**Physical Chemistry-Properties of Gases**

*(handwritten: 20-01-2021 Wed Jabb Abd R. Abduljabbar Rushdi)*

*(handwritten top right: 50/100 Fifty only)*

Name of a student _____ Signature _____ No. __23__

**University of Mustansiriyah**                          1st Semester-2021

**Department of Chemistry**                              1st Exam-paper B

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

*(handwritten: كاربون CO₂)*

**1:** Carbon dioxide is classified as a .

Answer:     **a) toxic gas**     b) ideal gas     c) real gas     d) heavy gas     *(0/5)*

**2:** A 2 dm³ container contains a certain amount of gas at 0.5 atm pressure. The gas is transferred to another vessel of volume and the pressure is 0.25 bar. What should be it is Volume?

Answer:     a) 0.40 atm     **b) 0.40 dm³**     c) 0.4 bar     d) 4 bar     *(5/5)*

**3:** A gas occupies 400 dm³ at 130 °C and 76 cmHg pressure. What would be it is volume at STP?

Answer:     **a) 270 L**     b) 207 dm³     c) 207 m³     d) 204 cm³     *(5/5)*

**4:** Calculate the weight of $H_2$ (2.00 g.mol⁻¹) in a 2 L cylinder at 2.5 atm and 27 °C.

Answer:     a) 0.40 mol⁻¹     **b) 0.40 g**     c) 0.40 mol g⁻¹     d) 0.4 g mol⁻¹     *(5/5)*

**5:** Calculate the number of moles for $CO_2$ in a 10 L cylinder at 8 bar and 27 °C.

Answer:     a) 3.25 mmol     b) 3.00 mol     c) 3.00 L     **d) 2.99 mol**     *(0/5)*

*(handwritten: Q1 30/50)*

**6:** According to Graham's law the lightest gas is?

Answer:     **a) $H_2$**     b) $O_2$     c) $N_2$     d) $CO_2$     *(5/5)*

**7:** According to the Boyle's law the pressure of a gas is inversely proportional with?

Answer:     a) mol     b) T     c) R     **d) V**     *(5/5)*

**8:** If a gas has $V_m \neq V^o_m$ then this means one of the following?

Answer:     **a) real**     b) noble     c) ideal     d) heavy     *(5/5)*

**9:** If RT > pV this means the forces dominated are?

Answer:     a) attraction     b) repulsion     **c) Van der Waal's**     d) no one of these     *(0/5)*

**10:** According to Gay-Lussac's law the volume of the gas is?

Answer:     a) constant     **b) variable**     c) equal to zero     d) equal to 22.4 L     *(0/5)*

Q2: Under the same conditions of temperature and pressure, how many times faster will hydrogen effuse compare to carbon dioxide.                 (25 degree)

*(handwritten: Q₂ / NO ANSWER)*

Q3: Calculate the density of carbon dioxide (44 g mol⁻¹) at STP.     (25 degree)

*(handwritten: Q₃ 0/25)*

Wed_20/01/2021                          Best wishes                          Dr Abduljabbar I. R. Rushdi

Q21

# NO ANSWER

$$Q_2 \frac{0}{25}$$

Q31

$$PV = nRT$$

$$PV = \frac{m}{M} RT$$

$$PM = d RT$$

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

$$d = \frac{1\,atm \times 44\,g/mole}{0.082\,\frac{L \cdot atm}{mole \cdot K} \times 273\,K}$$

$$d = \frac{44\,g}{22.386\,L}$$

$$d = \boxed{\quad ? \quad}$$

$$Q_3 \frac{20}{25}$$