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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

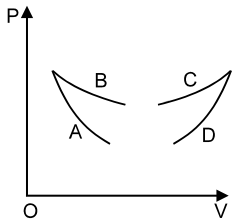
PHYSICS
DPP
DAILY PRACTICE PROBLEMS
DPP NO. 2

PHYSICS: KTG & Thermodynamics

DPP No. : 2

1. Two sample A and B are initially kept in the same state. The sample A is expanded through an adiabatic process and the sample B through an isothermal process upto the same final volume. The final pressures in A and B are p_A and p_B respectively.
(1) $p_A > p_B$
(2) $p_A = p_B$
(3) $p_A < p_B$
(4) The relation between p_A and p_B cannot be deduced.

2. Four curves A, B, C and D are drawn in the Fig. for a given amount of gas. The curves which represent adiabatic and isothermal changes are



(1) C and D respectively
(2) D and C respectively
(3) A and B respectively
(4) B and A respectively

3. Three closed vessels A, B, and C are at the same temperature T and contain gases which obey the Maxwellian distribution of velocities. Vessel A contains only O_2, B only N_2 and C a mixture of equal quantities of O_2 and N_2. If the average speed of O_2 molecules in vessel A is V_1, that of the N_2 molecules in vessel B is V_2 ,the average speed of the O_2 molecules in vessel C will be :

(1) $(V_1 + V_2)/2$ (2) V_1 (3) $(V_1V_2)^{1/2}$ (4) $\sqrt{3kT/M}$

4. In the isothermal expansion of an ideal gas. Select wrong statement:
(1) there is no change in the temperature of the gas
(2) there is no change in the internal energy of the gas
(3) the work done by the gas is equal to the heat supplied to the gas
(4) the work done by the gas is equal to the change in its internal energy

5. If heat is supplied to an ideal gas in an isothermal process,
(1) the internal energy of the gas will increase
(2) the gas will do positive work
(3) the gas will do negative work
(4) the said process is not possible

6. An ideal gas is allowed to expand freely against a vacuum in a rigid insulated container. The gas undergoes:

(1) an increase in its internal energy

(2) a decrease in its internal energy

(3) neither an increase nor decrease in temperature or internal energy

(4) an increase in temperature

7. In an adiabatic process on a gas with $\gamma = 1.4$, the pressure is increased by 0.5%. The volume decreases by about

(1) 0.36% (2) 0.5% (3) 0.7& (4) 1%

8. **Assertion :** Two different gases having same temperature always have molecules with same r.m.s speed.

Reason : The average translational KE per molecule for each gas is $\frac{2}{3}$ KT (where K = Boltzmann constant, T = temperature in kelvin)-

Read the assertion and reason carefully to mark the correct option out of the options given below :

(1) If both assertion and reason are true and the reason is the correct explanation of the assertion.

(2) If both assertion and reason are true but reason is not the correct explanation of the assertion.

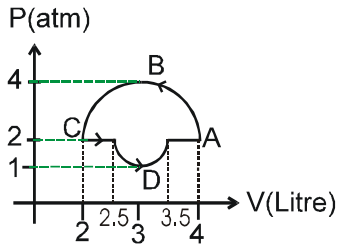
(3) If both assertion is true but reason is false.

(4) If the assertion and reason both are false.

9. Equation for an ideal gas is :

(1) $PV = nRT$ (2) $PV^{\gamma} = \text{constant}$ (3) $C_p - C_V = R$ (4) none of these

10. Find work done by the gas in the process shown in figure :



(1) $\frac{5}{2}\pi$ atm L (2) $\frac{5}{2}$ atm L (3) $-\frac{3}{2}\pi$ atm L (4) $-\frac{5}{4}\pi$ atm L