DELHI PUBLIC SCHOOL FIROZABAD

(UNDER THE AEGIS OF DELHI PUBLIC SCHOOL SOCIETY EAST OF KAILASH NEWDELHI)

(A SENIOR SECONDARY SCHOOL)

AFFILIATED TO CBSE, AFFILIATION NO. 2133064 SCHOOL NO: 61225

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Class – 11th
Name: _____
Roll no: _____
Date: _____

Subject - **Physics**
Topic: Kinetic theory
Worksheet Dated: 14.01.22

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1. What does gas constant R signify? What is its value?
2. Calculate the value of the universal gas constant (R) at NTP.
3. Calculate r.m.s. the velocity of hydrogen at N.T.P. Given the density of hydrogen = 0.09 kg m^3.
4. Calculate the temperature at which r.m.s. the velocity of the gas molecule is double its value at 27°C, the pressure of the gas remaining the same.
5. Calculate the diameter of a molecule if n = 2.79×10^{25} molecules per m^3 and mean free path = 2.2×10^{-8} m.
6. A balloon contains 500 m^3 of He at 27°C and 1 atm pressure. Find the volume of the helium at 3°C and 0.5 atm pressure?
7. At what temperature will the average velocity of O_2 molecules be sufficient so as to escape from earth? V_e = 11.0 km s^{-1} and mass of one molecule of O_2 is 5.34×10^{-26} kg, k = 1.38×10^{-23} JK^{-1}.
8. If the density of nitrogen at S.T.P. be 0.00125 g cm^3. What is the velocity of its molecules? g = 980 cm

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