Question 1

ot 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 SI unit system, inscribe just number into the data field, e.g. 1.23).

Answer:

Question 2

Time left 0:59:50

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 8.2 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 $s=5\cos(3\pi t-3\pi x)$. Determine the wavelength (inscribe just number into the data field, e.g. 1.23):

Answer:

Question 7

Not yet answered

Marked out of 2.00

Determine the temperature (in Celsius) of an ideal gas, if the average translation kinetic energy of molecules is equal to 700 k, where k is the Boltzmann's constant (inscribe just number into the data field, e.g. 1.23):

Answer:

Question 8

Not yet answered

Marked out of 2.00

A standing wave is produced along a string of 100 cm whose ends are fixed. What is the wavelength of the wave if there are 3 nodes between the fixed ends of the string?

Select one:

- a. 33.3 cm
- b. 300 cm
- c. 50 cm
- d. 20 cm
- e. 40 cm

Question 9

Not yet answered

Marked out of 1.00

The acceleration at any moment of time is called ----- .

Select one:

- a. constant acceleration
- b. variable acceleration
- c. instantaneous acceleration
- d. average acceleration

Question 10

Not yet answered

Marked out of 1.00

Is it possible to consider the motion of a body along a curvilinear trajectory without acceleration?

Select one:

- a. No
- b. Yes

Question **11**

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/s^2"

Select one:

- True
- False

Question **12**

Not yet answered

Marked out of 1.00

The vector of velocity of curvilinear motion is defined as ($\vec{r}$ is radius-vector):

a. $\vec{V} = dr/dt$

b. $\vec{V} = dt/\vec{r}$

c. $\vec{V} = d\vec{r}/dt$

Question 13

Not yet answered

Marked out of 1.00

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. 2 units,14 units or some value between them

b. exactly 14 units

c. 0 units,10 units or some value between them

d. exactly 2 units

Question 14

Not yet answered

Marked out of 1.00

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 remains constant

b. Gravitational force-decreases

c. Gravitational force-increases

Question **15**

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

Question **16**

Not yet answered

Marked out of 1.00

The force is a physical quantity, characterized by ----- .

Select one:

- a. the direction, modulus and the point of application
- b. the modulus
- c. the direction
- d. the point of application

Question **17**

Not yet answered

Marked out of 1.00

The force is conservative (potential) if the work done by the force applied on the body depends -----.

Select one:

- a. on the coordinates of the body
- b. only on the initial coordinate of the path
- c. only on the final coordinate of the path
- d. only on the initial and the final coordinates of the path

Question **18**

Not yet answered

Marked out of 1.00

The moment of inertia of a body of mass (m) with respect to an axis of rotation is:

Select one:

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

Question **19**

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. 50 N
- d. 200 N

Question **20**

Not yet answered

Marked out of 1.00

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

Question 21

Not yet answered

Marked out of 1.00

The object of mass 8 kg was moving with speed of 30 m/s. After collision the speed equals to 47 m/s. Define the change in momentum ----- .

Select one:

- a. 136 kg.m/s
- b. 616 kg.m/s
- c. 12.5 kg.m/s
- d. 36 kg.m/s

Question 22

Not yet answered

Marked out of 1.00

The work done by the force (F) on displacement (s) is given by the formula:

Select one:

- a. A=s/F
- b. A=F s
- c. A=F-s
- d. A=F/s
- e. A=F+s

Question 23

Not yet answered

Marked out of 1.00

Mechanical waves can be ----- .

Select one:

- a. only transverse
- b. transverse and longitudinal, both
- c. only longitudinal

Question 24

Not yet answered

Marked out of 1.00

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

Select one or more:

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

Question **25**

Not yet answered

Marked out of 1.00

Select the units for physical quantities:

wavelength Choose...

force Choose...

frequency Choose...

energy Choose...

Question **26**

Not yet answered

Marked out of 1.00

The relationship between the wavenumber and the wavelength is given by the formula:

Select one:

- a. $k = \lambda / 2\pi$
- b. $k = 2\pi / \lambda$
- c. $k = 2\pi\lambda$

Question **27**

Not yet answered

Marked out of 1.00

The absolute temperature (T) is given by an expression:

Select one:

- a. T=t-273
- b. T=t+372
- c. T=t+273

Question **28**

Not yet answered

Marked out of 1.00

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

Select one:

- a. 20 K
- b. 273 K
- c. 293 K

Question **29**

Not yet answered

Marked out of 1.00

Match the definitions describing the equilibrium states of an ideal gas:

T=constant Choose...

p=constant Choose...

V=constant Choose...

Question **30**

Not yet answered

Marked out of 1.00

When the temperature of a body changes by 2 degrees, the amount of heat needed is 2000 joules. The mass of a body is 10 kg. The heat capacity of the body will be equal to ----- .

Select one:

- a. 100 J/kg C°
- b. 200 J/kg C°
- c. 50 J/kg C°

Question **31**

Not yet answered

Marked out of 1.00

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 4 Jouls
- b. it has not changed
- c. it has increased by 20 Jouls

Question **32**

Not yet answered

Marked out of 1.00

In an isochoric process first law of thermodynamics is expressed by formula (Q is the heat added to the system, A - work done by the system, U - internal energy):

Select one:

- a. $dQ = -dA$
- b. $dQ = dA$
- c. $dQ = dU$
- d. $dQ = -dU$