Training test

Started	Wednesday, March 11 2020, 8:44 pm
State	Completed
terminated	Wednesday, March 11 2020, 9:10 pm
The time spent on	26 mins
Score	450,00 / 1200,00
Rating	**4.50 out** of a maximum of 12.00 (**38** %)

Question 1

Wrong answer

Score -25.00 out of 100.00

During a thermodynamic cycle, an ideal thermal machine absorbs heat $Q_2 > 0$ from a hot source and uses it to perform a job L> 0, transferring heat $Q_1 < 0$ to a cold source , with a yield of 20%. How much is the work done in relation to Q_1 worth ?

- ○ (a) L = 0
- ○ (b) L + Q_1 = /5
- ◉ (c) L = Q + $_1$ /4 ✗
- ○ (d) L = - Q_1 /5
- ○ (e) L = - Q_1 /4

Wrong answer.

The correct answer is: L = - Q_1 /4

Question 2

Correct answer

Score 100.00 out of 100.00

A copper wire has a section equal to 1.67 mm^2 and length L = 50 cm. The resistivity of copper at room temperature is $1.67 \cdot 10^{-8}$ Ωm. Determine the resistance R measured at the ends.

- ○ (a) $R = 5.6 \cdot 10^{-1}$ Ω
- ○ (b) $R = 5.0 \cdot 10^{-9}$ Ω
- ○ (c) $R = 5.0 \cdot 10^{-5}$ Ω
- ◉ (d) $R = 5.0 \cdot 10^{-3}$ Ω ✓
- ○ (e) $R = 5.6 \cdot 10^{-8}$ Ω

Correct answer.

The correct answer is: $R = 5.0 \cdot 10^{-3}$ Ω

An object moves in a uniformly accelerated rectilinear motion with acceleration a for a time $t = 5\,s$, covering a distance $d = 8\,m$. If its initial velocity is $v_0 = 2\,m/s$, which of the following statements is correct?

○ (A) a has the same verse as v_0, $v_f = 0$

○ (B) a has opposite verse v_0, $v_f = 0$

○ (C) a has opposite verse v_0; the final speed v_f has the same direction as v_0

○ (D) a has the same direction of v_0, v_f opposite

◉ (E) a and v_f have the same verse of v_0 ✗

The correct answer is: a has opposite verse v_0; the final speed v_f has the same direction as v_0

What is the value of the Earth's average rate ?

○ (to) $6.38 \cdot 10^9$ km

◉ (B) $6.38 \cdot 10^{10}$ km ✗

○ (C) $6.38 \cdot 10^5$ m

○ (D) $6.38 \cdot 10^3$ km

○ (e) $6.38 \cdot 10$ km

Wrong answer.

The correct answer is: $6.38 \cdot 10^3$ km

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

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○ (a) is inversely proportional to the square of the distance of the point P from the center of the sphere ✓

○ (b) is inversely proportional to the square of the distance of the point P from the surface of the sphere

○ (c) is inversely proportional to the distance of the point P from the center of the sphere

○ (d) is always null

○ (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

An elastic constant spring K = 200 N / m has one end fixed to the ceiling while a body of mass M is fixed to the other end. At equilibrium, the spring is elongated by X = 25 cm with respect to its rest length. What is the mass of the body? (Approximate acceleration of gravity of 10 m / s)

○ (a) M = 20 kg

○ (b) M = 50 kg

○ (c) M = 5 kg ✓

○ (d) M = 0.5 kg

○ (e) M = 2 kg

Correct answer.

The correct answer is: M = 5 kg

Question 7

Correct answer

Score 100.00 out of 100.00

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

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

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

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

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

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

Correct answer.

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

Question 8

Correct answer

Score 100.00 out of 100.00

A body of mass m, subjected to the action of a force F, moves with acceleration equal to a. If, keeping the force constant, we halve the mass m, the acceleration of the system:

○ (a) remains constant

○ (b) nothing can be said about the acceleration of the system because it depends on the value of m

○ (c) is halved

⦿ (d) doubles ✓

○ (e) nothing can be said about the acceleration of the system because it depends on the value of F

Correct answer.

The correct answer is: double

Question 9

Wrong answer

Score -25.00 out of 100.00

A car travels at a speed of 10 m / s along a 1 km radius curve. How much is its centripetal acceleration?

○ (to) $100 \, m/s^2$

⦿ (B) $10 \, m/s^2$ ✗

○ (C) $1 \, m/s^2$

○ (d) It is not possible to calculate it if you do not know the time taken to travel the curve

○ (is) $0.1 \, m/s^2$

Wrong answer.

The correct answer is: $0.1 \, m/s^2$

Question 10

Correct answer

Score 100.00 out of 100.00

A copper block of mass m_{cu} = 20 g is found in the laboratory at an initial temperature t_{in}. At block there is provided a heat equal to Q = 84 J thanks to which reaches the final temperature T_{fin} = 35 ° C . Knowing that the specific heat c_{cu} of the copper can be approximated to 0.1 cal / g ° C and using the approximation 1 cal = 4.2 J, determine the value of the initial temperature t_{in}.

○ (a) none of the other answers are correct

⦿ (b) 25 ° C ✓

○ (c) 250 ° C

○ (d) 390 K

○ (e) 2.5 ° C

Correct answer.

The correct answer is: 25 ° C

Question 11

Wrong answer

Score -25.00 out of 100.00

What is the minimum volume that a body with a mass of 1 kg must have in order not to sink when immersed in water? (water density = 10^3 kg / m^3).

⦿ (a) none of the other answers are correct ✗

○ (b) 1000 cm^3

○ (c) 1 · 10^{-3} m^3

○ (d) 2 dm^3

○ (e) 0.210^{-3} m^3

Wrong answer.

The correct answer is: 1 · 10^{-3} m^3

Question 12

Wrong answer

Score -25.00 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 greater than $a + b$.

○ (B) is always less than $a + b$.

⦿ (C) is greater than or equal to $a + b$. ✗

○ (D) is always equal to $a + b$.

○ (E) is less than or equal to $a + b$.

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