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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

PHYSICS
DPP
DAILY PRACTICE PROBLEMS
DPP NO. 1

PHYSICS: KTG & Thermodynamics

DPP No. : 1

1. Four particles have velocities 1, 0, 2, 3 m/s. The root mean square velocity of the particles is: (in m/s)

(1) 3.5 (2) $\sqrt{3.5}$ (3) 1.5 (4) $\sqrt{\frac{14}{3}}$

2. In a process the pressure of an ideal gas is proportional to square of the volume of the gas. If the temperature of the gas increases in this process, then work done by this gas:

(1) is positive (2) is negative (3) is zero (4) may be positive

3. 12 gm He and 4 gm H_2 is filled in a container of volume 20 litre maintained at temperature 300 K. The pressure of the mixture is nearly :

(1) 3 atm (2) 5 atm (3) 6.25 atm (4) 12.5 atm

4. In an adiabatic expansion the product of pressure and volume :

(1) decreases
(2) increases
(3) remains constant
(4) first increases, then decreases.

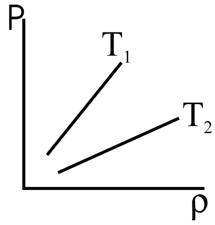
5. When an ideal gas is compressed isothermally then its pressure increases because :

(1) its potential energy decreases
(2) its kinetic energy increases and molecules move apart
(3) its number of collisions per unit area with walls of container increases
(4) molecular energy increases

6. A gas behaves more closely as an ideal gas at

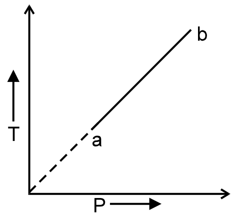
(1) low pressure and low temperature
(2) low pressure and high temperature
(3) high pressure and low temperature
(4) high pressure and high temperature

7. Fig. shows graphs of pressure vs density for an ideal gas at two temperatures T_1 and T_2.



(1) $T_1 > T_2$ (2) $T_1 = T_2$
(3) $T_1 < T_2$ (4) any of the three is possible

8. An ideal gas changes from state a to state b as shown in Fig. What is the work done by the gas in the process ?



(1) zero (2) positive (3) negative (4) infinite

9. When an ideal diatomic gas is heated at constant pressure , the fraction of the heat energy supplied which increases the internal energy of the gas is .

(1) $\frac{2}{5}$ (2) $\frac{3}{5}$ (3) $\frac{3}{7}$ (4) $\frac{5}{7}$

10. Supposing the distance between the atoms of a diatomic gas to be constant, its specific heat at constant volume per mole (gram mole) is

(1) $\frac{5}{2}R$ (2) $\frac{3}{2}R$ (3) R (4) $\frac{7}{2}R$