Question 1

ot 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).

Time left 0:44:30

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

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 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 $s=3\cos(7\pi t-8\pi x)$. 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 430 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 uniform electrostatic field strength, when along the field lines potential difference between two points is 0.05 V. Distance between these points equals 10 cm (inscribe in the field the value, e.g. 1.234).

Answer:

Question 7

Not yet answered

Marked out of 2.00

Calculate the energy transformed into the heat in resistance of 11 ohm during the time interval 10 s, if the current passing through is 9 A (inscribe in the field the value, e.g. 1.234).

Answer:

Question 8

Not yet answered

Marked out of 2.00

Calculate the magnetic flux passing through the loop area of 5 m^2. Magnetic field of 3 T creates the angle of 60^o to the line drawn perpendicular to the face of the loop (inscribe in the field the value, e.g. 1.234).

Answer:

Question **9**

Not yet answered

Marked out of 2.00

The angle of refraction of light is equal to 30^0, and the relative index of refraction is - 1.2. Define the sine of the angle of incidence on the boundary surface of two transparent mediums (inscribe just number into the data field, e.g. 1.234).

.

Answer:

Question **10**

Not yet answered

Marked out of 2.00

The angle between the axes of polarizer and analyzer is equal 15^0. Define the I_A/I_P - a ratio of intensities of light passed in analyzer (I_A) and in polarizer (I_P) (inscribe just number into the data field, e.g. 1.23).

.

Answer:

Question **11**

Not yet answered

Marked out of 2.00

Temperature (T) of black-body has increased in 6 times. The wavelength corresponding to the maximum value of radiating ability of black-body will be decreased in ----- times (inscribe just number into the data field, e.g. 1.234).

.

Answer:

Question **12**

Not yet answered

Marked out of 2.00

According to Faraday's law of induction $E=-d\Phi/dt$, define the meaning of Φ:

- a. electric strength
- b. electric potential
- c. phase
- d. magnetic flux

Question **13**

Not yet answered

Marked out of 2.00

Define the equation (Einstein's formula) for photoelectric effect (h is Planck's constant, ν - frequency, A - work function, V-velocity):

- a. $h\nu=A+m/2$
- b. $h\nu=A+mV^2/2$
- c. $h\nu=A+mV/2$
- d. $h\nu=A+V^2/2$

Question **14**

Not yet answered

Marked out of 1.00

Within the reference frame, equations describing the time dependence of coordinates of a given point particle are called:

Select one:

- a. Equations of oscillations
- b. Equations of rotation
- c. Equations of kinematics
- d. Equations of dynamics

Question **15**

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 **16**

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 **17**

Not yet answered

Marked out of 1.00

Newton's first law includes the statements (choose two correct answers):

Select one or more:

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

Question **18**

Not yet answered

Marked out of 1.00

Select the units for physical quantities of a rotating body:

angular velocity	Choose...
angular displacement	Choose...
frequency	Choose...
period	Choose...

Question 19

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

Question 20

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 21

Not yet answered

Marked out of 1.00

Ohm's law for the section of a circuit is given by the formula (U is the potential difference):

Select one:

- a. I=R/U
- b. I=U/R
- c. I=R * U

Question 22

Not yet answered

Marked out of 1.00

Magnetic field is produced by a current in a long, straight wire, which of the following is true?

- a. The field lines are directed radially outward from the wire
- b. The field lines are straight lines
- c. The field lines are circles with centre on the wire

Question 23

Not yet answered

Marked out of 1.00

The wave theory of light is supported by the phenomenon of (select two answers):

- [ ] a. interference
- [ ] b. heat radiation
- [ ] c. diffraction
- [ ] d. photoelectric

Question 24

Not yet answered

Marked out of 1.00

The rays, passing through the prism ----- .

Select one:

- a. are mutually perpendicular
- b. disperse in different directions
- c. cross each other

Question **25**

Not yet answered

Marked out of 1.00

According to the law of absorption of light $I = I_0 \, e^{-\mu x}$, where μ is the coefficient of:

Select one:

- a. Reflection
- b. Friction
- c. Absorption
- d. Refraction

Question **26**

Not yet answered

Marked out of 1.00

Is it true or false: “The Rutherford model of an atom was unable to explain why atoms emit line spectra”.

Select one:

- True
- False

Question **27**

Not yet answered

Marked out of 1.00

Is it true or false: “The mass of a stable nucleus is less than the sum of the masses of its constituent nucleons. The difference in mass (times c^2) is the total binding energy”.

Select one:

- True
- False