GEITA ADVENTIST SEC. SCHOOL
HOME ASSIGNMENT - APRIL 2020
CHEMISTRY - FORM III

Answer all questions.

1. A hydrated salt has the following composition by mass: Iron 20.2%, oxygen 23.0%, Sulphur 11.5%, water of crystallization 45.3% its relative molecular mass is 278.
   (i) Find empirical formula
   (ii) Determine the molecular formula of the hydrated salt.
   (iii) 6.95 of the hydrated salt were dissolved to make 250 cm^3 of solution. Calculate the concentration of the solution in mol/dm^3.

2. (a) Compute and balance the following equations
   (i) $AgNO_{3(s)} \xrightarrow{Heat}$
   (ii) $CuO_{(s)} + H_2SO_{4(aq)} \longrightarrow$
   (iii) $Na_2CO_{3(s)} \xrightarrow{heat}$
   (iv) $KClO_{3(s)} \xrightarrow{heat}$
   (b) Complete and write the ionic equation for the reaction between potassium hydroxide and Iron (II) chloride solution.

3. The equation below shows the dissociation of Sulphuric acid into ions

$$H_2SO_{4(aq)} \longrightarrow 2H^+_{(aq)} + SO^{2-}_{4(aq)}$$

From the equation above how many hydrogen ions are there in 9.8g of Sulphuric acid.

4. By using one example explain how hardness of water can be removed in:
   (i) Temporary hardness of water by boiling.
   (ii) Permanent hardness of water by chemical means

5.(a) If Magnesium nitride is reality decomposed by water give ammonia according to the unbalanced equations.

$$Mg_3N_{2(s)} + H_2O_{(l)} \longrightarrow Mg(OH)_{2(s)} + NH_{3(g)}$$

(i) Write a balanced equation for the reaction
(ii) What volume of ammonia, measured at STP would be evolved from 2.5g of the Magnesium nitride

(b) Lead nitrate decomposes on heating as shown in the equation below.

$$2Pb(NO_3)_{2(s)} \xrightarrow{heat} 2PbO_{(s)} + 4NO_{2(g)} + O_{2(g)}$$

$112 dm^3$ of oxygen were collected at STP when a sample of lead nitrate was complete decomposed on heating. Calculate the mass of lead nitrate sample.

gives: Fe = 56, O = 16, S = 32, H = 1, Mg = 24, N = 14, Pb = 207, C = 12.

END.