

SREE SARAVANA NIKETAN MATRIC HR SEC SCHOOL
NERINJIPETTAI
11TH STD CHEMISTRY

UNIT TEST: GASEOUS STATE

TOTAL MARKS - 50.

I. One marks**10X1=10**

- If temperature and volume of an ideal gas is increased to twice its values, the initial pressure P becomes
a) 4P b) 2P c) P d) 3P
- Maximum deviation from ideal gas is expected from
a) CH₄ (g) b) NH₃ (g) c) H₂ (g) d) N₂ (g)
- Compressibility factor for CO₂ at 400 K and 71.0 bar is 0.8697. The molar volume of CO₂ under these conditions is
a) 22.04 dm³ b) 2.24 dm³ c) 0.41 dm³ d) 19.5dm³
- The value of the gas constant R is
a) 0.082 dm³atm. b) 0.987 cal mol⁻¹ K⁻¹ c) 8.3 J mol⁻¹K⁻¹ d) 8 erg mol⁻¹K⁻¹
- Use of hot air balloon in sports at meteorological observation is an application of
a) Boyle's law b) Newton's law c) Kelvin's law d) Brown's law
- In a closed room of 1000 m³ a perfume bottle is opened up. The room develops a smell. This is due to which property of gases?
a) Viscosity b) Density c) Diffusion d) None
- What is the density of N₂ gas at 227°C and 5.00 atm pressure? (R = 0.082 L atm K⁻¹ mol⁻¹)
a) 1.40 g/L b) 2.81 g/L c) 3.41 g/L d) 0.29 g/L
- 25g of each of the following gases are taken at 27°C and 600 mm Hg pressure. Which of these will have the least volume ?
a) HBr b) HCl c) HF d) HI
- The value of universal gas constant depends upon
a) Temperature of the gas b) Volume of the gas
c) Number of moles of the gas d) units of Pressure and volume.
- The temperatures at which real gases obey the ideal gas laws over a wide range of pressure is called
a) Critical temperature b) Boyle temperature
c) Inversion temperature d) Reduced temperature

II. Very Short answer (15 compulsory)**4X2=8**

- State Boyle's law.
- What are ideal gases? In what way real gases differ from ideal gases.
- A balloon filled with air at room temperature and cooled to a much lower temperature can be used as a model for charle's law.
- Can a Van der Waals gas with a=0 be liquefied? explain.
- Define Graham's law of diffusion.

III. Short Answer (17 compulsory)**4X3=12**

- Give suitable explanation for the following facts about gases.
a) Gases don't settle at the bottom of a container
b) Gases diffuse through all the space available to them
- Distinguish between diffusion and effusion.
- Explain the following observations
a) Aerated water bottles are kept under water during summer
- Aerosol cans carry clear warning of heating of the can. Why?
- Name two items that can serve as a model for Gay Lussac's law and explain.

IV. DETAILS**4X5=20**

- Give detail in Pressure-Volume isotherms of Carbon dioxide by Andrew's isotherm method.
- Give the account of Pressure correction and Volume correction.
- Derivation of critical constants from vander Waals constant.
- Would it be easier to drink water with a straw on the top of Mount Everest?

*****SREE SARAVANA*****



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