G.C.E. A/L Examination November - 2016

Conducted by Field Work Centre, Thondaimanaru
In Collaboration with
Provincial Department of Education Northern.

FWC

Grade :- 12 (2018) **CHEMISTRY**

PART - II

B. Essay Questions.

❖ **Answer any two questions only.**

(01) (a) (i) How the cathode rays are formed?

(ii) Give 3 properties of cathode rays

(iii) Why positive rays are not called as Anodic rays?

(iv) Why cathode rays are called as fundamental particles?

(v) Explain Rutherford's $\propto$ scattering experiment

(vi) What are the observation from the above experiment

(vii) What are the conclusions from the above observations?

(b) (i) Give 5 examples for electromagnetic radiations?

(ii) Give uses for each radiation mentioned above?

(iii) Name three series in the hydrogen emission spectrum. And state the reason to which region the above series belongs?

(iv) The wavelength of electromagnetic radiation is $700\ cm$ Calculate the frequency & the energy of photon of this radiation

$(c = 3 \times 10^8\ ms^{-1}, \quad h = 6.63 \times 10^{-34} Js)$

(v) Calculate the energy carried by 1 mol of photon of this radiation?

(vi) This radiation beiongs to which region of electromagnetic spectrum?

(02) (a) $3.42\ g$ of sucrose is dissolved in water and made to $500\ ml$ solution. Density of water is $1 gml^{-1}$

(i) Calculate the mole fraction of sucrose

(ii) Calculate the mole fraction of water

(iii) Calculate the concentration of sucrose solution

(b) Consider the $KMnO_4$ / $K_2C_2O_4$ / H_2SO_4 system

(i) Write the half ionic equation for oxidation?

(ii) Write the half ionic equation for reduction?

(iii) Write the full ionic equation?

(iv) Give the balanced chemical equations for the reaction?

(v) Give the stochiometry in between $KMnO_4$ and $K_2C_2O_4$

(vi) Calculate the volume of CO_2 collected in STP by the oxidation of $0.9g\ KMnO_4$

$(K - 39,\ Mn - 55,\ O - 16)$

(c) $5.34\ g\ of\ M_2SO_4$ is dissolved in water when excess amount of $BaCl_2$ is added to the solution. $4.66g\ of\ BaSO_4$ was precipitated. $[Ba-137,\ S-32,\ O-16]$

(i) Calculate the number of moles of SO_4^{2-} in the solution.

(ii) Find the molar mass M_2SO_4

(iv) Calculate the relative atomic mass of M.

(03) (a) $0.887\ g$ mixture containing $NaCl,\ KCl$ are fully dissolved in water and then excess amount of $AgNO_{3(aq)}$ is added $1.913g\ of\ AgCl$ gets precipitated

$(Na = 23,\quad K = 39,\quad Cl = 35.5,\quad Ag = 108)$

(i) Obtain the relationship $\frac{x}{58.5} + \frac{m_1 - x}{74.5} = \frac{m_2}{143.5}$

(ii) Calculate the values $m_1,\ m_2$

(iii) Calculate the value of x

(iv) Calculate the mass percentage of $NaCl$

(b) (i) The meiting point of Aluminium is greater than sodium explain

(ii) The ionization enthalphy of phosphorus is less than Nitrogen explain

(iii) Explain the importance of Hydrogen bond in living organisms

(iv) The boiling point of Br_2 is $+59^0C\ boiling\ point\ of\ ICl$ is $+97^0C$ Explain this difference completely as possible

(c) A cake producing person needs $500\ cm^3$ (at STP) Carbon dioxide $[CO_2]$ gas. If sodium bicarbonate gives out CO_2 gas on heating calculate the mass of $NaHCO_3$ needed?