Training test

Started	Thursday, March 12 2020, 3:09 pm
State	Completed
terminated	Thursday, March 12 2020, 3:31 pm
The time spent on	21 min 50 seconds
Score	750,00 / 1200,00
Rating	**7.50 out** of a maximum of 12.00 (**63** %)

Question 1

Wrong answer

Score -25.00 out of 100.00

According to Stevin's law, if the depth inside a liquid in static equilibrium increases

- ○ (a) the hydrostatic pressure increases
- ○ (b) the acceleration of gravity increases
- ○ (c) the hydrostatic pressure decreases
- ◉ (d) the hydrostatic pressure remains unchanged ✗
- ○ (e) Stevin's law does not apply to liquids in static balance

Wrong answer.

The correct answer is: hydrostatic pressure increases

Question 2

Answer not given

Max score: 100.00

If the dimensions of mass, length and time are indicated with [M], [L] and [T] respectively, the dimensions of the tangential acceleration are:

- ○ (a) $[L] [T]^{-2}$
- ○ (b) $[M]_2 [L] [T]$
- ○ (c) $[L] [T]_{-2}$
- ○ (d) $[L] [T]_{-2}^{-2}$
- ○ (e) $[L] [T]$

Wrong answer.

The correct answer is: $[L] [T]^{-2}$

Question 3

Correct answer

Score 100.00 out of 100.00

A container with rigid and hermetically sealed walls contains a perfect gas at temperature T_1 = 300 K and pressure p_1 = 1 Pa. At what pressure does the gas go if the container is cooled down to a temperature of T_2 = 270 K?

○ (a) 0.9 Pa ✓

○ (b) 11.1 Pa

○ (c) 1.11 Pa

○ (d) The pressure does not vary

○ (e) 0.09 Pa

Correct answer.

The correct answer is: 0.9 Pa

Question 4

Correct answer

Score 100.00 out of 100.00

A body moves with uniform circular motion on a circumference of radius $R = 0.2m$. Its speed module is $v = 2m/s$. How much is its angular velocity worth ω?

○ (A) 10 rad / s ✓

○ (B) 2π rad / s

○ (C) 1 rad / s

○ (D) 4π rad / s

○ (E) $0,4$ rad / s
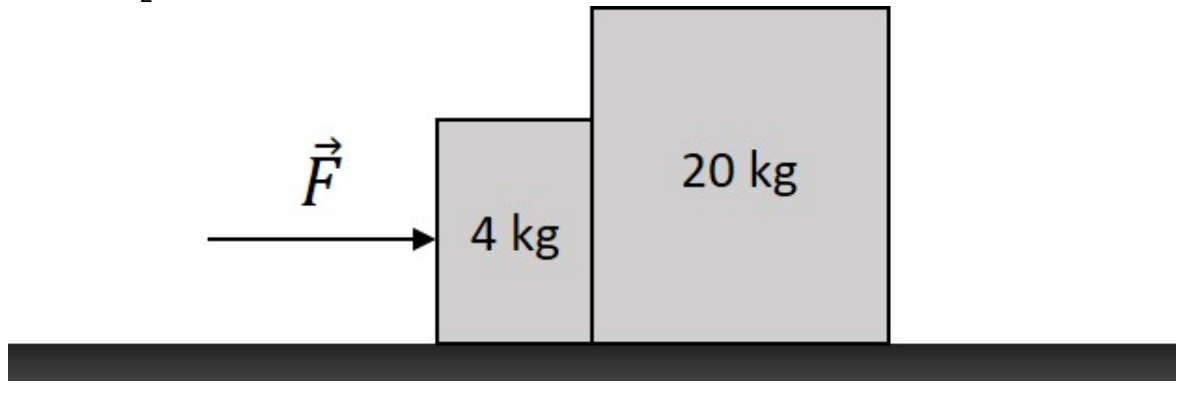
The correct answer is: 10 rad / s

Question 5

Wrong answer

Score -25.00 out of 100.00

Two boxes of mass m_1 = 4 kg and m_2 = 20 kg are placed on a smooth surface. The force F = 12 N is applied to the mass m_1 (see figure). How much is the force F_{12} that the mass m_1 exerts on the mass m_2?

