NALANDA COLLEGE – COLOMBO 10

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Unit Test

| Grade 10 | SCIENCE | Unit 07 |

Quantification of elements and compounds

❖ **Answer all the questions.**

01. What is the total number of atoms in molecular moles of Ammonia (NH_3)?

    (1). $3 \times 6.022 \times 10^{23}$ (3). $3 \times 6.022 \times 10^{23}$

    (2). $8 \times 6.022 \times 10^{23}$ (4). $3 \times 5 \times 6.022 \times 10^{23}$

02. What are SI units of distance, deceleration and amount of substances?

    (1). ms^{-1}, ms^{-2}, mol   (3). m, ms^{-2}, mol

    (2). m, ms^{-1}, mol   (4). m, ms^{-1}, $gmol^{-1}$

03. The scientist who present the constant number of atoms and molecules in mol of substance is,

    (1). Dimitri Mendeleif   (3). Jhon Dalton

    (2). Amedeo Avagadro   (4). J. Bursilias

04. Number of S atoms in 16g of sulphur is (Relative atomic mass of S = 32)

    (1). 6.022×10^{23} (2). 3.011×10^{23} (3). 3.011×10^{22} (4). 6.022×10^{22}

05. At which instance contain 1 mol of substances from following?

    (1). Hydrogen atoms of 2g of Hydrogen

    (2). Oxygen atoms of 8g of Oxygen

    (3). Water molecules of 8g water

    (4). Methane molecules of 16g of methane

Semi structured essay

01. 3g of cleaned Mg was heated strongly in a crucible until it burned. (Mg = 24, O = 16)

    (i). Write an observation when burning Mg.

    (ii). Write the balanced chemical equation for combustion of magnesium.

    (iii). What is the number of moles of Mg present in 12g?

    (iv). What is the number of atoms in 12g of Mg?

    (v). What is the number of moles of Mg present in 3g?

02. (A). When expressing the relative atomic mass, the value of 1/12 the mass of $^{12}_{6}C$ is used?

    (i).   How above value is called?

    (ii).   Define what is relative atomic mass?

    (iii). The mass of a chlorine (Cl) atom is 5.903×10^{-23}g. Value of atomic mass unit is 1.66×10^{-24}g. Find the relative atomic mass of chlorine.

    (iv). Calculate the number of moles that contained in 24g of carbon.

    (v).   Write the number of electrons, protons and electrons in $^{12}_{6}C$ isotope.

    (vi). Write the 3 different isotopes of Hydrogen.

  (B). (i).   Urea and ammonium sulphate are two types of chemical fertilizer used as Nitrogen supplement for the plants. Considering only the Nitrogen percentage in those 2 chemicals based on the mass, when one would be the most suitable to us as a fertilizer? Explain your conclusion closely.

              (H = 1, C = 12, N = 14, O = 16, S = 32)

    (ii). Calculate the mass of 2 mol of Urea?

    (iii). Find the number of moles of Oxygen in 2 mol of Urea.

    (iv). How many moles of ammonium sulphate contain in 1000 g?

    (v).   Calculate the moles of Nitrogen contain in it?