



PHYSICS

BOOKS - R G PUBLICATION

KINETIC THEORY OF GAS

Exercise

1. What is Boltzmann's Law of equipartition of energy? Obtain it.



Watch Video Solution

2. What is meant by degree of freedom?



[Watch Video Solution](#)

3. What is mean free path?



[Watch Video Solution](#)

4. What is meant by degree of freedom?



[Watch Video Solution](#)

5. The rms speed of nitrogen molecule is 490 m/s at 273 K. What would be the speed of hydrogen molecule at the same temperature?



[Watch Video Solution](#)

6. What is meant by degree of freedom?



[Watch Video Solution](#)

7. What is the interpretation of temperature on the basis of kinetic theory of gas?



[Watch Video Solution](#)

8. From the kinetic theory of gas, prove that

$P = \frac{2}{3}E$, where E is the kinetic energy per

unit volume of the gas.



[Watch Video Solution](#)

9. Which one has greater r.m.s value among hydrogen and oxygen?



[Watch Video Solution](#)

10. At what temperature would the kinetic energy of a gas molecule be zero?



[Watch Video Solution](#)

11. State the relation between rms speed of the molecules of a gas and its temperature.



Watch Video Solution

12. What is real gas and ideal gas.



Watch Video Solution

13. What is mean free path?



Watch Video Solution

14. What is meant by degree of freedom?



Watch Video Solution

15. Write the vander waals equation for 'n' mol gas.



Watch Video Solution

16. Why gas molecule exerts pressure inside the container?



Watch Video Solution

17. Establish Boyle's law and Charles law from pressure of a gas.



Watch Video Solution

18. Prove that velocity of gas molecule is directly proportional of the square root of temperature.



Watch Video Solution

19. Prove that $KE = \frac{3}{2}KT$



Watch Video Solution

20. If the size and intermolecular force of attraction is considered. What is the form of gas equation.



Watch Video Solution

21. Establish the relation between energy and temperature of gas molecule.



Watch Video Solution

22. Five molecules of a gas has speed 2km/s , 4k/s , 4 km/s 6KM/S AND 8 km/s . Find the average r.m.s velocity.



[Watch Video Solution](#)

23. in a vessel the ratio of helium and oxygen are in ratio 3:5. Calculate the ratio of no. of molecules.



[Watch Video Solution](#)

24. At $0^{\circ}C$ the speed r.m.s speed of oxygen is 460m/s , then calculate the r.m.s velocity at $40^{\circ}C$ for helium.



[Watch Video Solution](#)

25. What do you mean by 'Degrees of Freedom'? How many degrees of freedom are associated with monoatomic, diatomic and triatomic molecules?



[Watch Video Solution](#)

26. What is law of equipartition energy? Show that energy per molecule per degrees of freedom is $\frac{1}{2}KT$.



[Watch Video Solution](#)

27. From the kinetic theory of gas, prove that $P = \frac{2}{3}E$, where E is the kinetic energy per unit volume of the gas.



[Watch Video Solution](#)

28. Derive Avogadro's law from kinetic theory of gas.



Watch Video Solution

29. Write basic postulates of kinetic theory of gas.



Watch Video Solution

30. At what temperature the velocity of hydrogen gas molecule becomes twice at normal temperature and pressure.



Watch Video Solution

31. What is the interpretation of temperature on the basis of kinetic theory of gas?



Watch Video Solution

32. If the number of molecular mass of a gas becomes half and velocity becomes doubled, then calculated the initial and final pressure.



Watch Video Solution