Calculate the length of trajectory of the body moving through the straight line with velocity 6.5 m/s during the time 2.8 s (carry out calculations in SI unit system, inscribe just number into the data field, e.g. 1.23).

Answer:

A train of length 200 m is moving through the tunnel of length 50 m with a speed of 18 km/h. Determine the time (in seconds) needed for passing the tunnel (inscribe just number into the data field, e.g. 1.23).

Answer:
Question 3
Not yet answered
Marked out of 2.00

Calculate the moment of inertia of a circular disk relative to the symmetry axis, if the mass of a disk is 9.6 g, radius of the disk is 4 cm (carry out calculations in g.cm^2, inscribe just number into the data field, e.g. 1.23).

Answer:

Question 4
Not yet answered
Marked out of 2.00

An object of mass 2 kg in an elevator accelerates downward with acceleration of 5 m/s^2. Free fall acceleration is equal to 10 m/s^2. Determine the weight of the body (inscribe just number into the data field, e.g. 1.23).

Answer:
Question 5
Not yet answered
Marked out of 2.00

Calculate the period (T), if the number of complete revolutions is 7 and the corresponding time is 6.5 second (carry out calculations in seconds, inscribe just number into the data field, e.g. 1.23).

Answer:

Question 6
Not yet answered
Marked out of 2.00

Equation of plane wave propagating along the direction of x- axis is given by the formula \( s = 5\cos(8\pi t - 3\pi x) \). Determine the frequency (v) of the wave (inscribe just a number into the data field, e.g. 1.23):

Answer:

Question 7
Not yet answered
Marked out of 2.00

Calculate the electric force acting on the charged particle if \( q = 1 \times 10^{-4} \) C. Electric field strength \( E = 49207.4 \) V/m (Inscribe in the field the only value, e.g.1.234).

Answer:
Question 8
Not yet answered
Marked out of 1.00

When a car's speed changes from 30 m/s to 15 m/s, its kinetic energy ----- .
Select one:
- a. is decreased 2- times
- b. is decreased 4- times
- c. does not change
- d. is increased 4-times
- e. is increased 2-times

Question 9
Not yet answered
Marked out of 1.00

A 5-kilogram block is suspended by a cord from the ceiling. The force exerted on the block by the cord is most nearly ----- .
Select one:
- a. 25 N
- b. 100 N
- c. 200 N
- d. 50 N
In a given process, 12 joules of heat is added to an ideal gas and the gas does 8 joules of work. Which of the following is true about the internal energy of the gas?

Select one:
- a. it has increased by 20 Jouls
- b. it has not changed
- c. it has increased by 4 Jouls

Gay-Lussac's law for ideal gases is given by the formula (p is the pressure, V- volume, T-temperature):

Select one:
- a. p / V=const
- b. p / T=const
- c. V / T=const
Question 12
Not yet answered
Marked out of 1.00

Select the vector quantities (3 answers):
Select one or more:
- a. velocity
- b. distance
- c. displacement
- d. time
- e. acceleration
- f. mass

Question 13
Not yet answered
Marked out of 1.00

What kind is a motion if the value of the velocity remains unchanged (choose two correct answers):
Select one or more:
- a. Non-Uniform straight
- b. Uniform straight
- c. Uniform curvilinear (circular)
- d. Non-Uniform circular
- e. Acceleratory straight
Question 14
Not yet answered
Marked out of 1.00

Is it true or false: „A common unit of acceleration is the meter per second squared- m/s²“

Select one:
○ True
○ False

Question 15
Not yet answered
Marked out of 1.00

Newton's second law is given by the formula ----- (p - is the momentum, m - mass, a - acceleration)

Select one or more:
☐ a. F=ma
☐ b. F=dp/dt
☐ c. F=mdp/dt
☐ d. F=a
The kinetic energy of rotation body is given by formula (I is the moment of inertia):
Select one:
- a. \( E = \frac{1}{2} I \omega^2 \)
- b. \( E = \frac{1}{2} I \omega^2 \)
- c. \( E = I \omega^2 \)

Mechanical waves can be ----- .
Select one:
- a. only longitudinal
- b. transverse and longitudinal, both
- c. only transverse
Is it true or false: „Total mechanical energy of simple harmonic oscillator is proportional to the square of the amplitude.“

Select one:
○ True
○ False

Select the units for physical quantities of a rotating body:

- **angular displacement**: Choose...
- **period**: Choose...
- **angular velocity**: Choose...
- **frequency**: Choose...
Determine physical quantities characterizing the state of an ideal gas of a fixed amount of mass (m) (select 3 answers):

- [ ] a. Frequency
- [ ] b. Pressure
- [ ] c. Temperature
- [ ] d. Density
- [ ] e. Concentration
- [ ] f. Volume

A fixed volume of gas is cooled from 20°C to 0°C. What is the temperature change, ΔT in Kelvin?

Select one:
- [ ] a. 293 K
- [ ] b. 20 K
- [ ] c. 273 K