



Physical Chemistry, Chpt. One, Properties of Gases

FR II

سنتسەر صالح
40 Fourty
100 only
28
Rushdi

Name of a student _____ Signature _____ No. _____

University of Mustansiriyah

Department of Chemistry

1st Semester-2021

1st Exam-Repeat_1

Q1: Circle the right answer for all of the following:

(50 points)

1: Calculate the weight of C₂H₄ gas (26 g mol⁻¹) in a 10000 Cm³ cylinder at 1520 mmHg and 90 °C.

Answer: a) 17.47 g⁻¹ mol⁻¹ b) 17.47 g⁻¹ c) 17.47 mol d) 17.47 g e) 17.47 mg

2: When $V_{Real} > V_{Perfect}$, this means that the gas is:

Answer: a) perfect b) noble c) real d) heavy

3: The difference between real and ideal gas equation, that the ideal gas equation is not interested in?

Answer: a) p_{gas} & n_{gas} b) $V_{container}$ & $p_{attraction}$ c) V_{gas} & $p_{attraction}$ d) T_{gas} & p_{gas}

4: Calculate the density of C₂H₄ is placed in a 50000 Cm³ container at 760 torr and 273 K.

Answer: a) 1.16 g⁻¹ L⁻¹ b) 1.16 g⁻¹ L c) 1.16 g L⁻¹ d) 1.16 mg L⁻¹

5: Graham's law studies the _____ of the gas.

Answer: a) flow b) collision c) diffusion d) effusion

6: The right formula of the Dalton's law is?

Answer: a) $p_i = \chi_i \sum p_i$ b) $p_i = \chi_i \sum p_T$ c) $p_T = \chi_i \sum p_i$ d) $p_i = \chi_T p_T$

7: The law of Corresponding states is an evidence that the gas is?

Answer: a) real b) ideal c) expanded d) compressed e) heavy

8: The total mol fractions of atmospheric pressure of air is equal to?

Answer: a) zero b) one c) two d) three

9: A gas occupies $30 \times 10^{-3} m^3$ at 75 °C and 76 CmHg pressure. What would be its volume at STP?

Answer: a) 23.5 dm³ b) 23.5 m² c) 23.5 L⁻¹ d) 23.5 m⁻³

10: When the value of $Z > 1$ this means the dominated forces are:

Answer: a) attraction b) van der Waal c) repulsion d) compression

Q2: The following data have been observed for 5000 mg of unknown gas at 0 °C. Calculate the best value of the molar mass of this gas, and what is it? (25 points)

$p/10^5$ Pa	0.75	0.60	0.25
V/dm^3	9.33	11.60	27.50

Q3: A perfect gas undergoes isothermal compression, which reduces its volume by 1.80 dm³. The p_f and V_f of the gas are 197 atm and 2.14 dm³, respectively. Calculate the $p_{original}$ of the gas in (a) bar, (b) torr. (25 points)

Sun_28/11/2021

With best my wishes

Dr Abduljabbar I. R. Rushdi

Q21

Q2 25

NO ANSWER, Why?

Q31

د مقدار نقصان الحجم $\Delta V = 0.8 \text{ m}^3$

د مقدار الحجم العلي $V_2 = 2.14$

$V_1 = V_2 - \Delta V$

$V_1 = 2.14 - 0.8 = 1.34 \text{ m}^3$

Q3 25

ومن القانون $PV = T$

$\frac{P_1}{P_2} = \frac{V_2}{V_1} = \frac{2}{1.34} = 1.49$

$P_1 = 31.3 \text{ atm}$