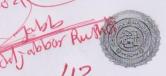


Physical Chemistry-Properties of Gases



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Signature ·

University of Mustansiriyah

1st Semester-2021

Department of Chemistry

1st Exam-paper A

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

(50 degrees)

1: A vessel of 100 L capacity contains a certain amount of gas at 50 °C and 0.5 bar pressure. The gas is transferred
to another vessel has a pressure of 5 bar at 50 °C. What should be the volume of the vessel?

Answer:

a) 10 bar

b) 10 dm³

d) 0.1 bar

2: What is the right formula of the Graham's law of effusion?

<u>Answer:</u> a) $\frac{r_1}{t_2} = (\frac{r_2}{M_1})^{\frac{1}{2}}$

3: Calculate Z for a gas if T is 22 °C, V_m is 5 dm³ mol⁻¹ and p is 3 bar.

Answer:

a) 0.62 °C b) 6.2 K

c) 0.62 (d) 6.2

4: Calculate the molar mass of O_2 (16 g.mol⁻¹) in a 4 L cylinder at 9 atm and 281 K.

Answer:

a) 32 g.mol 1 b) 32 g

c) 50 g.mol-1

d) 50 g

5: Calculate the Vom of a gas, if p is 1 atm and temperature is 32 °C.

Answer:

a) 25 K

b) 25 atm

c) 25 L mol-1

d) 25 mol

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

Answer: a) real b) noble c) perfect d) expands

7: According to the Dalton's law the unit of the mole fraction is?

Answer: a) mol

b) dm³

c) psi

d) free of units

8: What is the partial pressure of a gas in a mixture if the X_i is 0.1, and under atmospheric pressure?

Answer: a) 760 mmHg b) 10 bar (c) 0.1 atm

d) 1 bar

9: If the value of R is 0.082 then the unit of pressure is?

Answer: a) Pascal

b) mmHg

c) Psi

d) bar



10: What is the right equation of one of the following?

Answer: a) $p_r p_c = p$

b) $p_r p = p_c$

c) pr/po=

Q2: Calculate the mass of 335 mL of sulfur dioxide (64 g mol⁻¹) measured at 37 °C and 745 mm Hg (25 degrees) pressure.?

Q3: Calculate the volume of 0.25 g of oxygen at 25 °C and 742 mm Hg pressure.

(25 degrees)

Wed 20/01/2021

Best wishes

Dr Abduljabbar I. R. Rushdi

£(K)= 37£273 Q2/ soll = 3/0/ Patms 745mm Hg
760mm Hg PV= NRT PV= MRT 0.989 x 0.335 = m 0.082 tatm/kimol x 310 k=0.98 atm 0-328 = m × 25.42 V(L) = 335 M-583869 8 6235 Q2/50L/ t(K)= 25(+2 73 PV= NRT 0.976 XX = 0.259 X 0.082 Lath/k.melx298k = 0.976 atm 0-976XV=0.01X 20