinetic energy when the angular velocity drops from 740 rev/min to 610 rev/min. What is the moment of inertia of the object?

Select one:
- a. 0.662 kgm^2
- b. 0.701 kgm^2
- c. 0.499 kgm^2 ✓
- d. 0.585 kgm^2
- e. 0.600 kgm^2

Question **9**
Incorrect
Marked out of 1.00
Remove flag

A wheel is part of a complex machinery system designed for precision manufacturing. Initially, it has an angular velocity of 23.87 rev/min. As part of the system's operation, this wheel experiences a constant angular acceleration. During a particular phase of operation, the control system applies an angular acceleration of 0.4330 rad/s^2 to the wheel. Calculate the wheel's angular velocity after 2.600 seconds of applying this constant angular acceleration.

Select one:
- a. 7.458 rad/s
- b. 21.10 rad/s
- c. 24.96 rad/s ✗
- d. 3.625 rad/s
- e. 15.13 rad/s

Question **10**
Correct
Marked out of 1.00
Flag question

A football of mass 0.5 kg is kicked from rest and reaches a velocity of 20 m/s in 0.05 seconds. Calculate the average force exerted on the football during the kick.

Select one:
- a. 100 N
- b. 1 N
- c. 50 N
- d. 10 N
- e. 200 N ✓

Quiz navigation

1 2 3 4 5 6 7 8 9 10

Show one page at a time

Finish review