



Physical Chemistry-Properties of Gases

20-01-2021
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100 Fine
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University of Mustansiriyah

1st Semester-2021

Department of Chemistry

1st Exam-paper B

Q1: Circle the right answer for all of the following: (50 degree)

1: Carbon dioxide is classified as a .

Answer: a) toxic gas b) ideal gas c) real gas d) heavy gas 5/5

2: A 2 dm³ container contains a certain amount of gas at 0.5 atm pressure. The gas is transferred to another vessel of volume and the pressure is 0.25 bar. What should be it is Volume?

Answer: a) 0.40 atm b) 0.40 dm³ c) 0.4 bar d) 4 bar 5/5

3: A gas occupies 400 dm³ at 130 °C and 76 cmHg pressure. What would be it is volume at STP?

Answer: a) 270 L b) 207 dm³ c) 207 m³ d) 204 cm³ 0/5

4: Calculate the weight of H₂ (2.00 g.mol⁻¹) in a 2 L cylinder at 2.5 atm and 27 °C.

Answer: a) 0.40 mol⁻¹ b) 0.40 g c) 0.40 mol g⁻¹ d) 0.4 g mol⁻¹ 5/5

Q1 30/50

5: Calculate the number of moles for CO₂ in a 10 L cylinder at 8 bar and 27 °C.

Answer: a) 3.25 mmol b) 3.00 mol c) 3.00 L d) 2.99 mol 5/5

6: According to Graham's law the lightest gas is?

Answer: a) H₂ b) O₂ c) N₂ d) CO₂ 0/5

7: According to the Boyle's law the pressure of a gas is inversely proportional with?

Answer: a) mol b) T c) R d) V 5/5

8: If a gas has V_m ≠ V^o_m then this means one of the following?

Answer: a) real b) noble c) ideal d) heavy 0/5

9: If RT > pV this means the forces dominated are?

Answer: a) attraction b) repulsion c) Van der Waal's d) no one of these 5/5

10: According to Gay-Lussac's law the volume of the gas is?

Answer: a) constant b) variable c) equal to zero 0/5 d) equal to 22.4 L 5/5

Q2: Under the same conditions of temperature and pressure, how many times faster will hydrogen effuse compare to carbon dioxide. (25 degree)

Q3: Calculate the density of carbon dioxide (44 g mol⁻¹) at STP. (25 degree)

Q2/

~~Q2~~ ~~0~~ / ~~25~~

NO ANSWER

Q3/

$P = 1 \text{ atm}$, $T = 0^\circ \text{C} \rightarrow T = 0 + 273 = 273 \text{ K}$, $R = 0.08 \text{ L-atm/mol}\cdot\text{K}$

$PV = nRT$

$d = \frac{PM}{RT}$

$= \frac{1 \text{ atm} \times 44 \text{ g}\cdot\text{mol}^{-1}}{0.08 \text{ L}\cdot\text{atm}\cdot\text{mol}^{-1}\cdot\text{K} \times 273 \text{ K}}$

$= \frac{44 \text{ g}}{21.8 \text{ L}} = 2.0 \text{ g/L}$
~~22.33~~ ~~1.96~~

~~Q3~~ ~~25~~ / ~~25~~