TAIDOB COLLEGE

PRE-WASSCE PREPARATORY ASSESSMENT

CHEMISTRY **SS3**

1a. Draw the diagram of a typical electrolytic cell.
b. What is an electrolyte?

2a. In a tabular form, give two (2) differences between a conductor and an electrolyte.

b. Acidified water was electrolysed using platinum electrodes.
i. Write out the reaction that occurs at the:
I. anode
II. cathode.
ii. What product is obtained at the:
I. anode?
II. cathode?

c. Concentrated calcium chloride ($CaCl_2$) was electrolysed using graphite electrodes. Give the products that will be obtained at the:

I. anode
II. cathode.

3. What current in amperes will deposit 10.5 g of aluminum in 1hour? (Al = 27, 1 Faraday = 96 500C)

4a. What are nucleons?
b. State Graham's law of diffusion.
c. Explain briefly why aluminum does **not** corrode easily.

5a. Give one example of each for the following compounds
i. an amphoteric oxide:
ii. a hydride which evolves hydrogen when reacted with water.
iii. a trioxocarbonate (IV) salt which is readily decomposed on heating.

iv. a chloride salt which is readily hydrolyzed in water.

b. State two (2) differences between metals and non-metals with respect to their physical properties.

6a. Calculate the amount of hydrochloric acid in 50 cm^3 of 0.3 mol/dm^3.

bi. Describe briefly the industrial preparation of ammonia.

ii. Write a balanced equation for the reaction in 3 (b) (i) above.

iii. State two (2) uses of ammonia.

7. What volume of oxygen measured at s.t.p would be liberated by passing a current of 25 A, through acidified water for 900 seconds? (Molar volume of a gas = 22.4 dm^3 at s.t.p., 1 Faraday = 96 500C)

8a. Determine the oxidation number of iodine in IO_3^-.

b. State:

i. two physical properties and

ii. two chemical properties of chlorine.

9a. Mention **one (1)** example of a chloride that is:

i. Insoluble in water

ii. Soluble in water.

b. Briefly explain the laboratory preparation of chlorine.

10. **A** is a solution containing 0.98g in 500cm^3 of solution H_2SO_4. **B** is a solution of NaOH. Put in to the burette and titrate against 20 or 25 cm^3 portion of **B** using two or three drops of methyl orange as indicator. Record the volume of the pipette. Complete the table of burette readings and calculate the average volume of **A** used.

Burette Reading (cm^3)	1st Titre	2nd Titre	3rd Titre
Final reading (cm^3)	24.80	28.90	25.40
Initial reading (cm^3)	0.00	4.00	0.00
Volume of acid used (cm^3)			

The equation of reaction used:

$$H_2SO_{4(aq)} + 2NaOH_{(aq)} \rightarrow Na_2SO_{4(aq)} + 2H_2O_{(l)}$$

From your results and the information provided, calculate

i. Concentration of A in g/dm^3
ii. Concentration of solution A in mol/dm^3
iii. Concentration of solution B in mol/dm^3
iv. Concentration of solution B in g/dm^3 .
v. Amount in (mol) and mass in (gram) of H_2SO_4 present in solution A used.
vi. Amount in (mol) and mass in (gram) of H_2SO_4 present in $200cm^3$ of solution A.
vii. Amount in (mol) and mass in (gram) of NaOH present in solution B used.
viii. Amount in (mol) and mass in (gram) of NaOH present in 1 dm^3 of solution B.