- ○ (a) F_{12} = 4 N
- ○ (b) F_{12} = 72 N
- ◉ (c) F_{12} = 12 N ✗
- ○ (d) F_{12} = 2 N
- ○ (e) F_{12} = 10 N

Wrong answer.

The correct answer is: F_{12} = 10 N

Question 6

Correct answer

Score 100.00 out of 100.00

The surface of a conductive sphere is uniformly charged with a charge q. The electrostatic field at a point P located outside the sphere

- ○ (a) is inversely proportional to the distance of the point P from the center of the sphere
- ◉ (b) is inversely proportional to the square of the distance of point P from the center of the sphere ✓
- ○ (c) is always null
- ○ (d) is inversely proportional to the square of the distance of point P from the surface of the sphere
- ○ (e) is inversely proportional to the distance of the point P from the surface of the sphere

Correct answer.

The correct answer is: it is inversely proportional to the square of the distance of the point P from the center of the sphere

Question 7

Correct answer

Score 100.00 out of 100.00

Two arbitrary $\vec{a}$ and $\vec{b}$ planar vectors of forms a and are given b. Let it be $\vec{c} = \vec{a} + \vec{b}$. The form of $\vec{c}$:

- ○ (A) is always equal to $a + b$.
- ◉ (B) is less than or equal to $a + b$. ✓
- ○ (C) is always less than $a + b$.
- ○ (D) is greater than or equal to $a + b$.
- ○ (E) is always greater than $a + b$.

The correct answer is: it is less than or equal to $a + b$.

Question 8

Correct answer

Score 100.00 out of 100.00

After exercising, a cyclist lost 460 kcal of heat from evaporation of water from the skin. Approximating the latent heat of evaporation of the water to J / kg and knowing that 1kcal = 4180 J, how much water is lost $2,3 \times 10^6$?

- ○ (a) 83.6 g
- ○ (b) 83.6 kg
- ○ (c) 8.36 kg
- ◉ (d) 836 g ✓
- ○ (e) 8.36 g

Correct answer.

The correct answer is: 836 g

Question 9

Correct answer

Score 100.00 out of 100.00

A car moves in a straight direction, starting from a standstill, with constant acceleration equal to 10m / s . What will be your speed after covering 45m?

- ○ (a) 40m / s
- ○ (b) 5m / s
- ○ (c) 20m / s
- ○ (d) 50m / s
- ◉ (e) 30m / s ✓

Correct answer.

The correct answer is: 30m / s

Question 10

A ball is thrown upwards. Which of the following statements is false?

○ (a) As the ball rises, the force of gravity opposes the motion.

○ (b) The potential energy of the ball increases as it rises.

⦿ (c) As the ball rises, the force of gravity does positive work on it. ✓

○ (d) The kinetic energy of the ball is a function of its speed.

○ (e) The kinetic energy of the ball decreases as it rises.

Correct answer.

The correct answer is: As the ball goes up, the force of gravity does positive work on it.

Question 11

A trolley of mass M = 25 kg is moved along a horizontal plane without friction with an acceleration parallel to the plane of 8 m / s . What is the value of the force that is applied to the trolley, knowing that it forms a 60 ° angle with the plane?

○ (a) F = 2000 N

○ (b) F = 200 N

○ (c) F = 4000 N

○ (d) F = 40 N

⦿ (e) F = 400 N ✓

Correct answer.

The correct answer is: F = 400 N

Question 12

Calculate the value of the current intensity I flowing in a conductor where the drift velocity of the charge carriers (electrons) is $v_d = 2 \cdot 10$ m / s and the circular section is S = 5 mm . [Assume that the density of carriers is equal to 5 = 10 m].

○ (a) I = 0.8 A

○ (b) I = 0.08 A

○ (c) I = 2 A

○ (d) I = 8 A

○ (e) I = 16 A

Wrong answer.

The correct answer is: I = 8 A