



F36

Physical Chemistry\_Chpt\_One\_Properties of Gases

95-11-21 40/100 Forty only  
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1st Exam-paper E

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  $60 \times 10^3$  mL at  $150^\circ\text{C}$  and 760 mmHg pressure. What would be its volume at STP?

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

3: Calculate the weight of  $\text{H}_2\text{O}$  gas ( $18 \text{ g.mol}^{-1}$ ) in a 5 L cylinder at  $10 \times 10^2$  kPa and  $373 \text{ K}$ .

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

4: Calculate the density of  $\text{H}_2\text{O}$  placed in a 22400 mL cylinder at  $10^5$  Pa and  $0^\circ\text{C}$ .

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

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

Answer: a)  $\text{H}_2\text{O}$  b)  $\text{CH}_4$  c)  $\text{NH}_3$  d)  $\text{Cl}_2$

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

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

7: According to Boyle's law the pressure of a gas is inversely 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)  $V_m < V_m^0$  b)  $V_m > V_m^0$  c)  $V_m = V_m^0$  d)  $V_m \neq V_m^0$

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 $\text{N}_2$	$p/10^5 \text{ Pa}$	0.750	0.500	0.200
$V/\text{dm}^3$	3.0	4.5	7.0	

(25 points)

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

Thur\_11/11/2021

Best wishes

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NO ANSWER Why?

Q3/  $P_1 V_1 = P_2 V_2$

$$P_1 = \frac{P_2 V_2}{V_1} = \frac{2 \times 10^5 \times 2.14}{1.8}$$

$V_1 = 1.8 \text{ dm}^3 = \text{L}$   
 $V_2 = 2.14 \text{ dm}^3 = \text{L}$   
 $P_2 = 2 \times 10^5 \text{ Pa}$

? = units

Q3  $\frac{10}{25}$