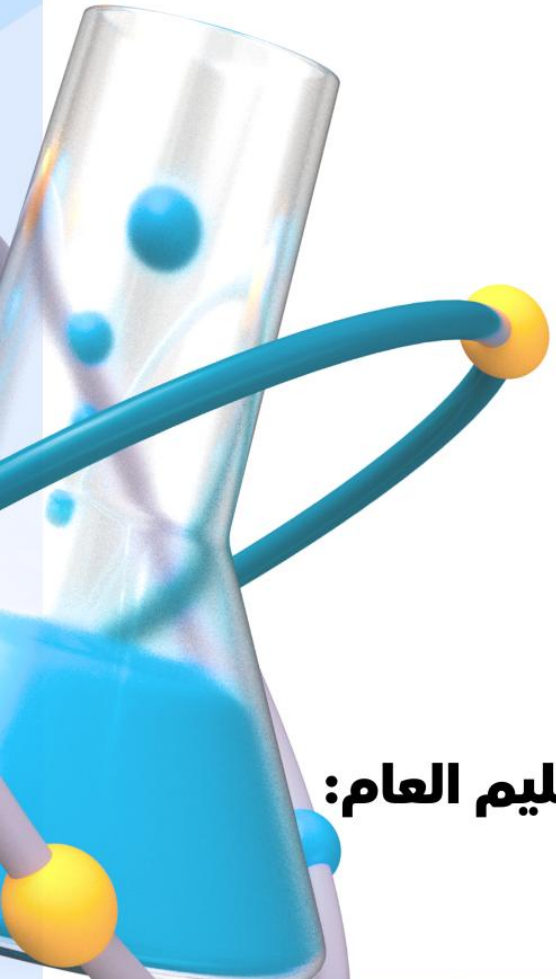
الإدارة المركزية للتعليم العام
مكتب تنمية مادة العلـــــوم

CHEMISTRY

2nd secondary
first term

HOME PERFORMANCE



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2026

week

1

Home performance (Week 1)

Q1/ choose the correct answer:-

1-What is the mass of 2.52×10^{-3} mol of ammonium sulphate? [H=1, N=14, O=16, S=32]

(a) 0.287 g
(b) 0.285 g
(C) 0.328 g
(d) 0.333 g

2- Which of the following has the same number of molecules as 11.2 L of methane (CH_4) gas at STP? [H=1, N=14, C=12]

(a) 1 mole of nitrogen gas at STP
(b) 3.01×10^{23} molecules of hydrogen gas
(C) 4 g of methane gas
(d) 17 gm of ammonia (NH_3) gas at STP

3-The number of sulphate ions in 17.1 gm of aluminum sulphate =..... [Al=27, S=32, O=16]

(a) 3×10^{21}
(b) 1×10^{22}
(C) 3×10^{22}
(d) 9×10^{22}

4- The number of atoms in 0.25 mole of formaldehyde (HCHO) =.....

(a) Avogadro's number
(b) Half Avogadro's number
(C) Quarter Avogadro's number
(d) Four times Avogadro's number

5- Which of the following represents the volume of 32 g of sulphur dioxide gas at STP? [S=32, O=16]

(a) 22.4 L
(b) 11.2 L
(C) 5.6 L
(d) 44.8 L

Essay Questions:

1-Calculate the number of moles of atoms present in half a mole of dinitrogen tetroxide (N_2O_4).

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2-If the mass of 1.5 liters of a gas at Standard Temperature and Pressure (STP) is 3.0 g, calculate the molar mass of this gas.

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3-Compare 1.0 mol of water (H_2O) and 32 g of oxygen gas (O_2) in terms of: volume, mass, number of molecules, and number of atoms. Explain which of these are equal between them and why.

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4-You have 1.5 mol of a solid compound. Which of the following quantities (density, volume at STP, molar mass, number of particles) can you determine from this information alone? Justify your answer.

