P14

65/100 Sixty five

23-11-2021 Tue

Abd Jabb Abdul Jabbar Rushdi

Dr. Abdul Jabbar

Physical Chemistry_Chpt_One_Properties of Gases

Name of a student --- Alhasm AKeel Subhi --- Signature --- --- No. --- 9

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

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

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

1: A vessel of 5000 mL capacity contains a certain amount of gas at 313 K and 2 bar pressure. The gas is transferred to another vessel of volume 10000 mL at 40 °C. What should be its pressure?

Answer: a) 1.0 atm b) 1.0 mmHg c) 75 cmHg d) 1.5 bar 5/5

2: If the particles of a gas are polar that means the difference between p_{ideal} and p_{real} is

Answer: a) low b) equal c) high 5/5

3: Calculate the temperature of 5000 mmol of a gas occupying 5.0 dm^3 at $3.3 \cdot 10^5$ Pa?

Answer: a) 40.2 °C b) 40.2 K c) 44.2 °C d) 44.2 K 5/5

4: Calculate the weight of NH_3 (17 $g.mol^{-1}$) in a 4 L cylinder at 8 atm and 300 K.

Answer: a) 22.11 kg b) 22.11 g c) 23 K d) 23 °C 5/5

Q1 35/50

5: Calculate the p_C of a gas, if the p_r is 0.44 and p is 1 bar.

Answer: a) 2.27 K b) 2.27 atm c) 2.27 L d) 2.27 mol 5/5

6: If the attraction forces are calculated, that means the gas is?

Answer: a) real b) noble c) perfect d) compressed 0/5

7: According to the Dalton's law total mole fraction is equal to?

Answer: a) Σn b) Σp_i c) Σp_T d) $\Sigma \chi$ 0/5

8: What is the partial pressure of a gas in a mixture, if the X_i is 1, and the conditions are at STP?

Answer: a) 0.99 torr b) 0.89 bar c) 0.900 atm d) 1.01 bar 0/5

9: At high pressure the Z > 1 which means the dominated forces are?

Answer: a) Van der Waal's b) equal c) repulsions d) attractions 5/5

10: According to Avogadro's law the amount of a gas at STP is?

Answer: a) 1.00 mol b) 2.00 mol c) 1.00 mmol d) 2.00 mmol 5/5

Q2: The air inside a flexible 3.5 L container has a pressure of 115 kPa. What should the volume of the container be increased to in order to decrease the pressure to 625 torr? (25 points)

Q3: A 3 dm^3 container holds 0.5 moles of N_2 gas at 42 °C. What is the pressure inside the container? (25 points)

09/11/2021 **Best wishes** **Dr Abduljabbar I. R. Rushdi**

Q2

$V_1 = 3.5\,L$

$P_1 = 115\,kPa$

$V_2 = ?$

$P_2 = 626\,torr$

$P_1 = \frac{115\,kPa}{760\,atm} \Rightarrow P_1 = 0.15\,atm$

$P_2 = \frac{626\,torr}{760\,atm} \Rightarrow P_2 = 0.82\,atm$

Q2 15/25

$V_1 P_1 = V_2 P_2$

$3.5\,L \times 0.15\,atm = V_2 \times 0.82\,atm$

$V_2 = \frac{3.5 \times 0.15}{0.82} \Rightarrow V_2 = 0.64\,L$

Q3 $V = 3\,dm^3$, $n = 0.5\,mols$, $T = 42^\circ C$, $P = ?$

$V = \frac{3\,dm^3}{1000} \Rightarrow V = 0.003\,L$

$T = 0 + 273\,K \Rightarrow T = 42 + 273 \Rightarrow T = 315\,K$

$PV = nRT$

$P \times 3L = 0.5\,mols \times 0.082\,\frac{mol \cdot K}{atm \cdot K} \times 315\,K$

$P = \frac{0.5 \times 0.082 \times 315}{0.003}$

Q3 15/25

$P = 4.30\,atm$

According to your Calculat
your result will be 4305 atm