MDCAT Chemistry

Past Paper MCQ's (2009 – 2022)

Gases

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1. General gas equation
a) $PV = MRT$
c) $P = nRt/V$

c) $PV = nRT$
d) $PM = dMT$

2. Which one the following expression represent the Avogadro law?
a) $V = RnT/P$ (when T and n constant)
b) $V = RnT/P$ (when T and p are constant)
c) $V = RnT/P$ (when P and n are constant)
d) $V = RP/nT$ (when T,p and n are constant)

3. The root mean square velocity of gases is inversely proportional to square root of their:
a) Temperature   b) pressure   **c) molar mass**   d) volume

4. In the equation ($p + \frac{n^2 a}{v^2}$) ($v - nb$) $= RT$, 'b' represents the
a)   Excluded volume   b) actual volume
c) Excluded pressure   **d) excluded volume per mole**

5. The number of molecules in 22.4 dm^3 of H_2 gas at $0°c$ and 1 atm are
a) 60.2×10^{23}
b) 6.02×10^{25}
c) 6.02×10^{23}
d) 60.2×10^{22}

6. There are four gases H_2 , He , N_2 and CO_2 at $0°C$. which gas shown greater non – ideal behavior?
a) He
b) H_2
c) CO_2
d) N_2

7. Identity the value of R at STP
a) 8.314 atm dm^{-3} mol^{-1}
b) 0.0821 atm dm^3 k^{-1} mol^{-1}
c) 0.0821 cal k^{-1} mol^{-1}
d) 8.314 cal k^{-1} mol^{-1}

8. At absolute zero the molecular of hydrogen gas will have
a) Only translation motion   b) only vibrational
c) Only rotational motion   **d) all the motion are ceased**

9. Which of the following is the correct equation to calculate relative molecular mass of a gas
a) $M = mPRT/V$ B) $M = mPR/VT$
c) $M = PV/mRT$ d) $M = mRT/PV$

10. Which of the statement is applicable for both ideal and real gases molecules?
a) Have no forces of attraction
b) Collisions between the molecules is elastic
c) Molecules are in random movement
d) The actual volume of gas is negligible as compared to the volume of gas

11. The actual volume of gas molecular is considered negligible at following pressures.
   a) 2 atm
   b) 4 atm
   c) 6 atm
   d) 8 atm

12. Gas is enclosed in a container of $20cm^3$ with the moving piston. According to kinetic theory of gases, what is the effect on freely moving molecules of the gas if temperature is increased from $20°C$ to $100°C$?

   a) Colliding capability of molecular will become lower
   b) Pressure will become one half
   c) Temperature has no effect on freely moving molecialr
   d) Volume will be increased

13. According to the general gas equation, density of an ideal gas depends upon.
   a) Pressure
   b) temperature
   c) molar mass of the gas
   d) All of these

14. The unit is …….. Commonly used by meteorologist
a) Bar   b) centibar   c) millibar   d) kilobar

15. For non – ideal gas
a) PV/ nRT not equal to 1   b) PV/nRT = 1
c) Following gas law   d) following general gas equation

16. Plasma is difficult to maintain at
a) Low temperature   b) low pressure
c) High temperature   d) high pressure

17. PV/ nRT for an ideal gas is called
a) Expansion factor
b) depression factor
c) **Compressibility factor**
d) diffusion factor

18. Effusion is the movement of a gas through extremely small opening of molecular size into region of …….. Pressure.
a) High
b) low
c) moderate
d) same

19. Calculate the mass of $1 dm^3$ NH_3 gas at 3°C and 1 mm Hg pressure, considering that NH_3 is ideally behaving
a) 0.99g
b) 0.89g
c) 0.9kg
d) 0.78g

20. The sum of mole fraction of the gases in a mixture of gases is
a) Always greater than 1
b) always smaller than 1
c) May be equal or less then 1
d) always 1

❖ 212 degree Fahrenheit is expressed Kelvin as:
a) 373
b) 273
c) 173
d) 0

22. According to Avogadro's law, .899 g of $1 dm^3$ H_2 and 1.4384 g of 1 dm^3 O_2 have number of molecules
a) Same
b) different
c) H_2 has more
d) O_2 has more

23. Which has highest rate of diffusion
a) CO_2
b) NH_3
c) HCl
d) SO_2

24. R does not depend upon
a) Nature of gas
b) pressure
c) Temperature
d) none of these

25. General gas equation is also known as
a) Vander walls equation
b) ideal gas equation
c) Non ideal gas equation
d) vant- hoff equation

26. KMT discovered by
a) **Bernoulli**   b) Rutherford   c) Bohr   d) heisenberg

27. Effusion is related
a)   Inversely to mass   b) direct to mass
c) Square root of mass   d) inversely to square root of mass

28. General gas equation is used for
a) Non real gases   b) real gases   c) ideal gases   d) ideal or non-real

29. Which of these gasses cannot be liquefy
a) H_2 b) He   c) Both a and b   d) Co2

❖ General gas equation also know as
a) Ideal   b) Real   c) A and B both   d) none of these

31. When temperature increases isotherm moves
a) Away from both axes   b) toward x axis
c) Toward y axis   d) remains at same position

❖ Volume in ideal gas is directly related to
a) **n, T**   b) n, T , P   c) T, P   d) K, E, P

33. According to kinetic molecular theory absolute temperature is directly proportional is ………. of molecules
a)   Translational K.E   b) vibrational K.E
c) K.E   d) **average translational K.E**

34. All the collisions the particles of gases are elastic in nature . What is meant by 'Elastic collisions'?
a)   The velocity of the molecules changes
b)   No changes in mass during the collisions
c) **No change in the Kinetic energy**
d)   No changes in potential energy during the collision