



Physical Chemistry\_Chpt\_One\_Properties of Gases

20/700 Twenty only

F3



Name of a student (Ar) Signature No. 20

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) VReal > VPerfect b) VReal < VPerfect c) VReal = VPerfect d) VReal ≠ VPerfect

2: A gas occupies 60 x 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 H2O gas (18 g.mol^-1) in a 5 L cylinder at 10 x 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 H2O 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) H2O b) CH4 c) NH3 d) Cl2

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 x 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) Vm < Vm^0 b) Vm > Vm^0 c) Vm = Vm^0 d) Vm ≠ Vm^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 N2. Table with columns p/10^5 Pa, V/dm^3 and values 0.750, 0.500, 0.200 and 3.0, 4.5, 7.0

Q3: A perfect gas undergoes isothermal compression, which reduces its volume by 1.80 dm^3. The pi and Vf of the gas are 2 x 10^2 kPa and 2.14 dm^3, respectively. Calculate the poriginal of the gas in (i) bar, (ii) torr. (25 points)

any

(B)

NO ANSWER why?

Q2 25

Q3/  $v_2 = 1.80$      $v_1 = 2.14$   
 $P_2 = 2 \times 10^2$      $P_1 = ?$

$$\frac{P_2}{P_1} = \frac{v_2}{v_1}$$

$$\frac{2 \times 10^2}{P_1} = \frac{1.80}{2.14}$$

$$P_1 = \frac{1.80 \times 2.14}{2 \times 10^2}$$

$$P_1 = 1200.69 \text{ atm}$$

$P_{bar} =$

$P_{torr} =$

5/15  
Q3