55/100 Fiftyfive

12-01-2021

Name of a student ----- ياسرحسين عبد الحسن ----- Signature ----- No. _12_

University of Mustansiriyah

Department of Chemistry

1st Semester-2021

1st Exam-paper A

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

1: A vessel of 50 mL capacity contains a certain amount of gas at 40 °C and 2 bar pressure. The gas is transferred to another vessel of volume 100 mL at 40 °C. What should be it is pressure?

Answer: a) 1.0 atm   b) 0.85 mmHg   c) 0.9 cmHg   **d) 1 bar**   5/5

2: What is the right formula of the Van der Waals equation?

Answer: a) $p = [nRT/(V-nb)] - n(a^2/V^2)$ b) $P = [nRT/(V-nb)] - V(n^2/a^2)$ c) $p = [nRT/(b-nV)] - a(n^2/V^2)$ **d) $P = [nRT/(V-nb)] - a(n^2/V^2)$**   5/5

3: Calculate the temperature of 4.0 mol of a gas occupying 5.0 dm^3 at 3.3 bar?

Answer: a) 50.3 °C   b) 48 K   c) 51 °C   **d) 50.3 K**   5/5

4: Calculate the weight of O_2 (32 g.mol^{-1}) in a 4 L cylinder at 9 atm and 281 K.

Answer: a) 50 kg   **b) 50 g**   c) 50 K   d) 50 °C   5/5

5: Calculate the p_c of He gas, if the p_r and p is 0.44 and 1 atm respectively

Answer: a) 2.26 K   **b) 2.26 atm**   c) 2.26 L   d) 2.26 mol   5/5

6: If the repulsion forces are negligible, that means the gas is?

Answer: a) real   **b) noble**   c) perfect   d) compressed   0/5   40/50

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

Answer: a) 0.10 mol   b) 1.0 mol   c) 0.10   **d) 1.0**   5/5

8: What is the partial pressure of a gas in a mixture if the X_i is 0.5, and the conditions are at STP?

Answer: a) 1.5 Pa   b) 0.49 bar   **c) 0.5 atm**   d) 0.5 bar   5/5

9: If the value of is 0.082 then the unit of temperature is?

Answer: **a) Kelvin**   b) Celsius   c) Fahrenheit   d) no one of these   5/5

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

Answer: a) 1.00 mol   b) 2.00 mol   **c) 1.00 L**   d) 2.00 mol   0/5

وفقاً لاقوكادرو فان كمية الغاز في الضروف القياسية كميتها؟

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?

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

12/01/2021   **Best wishes**   Dr Abduljabbar I. R. Rushdi

Answer Q2:   V = 3.5 L   P = 115 KPa   P = 625 torr

$$P_{atm} = \frac{625 torr}{760 atm} = 0.822 atm$$

$P_{KPa} = 115$

$$\frac{P_1}{V_1} = \frac{P_2}{V_2}$$

$$\frac{115}{3.5} = \frac{0.822}{V_2}$$

$$V_2 = \frac{3.5 \times 0.822}{115} = 0.025 L$$

Q2 $\frac{5}{25}$

Answer Q3

$$PV = nRT$$

$$P = \frac{0.5 \times 0.082 \times 315}{3} = \frac{12.9}{3} = 3.3$$

$T = 42 + 273 = 315 K$

4.3 L

Q3 $\frac{10}{25}$