WASSCE / WAEC MAY / JUNE 2006 CHEMISTRY TEST OF PRACTICAL ALTERNATIVE A

S5051/A June
W.A.S.S.C.E. 2006
CHEMISTRY 1
Practical
ALTERNATIVE A
2 hours

A

Name: 239

Index Number:.....

THE WEST AFRICAN EXAMINATIONS COUNCIL

West African Senior School Certificate Examination

CHEMISTRY 1

PRACTICAL

June 2006 ALTERNATIVE A 2 hours

[50 marks]

Write your **name** *and* **index number** *in the spaces provided at the top right-hand corner of this paper.*

On the front page of your answer book record your **index number**, *your* **serial number** *and the* **number** *and* **letter** *of every substance supplied to you. These substances should all bear your* **serial number**; *if this is not so, inform the Supervisor immediately.*

Answer **all** *the questions in* **ink**.

1. *Burette readings (initial and final) must be given to two decimat places. Volume of pipette used* **must** *also be recorded but no account of experimental procedure is required. All calculations* **must** *be done in your answer book.*

A is a solution containing 6.3 *g dm*$^{-3}$ of HNO_3,

B is a solution of Na_2CO_3.

(a) Put **A** into the burette and titrate it against 20.0 *cm*^{3} or 25.0 *cm*^{3} portions of **B** using methyl orange as indicator. Record the volume of your pipette. Repeat the titration to obtain consistent titres. Tabulate your burette readings and calculate the average volume of **A** used.

The equation for the reaction involved in the titration is:

$$2HNO_{3(aq)} + Na_2CO_{3(aq)} \longrightarrow 2NaNO_{3(aq)} + CO_{2(g)} + H_2O_{(l)}$$

(b) From your results and information provided above, calculate the

(i) concentration of **B** in *mol dm*$^{-3}$;

(ii) concentration of **B** in *g dm*$^{-3}$;

(iii) mass of sodium ions in 1.0 *dm*$^{-3}$ of **B**.

[H = 1; C = 12; O = 16 N = 14 Na = 23]

[21 marks]

2. *Credit will be given for strict adherence to the instructions, for observations precisely recorded and for accurate inferences. All tests, observations and inferences* **must** *be clearly entered in your answer book, in* **ink**, *at the time they are made.*

C is a mixture of an inorganic and organic compounds. Carry out the following exercises on **C**. Record your observations and identify any gases evolved. State the conclusion you draw from the result of **each** test.

(a) Put all of **C** into a beaker and add 10 *cm*^{3} of distilled water. Stir the mixture thoroughly and filter. Keep both the filtrate and residue.

(b) (i) Test the filtrate with litmus paper.
(ii) To about 2 cm^3 of the filtrate, add $BaCl_{2(aq)}$ followed by dilute HCl.
(iii) To another 2 cm^3 portion of the filtrate add $NaOH_{(aq)}$ and heat.

(c) Transfer the residue into a boiling tube and add few drops of iodine solution. [16 marks]

3. (a) Consider the following compounds:
MnO_2, $NaHCO_3$, Na_2CO_3, NH_4Cl and $Pb(NO_3)_2$
Select the compound(s) which
(i) has a black colour;
(ii) is a basic oxide;
(iii) sublime on heating;
(iv) dissolves in water to give a solution of pH less than 7. [4 marks

(b) State the colour of **each** of the following aqueous solutions:
(i) Calcium hydroxide;
(ii) Iron (III) trioxonitrate (V);
(iii) Copper (II) tetraoxosulphate (VI);
(iv) Potassium heptaoxodichromate (VI). [4 mark

(c) Give **one** example of a neutral oxide which is a colourless liquid at room temperature. [1 ma

(d) Draw and label a diagram for a set-up that can be used for the separation of two immiscible liquids. [4 ma