**END OF TERM 2 2021 EXAM**

**FORM 3 PRACTICAL**

**Time:1hr 45min (x/30)**

**Q1**. You are provided with;

* Solution A which is dilute hydrochloric acid.
* Solution B which is made of dissolving 5.3g of Na2Co3 in 500cm3 of dilute water.

You are required to standardize solution A.

Procedure 1

i) Mark your conical flasks as X, Y, Z

ii) Put solution A into the burette.

iii) Place25cm3 of solution B into conical flask X and titrate with solution A using 3 drops of phenolphthalein indicator. RETAIN THE CONTENT OF THE FLASK X.

iii) Record your results in table1 below and repeat the procedure using other flask y and z respectively.

Table 1

|  |  |  |  |
| --- | --- | --- | --- |
|  | I  | II | III |
| Find burette readings |  |  |  |
| Initial burette readings |  |  |  |
| Volume v1 A used (cm3)  |  |  |  |

Calculate the average volume v1 of solution A used. (5mks)

Procedure 2

i) Refill the burette with solution A.

ii) Add 3 drops of methyl orange indicator to the content of conical flask X and continue titrating with solution A.

iii) Record your result in table 2 below.

 Repeat procedure 2 using the other conical flask Y and Z respectively. Fill the table below.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Find burette readings |  |  |  |
| Initial burette readings |  |  |  |
| Volume v2 A used  |  |  |  |

Calculate the average volume of solution v2 of solution A used. (5mks)

a) Calculate the total volume of v1 + v2 used in table 1 and table 2. (1mk)

b) Write the chemical equation between solution A and solution B. (1mk)

c) Determine the concentration of solution B in moles per litre (Na=23 O=16 C=16) (1mk)

d) Calculate the number of moles of solution A used in titration. (1mk)

e) Calculate the concentration of solution A in moles per litre. (2mks)

You are provided with solid E

i) Place little amount of solid E on a watch glass.

Describe its appearance. (2 mks)

ii) Place all amount of solid E in a boiling tube. Add about 10cm3 of distilled water. Shake the mixture.

Observations Inferences

 (1mk) (1mk)

iii) Divide the resulting solution into 4 portions. To the first portion, add drops of Barium Nitrate provide.

Observations Inferences

 (1mk) (1mk)

iv) To the mixture attained in (iii) acidity using about 5 drops of nitric provided in the access.

Observations Inferences

 (1mk) (1mk)

v) To the second portion add 3 drops of acidified potassium chromate (vi) provided.

Observations Inferences

 (1mk) (1mk)

vi) To the third portion add ammonia solution provided.

Observations Inferences

 (1mk) (1mk)

vii) To the last portion, dip a glass rod and place it on non luminous flame

Observations Inferences

(1mk) (1mk)