Class_C_ F15 35/100 Thirty five

Physical Chemistry_Chpt_One_Properties of Gases

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University of Mustansiriyah — **1st Semester-2021**

Department of Chemistry — **1st Exam-paper C**

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

1: If a gas has polar particles then the difference between the volume of this gas is:

Answer: a) $V_{Real} > V_{Perfect}$ **b) $V_{Real} < V_{Perfect}$** c) $V_{Real} = V_{Perfect}$ d) $V_{Real} \neq V_{Perfect}$

2: A gas occupies 60×10^3 mL at 150 °C and 760 mmHg pressure. What would be its volume at STP?

Answer: a) 38.7 mL **b) 38.7 dm^3** c) 38.7 L^{-1} d) 38.7 dm^{-3}

3: Calculate the weight of H_2O gas (18 $g.mol^{-1}$) in a 5 L cylinder at 10×10^2 kPa and 373 K.

Answer: a) 29.40 g mol^{-1} **b) 29.40 g** c) 29.40 mol d) 29.40 kg

4: Calculate the density of H_2O placed in a 22400 mL cylinder at 10^5 Pa and 0 °C.

Answer: a) 0.804 kg L^{-1} **b) 0.804 g L^{-1}** c) 0.804 g d) 0.804 L^{-1}

5: According to Graham's law the heaviest gas is?

Answer: a) H_2O b) CH_4 c) NH_3 **d) Cl_2**

6: A tank contains a certain amount of gas at 10^5 Pa. The gas is transferred to another tank 40 dm^3 with pressure of 200×10^3 Pa. What should be its volume?

Answer: **a) 80 L** b) 80 Pa L c) 80 Pa dm^3 d) 80 L^{-1}

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

Answer: a) p b) T c) R d) V **e) n**

8: The difference between real and ideal gas, that the real gas interested in?

Answer: a) V & p b) V & T c) p & n **d) T & p**

9: It can follow the direct proportional between temperature and pressure through the law of

Answer: a) Van der Waal b) Graham c) Charles **d) Gay-Lussac**

10: The behaviour of real gas is ideal when the value of Z is equal to

Answer: a) $V_m < V^O_m$ **b) $V_m > V^O_m$** c) $V_m = V^O_m$ d) $V_m \neq V^O_m$

Q2: The following data have been observed for 800 mg of nitrogen gas at 273 K. Calculate the best value of the molar mass of N_2. **(25 points)**

$p/10^5$ Pa	0.750	0.500	0.200
V/dm^3	3.0	4.5	7.0

Q3: A perfect gas undergoes isothermal compression, which reduces its volume by 1.80 dm^3. The p_f and V_f of the gas are 2×10^2 kPa and 2.14 dm^3, respectively. Calculate the $p_{original}$ of the gas in (i) bar, (ii) torr. (25 points)

Wed_10/11/2021 **Best wishes** **Dr Abduljabbar I. R. Rushdi**

$T = 273 + C°$

Q2

$m = 800\,mg$ $T = 273\,K$

M $n_e = ?$

$P = 10^5\,Pa$ $V = 1\,m^3$

$P = 0.750$ $V = 3.0$

$P = 0.500$ $V = 4.5$

$P = 0.200$ $V = 7.0$

$PV = nRT$

$n = \frac{m}{M}$ $R = 0.0827$.

Q2 5/25

Q3 0/25 NO ANSWER why?