



F2

Physical Chemistry Chpt_One_Properties of Gases

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No.

University of Mustansiriyah

Department of Chemistry

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1st Exam-paper F

(50 points)

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

1: According to van der Waal's corrections if $V_{Real} < V_{Perfect}$ of any gas that means the gas has:
Answer: a) non-polar particles b) polar particles c) small particles d) big particles

2: Calculate the weight of CO₂ gas (44 g.mol⁻¹) in a 0.5 x 10⁴ mL cylinder at 20 x 10² kPa and 25 °C.
Answer: a) 180 g mol⁻¹ b) 180 g c) 180 mol d) 180 kg

3: Calculate the density of CO₂ placed in a 22.4 x 10³ mL cylinder at 20 x 10² kPa and 298 K.
Answer: a) 36.06 kg L⁻¹ b) 36.06 g L⁻¹ c) 36.06 g d) 36.06 L⁻¹

4: According to Graham's law the heaviest gas has?
Answer: a) low rate b) high rate c) middle rate d) low density

5: A gas occupies 20 dm³ at 90 °C and 760 torr pressure. What would be its volume at STP?
Answer: a) 15.04 mL b) 15.04 dm³ c) 15.04 L⁻¹ d) 15.04 dm⁻³

6: A vessel contains a certain amount of gas at 80 x 10⁵ Pa. The gas is transferred to another tank 20 dm³ with pressure of 20 x 10⁵ Pa. What should be its volume?
Answer: a) 0.5 L b) 0.5 Pa L c) 0.5 Pa dm³ d) 0.5 L⁻¹

7: According to Avogadro's law n is directly proportional with volume at constant?
Answer: a) p & V b) T & p c) T & V d) p & n e) R & P

8: Attractive and repulsive forces between particles are present in a?
Answer: a) perfect gas b) non-ideal gas c) ideal gas d) noble gas

9: It can follow the direct proportional between temperature and volume through the law of
Answer: a) Van der Waal b) Graham c) Charles d) Gay-Lussac

10: The mol fraction of atmospheric pressure is equal to?
Answer: a) zero b) one c) two d) three

Q2: The following data have been observed for 10000 mg of CO₂ gas at 273 K. Calculate the best value of the molar mass of CO₂. (25 points)

p/10 ² kPa	1.00	2.00	3.00
V/L	4.00	7.50	11.75

Q3: A perfect gas undergoes isothermal expansion, which increases its volume by 2.48 dm³. The p_i and V_i of the gas are 2 x 10² kPa and 2.14 dm³, respectively. Calculate the p_f of the gas in (i) bar, (ii) torr. (25 points)

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Best wishes

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1000 mg
 $T = 273 K$

س/ع

$$n_{CO_2} = \frac{1}{1.00} = 1, \quad \frac{1}{2.00} = 0.5, \quad \frac{1}{3.00} = 0.33$$

~~$VP = nRT$~~

~~$\frac{1}{4.00} = 0.44$~~

~~$\frac{1}{7.50} = 0.133$~~

~~$\frac{1}{11.75} = 0.085$~~

~~$VP = nRT =$~~

$Q_2 \frac{5}{25}$

$V_1 = 2.48 dm^3$

س/ع

$P_1 = 2 \times 10^2$

$V_1 = 2.14 dm^3$

$Q_2 \frac{0}{25}$

NO ANSWER

$P_2 = ?$
 i bar = ?

ii torr = ?

why?