Question 1

Not yet answered

Marked out of 2.00

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 m, inscribe just number into the data field, e.g. 1.23).

Answer:

Question 2

Not yet answered

Marked out of 2.00

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 5 and the corresponding time is 2.1 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

When a vector of magnitude 6 units is added to a vector of magnitude 8 units, the magnitude of the resultant vector will be ----- .

Select one:

- a. exactly 2 units
- b. exactly 14 units
- c. 0 units,10 units or some value between them
- d. 2 units,14 units or some value between them

Question 7

Not yet answered

Marked out of 2.00

A satellite moving in a circular orbit with respect to the Earth's center experiences a gravitational force. If the satellite is put into a new circular orbit of a greater radius, how will the gravitational force change?

Select one:

- a. Gravitational force-decreases
- b. Gravitational force-increases
- c. Gravitational force remains constant

Question 8

Not yet answered

Marked out of 2.00

If the speed and mass of an object are doubled, which of the following is true?

Select one or more:

- a. The momentum of the object is quadrupled
- b. The momentum of the object is doubled
- c. The kinetic energy of the object is multiplied by 8
- d. The kinetic energy of the object is doubled

Question **9**

Not yet answered

Marked out of 2.00

When a car's speed changes from 30 m/s to 15 m/s, its kinetic energy ----- .

Select one:

- a. is increased 2-times
- b. is decreased 4- times
- c. is increased 4-times
- d. is decreased 2- times
- e. does not change

Question **10**

Not yet answered

Marked out of 2.00

Two objects A and B of velocities v_A and v_B have momentums with equal magnitudes. If $|v_A| < |v_B|$, which of the following is true?

Select one:

- a. The two objects have equal kinetic energies
- b. Mass of object A is less than mass of object B
- c. The two objects have equal masses
- d. Mass of object A is greater than mass of object B

Question **11**

Not yet answered

Marked out of 2.00

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. 100 N
- b. 50 N
- c. 25 N
- d. 200 N

Question **12**

Not yet answered

Marked out of 1.00

Complete the definition: The velocity of a body at a given point of the trajectory and in a given time moment is called ----- .

Select one:

- a. Constant velocity
- b. Varying velocity
- c. Average velocity
- d. Instantaneous velocity

Question 13

Not yet answered

Marked out of 1.00

Is it possible, the motion of a body along a curvilinear trajectory without acceleration, and why?

Select one:

- a. No, because the direction of a velocity along the curvilinear trajectory continuously changes, thus changes the vector of the velocity as well.
- b. yes, because the direction and modulus of the velocity may remain unchanged

Question 14

Not yet answered

Marked out of 1.00

Newton's first law includes two statements:

Select one or more:

- a. Exists the inertial reference frame
- b. Bodies are not characterized by the inertia
- c. Does not exists the inertial reference frame
- d. Bodies are characterized by the inertia

Question **15**

Not yet answered

Marked out of 1.00

Is it true or false:"The work-energy principle states, that the net work done (by the net force) on a body equals the change in kinetic energy of that body"

Select one:

- True
- False

Question **16**

Not yet answered

Marked out of 1.00

The moment of inertia of a body in rotational motion is ----- (m is the mass of a body).

Select one:

- a. $I=m/r^2$
- b. $I=m^2r$
- c. $I=mr^2$

Question 17

Not yet answered

Marked out of 1.00

The main quantities characterizing the harmonic oscillations are (select 3 answers):

Select one or more:

- a. Amplitude
- b. Time
- c. Momentum
- d. mass
- e. Frequency
- f. Period

Question **18**

Not yet answered

Marked out of 1.00

Select the units for physical quantities of a rotating body:

angular velocity Choose...

frequency Choose...

angular displacement Choose...

period Choose...

Question **19**

Not yet answered

Marked out of 1.00

Determine the formulas of instantaneous angular velocity in a case of circular motion (φ is the angle, t - time)

a. $\omega = d\varphi * dt$

b. $\omega = dt / d\varphi$

c. $\omega = d\varphi / dt$