Avogadro Q

1 Which sample has the greatest mass?

A 1.0 mol of N_2H_4 B 2.0 mol of N_2 C 3.0 mol of NH_3 D 25.0 mol of H_2

2 The number of moles in 500 g of water is approximately:

A 28 B 9000 C $1x10^{25}$ D $3x10^{26}$

3 The mass (in grams) of one molecule of water is

A $3.0x10^{-23}$ B $1.8x10^{-22}$ C 3.0 D 18.0

4 How many molecules are there in 180 g of H_2O?

A 6.0×10^{22} B 6.0×10^{23} C 6.0×10^{24} D 6.0×10^{25}

5 How many atoms are present in 0.10 mol of propyne, C_3H_4?

A 4.2×10^{22} B 6.0×10^{22} C 4.2×10^{23} D 6.0×10^{23}

6 How many moles of CH_4 are needed to obtain 6.0×10^{23} hydrogen atoms?

A ¼ B 1 C 2 D 4

7 What is the mass in grams of one **molecule** of propanol, C_3H_7OH?
(Avogadro's constant 6.0×10^{23} mol^{-1})

A 60 B 1.0×10^{-22} C 3.6×10^{25} D 1.0×10^{-23}

8 What amount of oxygen, O_2 , (in moles) contains 1.8×10^{22} molecules?

A 0.0030 B 0.030 C 0.30 D 3.0

9 One atom of an element has a mass of 1.06×10^{-22} grams. The atomic symbol of this element is

A Cu B C C Cl D Cr

10 Which of the following has the greatest mass?

A 6×10^{25} atoms of helium gas
B 10 moles of oxygen molecules
C 1.2×10^{24} atoms of copper
D 1 mole of gold atoms

11 Which one of the following samples contains the smallest number of molecules?

A 1 g of carbon dioxide, CO_2
B 1 g of glucose, $C_6H_{12}O_6$
C 1 g of naphthalene, $C_{10}H_8$
D 1 g of octane, C_8H_{18}

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12 One mole of H_2O molecules contains

A 6.02×10^{23} atoms
B 6.02×10^{23} hydrogen atoms
C 3.01×10^{23} oxygen atoms
D 1.8×10^{24} atoms

13 The sample which contains 2.0×10^{23} atoms is

A 9.0 g O_2
B 13.0 g K
C 15.0 g P_4
D 12.0 g Mg

14 In 0.250 moles of ethane-1,2-diol (antifreeze), $HOCH_2CH_2OH$, there are

A 1.51×10^{23} atoms
B 1.51×10^{24} molecules
C 1.51×10^{24} atoms
D 6.02×10^{24} atoms

15 Which one of the following statements about CO2 is (are) correct?

I One mole of CO_2 has a mass of 44.0 grams
II One mole of CO_2 contains 6.0×10^{23} atoms

A I only
B II only
C Both I and II
D Neither I nor II