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5-A balloon contains 2.0×10^{23} molecules of a gas at standard conditions, and the mass of this gas is 9.296 g. Identify this gas, given that:
[O = 16, C = 12, H = 1, N = 14]

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WEEKLY ASSESSMENTS

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2026

week

1

Weekly assessment (Week-1)

Q1/ Give scientific reason for each of the following:

1- The number of oxygen atoms in 32 g of oxygen gas is twice the number of Hydrogen molecules in 2 g of hydrogen gas. [H=1, O=16]

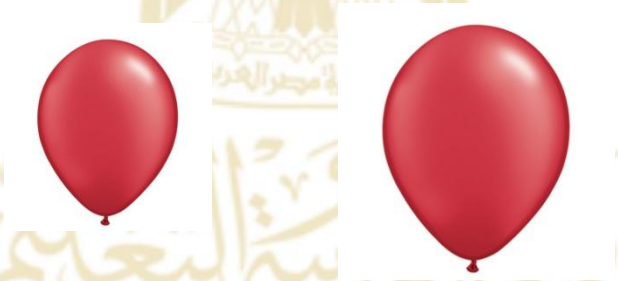
2- The number of anions is half the number of cations in each mole of sodium Sulphate.

3- The volume of 4 g of hydrogen gas is equal to the volume of 32 g of oxygen Atoms

Q2/ which of balloons (1) and (2) contains oxygen gas and which contains Hydrogen gas, given that the weight of the gas in each is 3.2 g? Why?

[O = 16, H=1]

Balloon (1) Balloon (2)



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Q3/ Calculate the mass of each of the following:

1- 1.505×10^{23} units of silver phosphate. [Ag= 108 , P =30, O=16]

2- 11.2 L of sulphur dioxide gas SO_2 [S= 32 , O=16]

3- 0.5 moles of sulphur in its vapour state, knowing that each molecule of Sulphur in its vapour state consists of 8 atoms. [S= 32]

4- Moles of hydrated sodium sulphate, knowing that each mole of hydrated Sodium sulphate consists of one mole of sodium sulphate binds with Seven moles of water. [Na= 23, S =32, O=16, H=1]

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Q2/ Choose the correct answer:

1. The molar volume of sodium chloride (NaCl) does not equal 22.4 L at STP. Which of the following is the correct explanation for this?

(a) Because sodium chloride is a gas at standard conditions

(b) Because sodium chloride is a solid substance and not a gas

(c) Because sodium chloride has a very large molar mass

(d) Because the molar volume law only applies to liquids

2. The molar volume of hydrogen gas and oxygen gas at the same conditions of pressure and temperature is equal, despite the difference in molar mass between them. What is the explanation for this?

(a) Because the two gases have the same density

(b) Because equal numbers of moles of any gas contain the same number of molecules, and occupy the same volume under the same conditions

(c) Because hydrogen and oxygen have the same molar mass

(d) Because molar volume depends only on atomic mass

3. Equal volumes of oxygen gas (O_2) and ozone gas (O_3) at the same conditions contain an equal number of molecules, but contain a different number of oxygen atoms. What is the reason for this?

(a) Because the molecular mass of ozone gas is greater than the molecular mass of oxygen gas

(b) Because an ozone molecule consists of 3 oxygen atoms while an oxygen molecule consists of only 2

(c) Because the molar volume of ozone gas is greater than the molar volume of oxygen gas

(d) Because the number of ozone molecules is greater than the number of oxygen molecules in the same volume

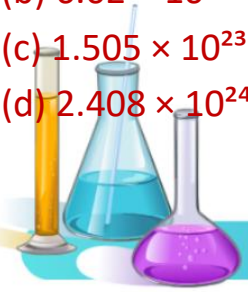
4. The molecule of the element phosphorus in its vapor state is tetra-atomic (P_4). Calculate the number of phosphorus atoms in 30 g of phosphorus in its vapor state. [P = 30]

(a) 6.02×10^{22}

(b) 6.02×10^{23}

(c) 1.505×10^{23}

(d) 2.408×10^{24}



5. How many molecules of phosphorus (P_4) are present in 30 g of phosphorus in its vapor state? [P = 30]

(a) 6.02×10^{23}

(b) 1.505×10^{23}

(c) 3.01×10^{23}

(d) 2.408×10^{24}

6. Which of the following represents the mass (weight) of a single oxygen atom in grams? [O = 16 amu]

(a) 16

(b) 2.66×10^{-23}

(c) 9.63×10^{24}

(d) 6.02×10^{23}

7. Which of the following represents the number of moles of atoms in 0.5 mol of acetic acid (CH_3COOH)?

(a) 0.5 mol

(b) 2 mol

(c) 4 mol

(d) 8 mol