(F6)

20 / 100 Twenty only

Physical Chemistry_Chpt_One_Properties of Gases

Noor Ahqadaa Ali
B1 نور الهدى علي رتك

Name of a student ------------------- نور الهدى علي رتك B1 ----------------Signature -------- Noor -------- No. ---8---

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التربدائية

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

ددا كان غاز يمتلك دقائقا غير قطبية را حري صوفرت بلحجم

1: If a gas has a non-polar particle 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 300000 mL at 130 °C and 760 mmHg pressure. What would be its volume at STP?

Answer: a) 203.22 mL   b) 203.22 dm³   c) 204 L   d) 204 dm³

3: Calculate the weight of CH_4 (16 g.mol⁻¹) in a 10 L cylinder at 15 x 10⁵ Pa and 307 K.

Answer: a) 95.33 g mol⁻¹   b) 95.33 g   c) 95.33 mol   d) 95.33 kg

4: Calculate the number of moles for CH_4 in a 10000 mL cylinder at 10⁶ Pa and 32 °C.

Answer: a) 4.5 mol   b) 4.0 mol   c) 4.0 mmol   d) 4.5 mmol

Q1 10/50

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

Answer: a) H_2O b) CH_4 c) NH_3 d) CO

6: A 20 L tank contains a certain amount of gas at 10⁵ Pa. The gas is transferred to another tank 40 dm³. What should be its pressure?

Answer: a) 0.50 atm   b) 50 dm³   c) 50 atm   d) 0.50 mmHg

7: According to the Avogadro's law the amount of a substance is directly proportional with?

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

8: The difference between real and ideal gas is one of the following?

Answer: a) law p & high T   b) high p & law T   c) high p & high T   d) law p & law T

9: It can know the density of a gas by applying one of the following?

Answer: a) Van der Waal's law   b) Graham's law   c) Charles's law   d) Gay-Lussac's law

10: If V_m is bigger than V^0_m then this means the behaviour of a gas is?

Answer: a) Real   b) Ideal   c) Real & ideal   d) Z < 1

Q2: A (28 mol) gas sample has a mass of 10000 mg. The volume of a container is 22 dm³ at a temperature of 76 °C and a pressure of 641 Torr. What is the density of the gas?   (25 points)

Q3: An Ar gas is placed in a container at 30 °C at a pressure of 730 torr. What is the volume of the container in ml?   (25 points)

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

$PV = nRT$

$P * 22 dm^3 = 28 mol * 0.082 \, atm \, X \, mol^{-1} \, L \times 352 K$

$$P = \frac{28 * 0.082 \, atm \, L * 352}{22 dm^3} \Rightarrow \boxed{P = 36.736 \, \frac{dm^3}{}}$$

↑ this is pressure not volume

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

$Q_2 \; \dfrac{5}{10}$

$T = 0°C + 273 K$
$T = 76 + 273$
$T = 352 K$

273
76
349

$$d = \frac{36.736 \times 10000 \, mg}{0.082 \, atm \, L \, mol^{-1} \, K \times 1 \times 352 K} \quad g/L$$

This is V ≠ 22

$U = \dfrac{22}{}$

$$\boxed{d = 1.576 \; g/L}$$

This is P → 780

$U = L$

$T = 30°C$
$P = 730 \, torr$

$PU = T$

$T = t(c°) + 273$
$T = 30 + 273$
$T = 303 K$

$$V = \frac{T}{P}$$

$$V = \frac{303 K}{0.960 \, atm}$$

$$P = \frac{730 \, torr}{760}$$

$$\boxed{P = 0.96 \, atm} \checkmark$$

$$V = 315.6 \, mL$$

$Q_3 \; \dfrac{5}{10}$

0

$V = mL$