Question 1

Time left 0:58:33

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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 2

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 3

Not yet answered

Marked out of 2.00

An object of mass 4 kg in an elevator accelerates upward 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 4

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=3cos(7πt-3πx). Determine the wavelength (inscribe just number into the data field, e.g. 1.23):

Answer:

Question 5

Not yet answered

Marked out of 2.00

Determine the temperature (in Kelvin) of ideal gas, if the average translation kinetic energy of molecules is equal to 415 k, where k is the Boltzmann's constant (inscribe just number into the data field, e.g. 1.23):

Answer:

Question 6

Not yet answered

Marked out of 2.00

Calculate the electric force acting on the charged particle if $q=1*10^{-4}$ C. Electric field strength E= 49898.6 V/m (Inscribe in the field the only value, e.g.1.234).

Answer:

Question 7

Not yet answered

Marked out of 2.00

Calculate the uniform electrostatic field strength, when along the field lines potential difference between two points is 0.08 V. Distance between these points equals 4 cm (inscribe in the field the value, e.g. 1,234).

Answer:

Question 8

Not yet answered

Marked out of 2.00

How will be changed the electric field strength of point charge when the value of charge increases 2-times and r decreases 7-times (inscribe in the field only value e.g. 1.23).

Answer:

Question 9

Not yet answered

Marked out of 2.00

Distance between the plates of the parallel-plate capacitor is decreased 8- times and the plate area is increased 7-times, therefore capacitance of the capacitor has increased by the factor K. Determine the value of K (inscribe answer in the data field, e.g.1,234).

Answer:

Question **10**

Not yet answered

Marked out of 1.00

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

Select one:

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

Question **11**

Not yet answered

Marked out of 1.00

What kind is a motion if the value of the velocity remains unchanged:

Select one or more:

- a. Uniform curvilinear (circular)
- b. Uniform straight
- c. Non-Uniform circular
- d. Acceleratory straight
- e. Non-Uniform straight

Question **12**

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 **13**

Not yet answered

Marked out of 1.00

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

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

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

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

Question **14**

Not yet answered

Marked out of 1.00

Newton's second law is given by the formulas ($\vec{p}$ - is the momentum, m - mass, $\vec{a}$ - acceleration):

Select one or more:

- a. $F = a$
- b. $\vec{F} = m\vec{a}$
- c. $\vec{F} = d\vec{p}/dt$
- d. $\vec{F} = m\,d\vec{p}/dt$

Question **15**

Not yet answered

Marked out of 1.00

Complete the definition: The part of the energy of the mechanical system depending on the location of the system in the external field of forces and on the configuration of the system is called ----- .

Select one:

- a. Deformation energy
- b. Kinetic energy
- c. Internal energy
- d. Potential energy

Question **16**

Not yet answered

Marked out of 1.00

The kinetic energy of a body rotating with velocity ω is given by the formula:

Select one:

- a. $E=\frac{1}{2} L\omega^2$
- b. $E=L\omega^2$
- c. $E=\frac{1}{2}L^2\omega$

Question **17**

Not yet answered

Marked out of 1.00

The work done by a force ($\vec{F}$) on displacement ($\vec{s}$) is given by the formula:

Select one or more:

- a. $A=(\vec{F}\vec{s})$
- b. $A=F+s$
- c. $A=\vec{s}/\vec{F}$
- d. $A=Fscos(\phi)$

Question **18**

Not yet answered

Marked out of 1.00

Mechanical waves can be ----- .

Select one:

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

Question **19**

Not yet answered

Marked out of 1.00

Is it true or false: „Total mechanical energy of simple harmonic oscillator is proportional to the square of the period.“

Select one:

- True
- False

Question **20**

Not yet answered

Marked out of 1.00

The unit of the frequency in SI units system is:

Select one:

- a. Joule
- b. metre
- c. Hertz
- d. Second
- e. m/s

Question **21**

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 22

Not yet answered

Marked out of 1.00

If the temperature of a fixed mass of gas increases, what happens to the average kinetic energy of the particles in the gas?

Select one:

- a. It decreases
- b. It increases
- c. It remains the same

Question 23

Not yet answered

Marked out of 1.00

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

Select one:

- a. pV=const
- b. pT=const
- c. VT=const

Question **24**

Not yet answered

Marked out of 1.00

Is it true or false: „The temperature of two bodies are equal if no heat exchange occurs between them.“

Select one:

- ○ True
- ○ False

Question **25**

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

Question **26**

Not yet answered

Marked out of 1.00

Is it true or false: „Electric field vector is directed through the tangent to the field line at any given point".

Select one:

- True
- False

Question **27**

Not yet answered

Marked out of 1.00

The potential difference is defined as a measure of ----- .

a. the work done per unit charge

b. the power per unit charge

c. the electric field per unit charge

d. the force per unit charge

Question **28**

Not yet answered

Marked out of 1.00

Capacitance of the capacitor is equal to (q is the charge):

- a. C=U/q
- b. C=q/U
- c. C=q U

Question **29**

Not yet answered

Marked out of 1.00

The electric field at a distance r from a charge Q is equal to E. What is the electric field at a distance 2 r from a charge 2 Q?

- a. E
- b. E / 4
- c. E / 2
- d. 4 E
- e. 2 E

Question 30

Not yet answered

Marked out of 1.00

Electric Field Strength is given by an expression (q is the charge):

Select one:

- a. $E= F/q^2$
- b. $E = Fq$
- c. $E = F/q$

Question 31

Not yet answered

Marked out of 1.00

44 J is used to move 4 coulombs through a potential difference of V. What is V?

Select one:

- a. 40 v
- b. 11 v
- c. 48 v
- d. 1/4 v
- e. 176 v