

Medical physics

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A temperature of 50 oF is equivalent to what temperature in Kelvin.

1. 283.15 k
2. 293.15 k
3. 303.15 k
4. 313.15 k
5. 323.15 k

ص ١٢:٢٧

An ideal gas in a cylinder initially has a pressure of 5.75 atm and at temperature 27 °C. It is compressed until its volume is halved ($V_2=0.5V_1$) at constant temperature, the gas final pressure equals to:

1. 3.5 atm
2. 5.5 atm
3. 7.5 atm
4. 9.5 atm
5. 11.5 atm

تم تعديلها ١٢:٢٣ ص

An ideal gas in a cylinder is initially at temperature T . If it is cooled to a temperature $T/2$ and allowed to expand so that its volume is doubled, its pressure will be

1. P
2. $p/2$
3. $p/4$
4. $2p$
5. $4p$

ص ١٢:٢٥

A car travels on a flat circular track of radius 100 m. If the coefficient of static friction between the tires and the road is $\mu_s = 0.8$, what is the maximum speed at which the car can circle the track safely?

($g = 10 \text{ m/s}^2$)

1. 28.3 m/s
2. 33.5 m/s
3. 37.9 m/s
4. 42.0 m/s
5. 45.6 m/s

ص ١٢:٢٨

Two bodies of masses $m_1 = M$ and $m_2 = 5M$, respectively, Both have the same kinetic energy. The relation between their speeds is

1. $v_1 = 1.41 v_2$
2. $v_1 = 1.73 v_2$
3. $v_1 = 2.00 v_2$
4. $v_1 = 2.24 v_2$
5. $v_1 = 2.45 v_2$

ص ۱۲:۳۴

A rock is submerged in a container of water with a depth of 5 m. The density of the rock is 5000 kg/m^3 and the density of water is 1000 kg/m^3 . The pressure on the rock in atmospheric pressure unit equals to: (1 atm = 1.013×10^5

Pa, $g = 10 \text{ m/s}^2$)

1. 1.1 atm
2. 1.2 atm
3. 1.3 atm
4. 1.4 atm
5. 1.5 atm

ص ۱۲:۳۱

A piece of iron of mass equals to 1 kg at temperature equals to 120 °C. The iron is inserted into a cup of cold water at $T=0$ °C. The mass of water is 1.2 kg and its specific heat capacity equals 4.169 kJ/kg

K. Assume no heat is lost in the cup material and into the surrounding. Find the final temperature (in Celsius) after thermal equilibrium is reached. Note: specific heat capacity of iron is 0.444 kJ/kg K

- 24.5 .1
- 21.2 .2
- 17.9 .3
- 14.7 .4
- 9.8 .5

ص ۱۲:۲۸

A steel rod has a length of 7 m at $T=20$ °C. What is its length at $T= 400$ °C if you are given the steel expansion coefficient $\alpha=1.27\times 10^{-5} \text{ k}^{-1}$

- 1. 5.024 m
- 2. 6.029 m
- 3. 7.034 m
- 4. 8.039 m
- 5. 10.048 m

ص ۱۲:۲۶

Which statement is right?

1. The diffusion spread the gas out from low pressure to high pressure regions:
2. The osmotic pressure flows the fluid from solution of high concentrations to solution of low concentrations.
3. The increase in gas temperature decreases the gas kinetic energy
4. Charles's law defines the relation between gas temperature and its pressure at constant pressure.
5. For constant pressure, absolute zero is the temperature at which the Volume of an ideal gas becomes zero.

تم تعديلها ١٢:٣٧ ص

A ball of mass $m = 1 \text{ kg}$ is dropped from rest from a height $h = 5 \text{ m}$ above the ground. What is its potential energy when its velocity reaches 8 m/s . ($g = 10 \text{ m/s}^2$)

1. 18J
2. 36J
3. 54J
4. 72 J
5. 90J

ص ۱۲:۳۵

The area thermal expansion coefficient is twice the coefficient of linear thermal expansion:

1. ©True
2. 0False

ص ۱۲:۲۹