

Physical Chemistry\_Chpt\_One\_Properties of Gases245

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## University of Mustansiriyah

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## 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) V<sub>Real</sub> > V<sub>Perfect</sub>

b) V<sub>Real</sub> < V<sub>Perfect</sub>

c) V<sub>Real</sub> = V<sub>Perfect</sub>

2: A gas occupies  $60 \times 10^3$  mL at 150 °C and 760 mmHg pressure. What would be its volume at STP?

Answer:

(a) 38.7 mL

b) 38.7 dm<sup>3</sup>

c) 38.7 L-1

d) 38.7 dm

3: Calculate the weight of H<sub>2</sub>O gas (18 g.mol<sup>-1</sup>) in a 5 L cylinder at 10 x 10<sup>2</sup> kPa and 373 K.

a) 29.40 g mol-1 b) 29.40 g c) 29.40 mol d) 29.40 kg

4: Calculate the density of H<sub>2</sub>O placed in a 22400 mL cylinder at 10<sup>5</sup> Pa and 0 °C

Answer:

a) 0.804 kg L<sup>-1</sup>

(b) 0.804 g L<sup>-1</sup>

c) 0.804 g

d) 0.804 L-1

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

Answer:

a) H<sub>2</sub>O

(b) CH<sub>4</sub>

c) NH<sub>3</sub>

d) Cl<sub>2</sub>



6: A tank contains a certain amount of gas at 105 Pa. The gas is transferred to another tank 40 dm3 with pressure of 200 × 103 Pa. What should be its volume?

Answer:

6) 80 L

c) 80 Pa dm3

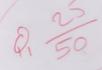
d) 80 L-1

7: According to Boyle's law the pressure of a gas is inversly proportional with? c) R

Answer:

a) p

(d) V



8: The difference between real and ideal gas, that the real gas interested in?

Answer:

a) V & p

b) V & T

c) p & n

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 < Vom

b) Vm > V0m

c) V<sub>m</sub> = V<sup>O</sup><sub>m</sub>

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.

p/105 Pa 0.750 0.500 0.200 V/dm3 3.0 4.5 7.0

(25 points)

Q3: A perfect gas undergoes isothermal compression, which reduces its volume by 1.80 dm3. The pf and Vf of the gas are 2 × 10<sup>2</sup> kPa and 2.14 dm<sup>3</sup>, respectively. Calculate the p<sub>original</sub> of the gas in (i) bar, (ii) torr. (25 points) 12

Wed 10/11/2021

Best wishes

Dr Abduljabbar I. R. Rushdi

