**NAME: ……………………………………………….…………. ADM NO: ………… CLASS: ………………**

**TEACHER.CO.KE**

**CHEMISTRY**

**FORM 4**

**PAPER 3**

**TIME: 1 HR 25 MIN**

**Q1 = 11MKS**

**Q2 = 14MKS**

Q1. You are provided with:

Solution A: Potassium Chromate VI

Solution B: 0.1mNa2SO3

You are required to determine the number of moles dichromate VI ions (Cr2O2-7) in one litre of solution.

PROCEDURE

Fill the burette with solution B. Pipette 25cm3 of solution A and transfer it into conical flask. Titrate until a permanent green colour is obtained. Record your results in table below and repeat the procedure to fill the table.

|  |  |  |  |
| --- | --- | --- | --- |
|  | I | II | III |
| Find burette readings |  |  |  |
| Initial burette readings |  |  |  |
| Volume of solution B (cm3) |  |  |  |

1. Determine the average volume of solution B. (5mks)

1. Calculate the number of moles of solution B. (2mks)

3. Given that the ionic equation for the reaction between dichromate ion and sulphate is;

Cr2O2-7(aq) + 3SO2-3(aq) + 8H+(aq) 2Cr3+(aq) + SO2-4(aq) + 4H2O(l)

Calculate;

i) Number of moles of dichromate IV ion in 25cm3 (2mks)

ii) Moles of dichromate ion one litre of solution.

12. You are provided with substance E, carry out the tests below and write your observations and inferences in the space provided.

a) Describe the appearance of substance E.

Observation inferences

(1mk) (1mk)

c) Place remaining amount of E in boiling tube. Add about 10cm3 of distilled water and shake well. Retain the mixture for tests in d) below.

Observations inferences

(1mk) (1mk)

d) Use about 2cm3 potion of the mixture obtained in (c) for tests (i) to (iv)

i) Add 2 to 3 drops of lead (ii) Nitrate to the mixture.

Observation inferences

(1mk) (1mk)

ii) Add 2 to 3 drops of barium Nitrate to second portion of the mixture.

Observation inferences

(1mk) (1mk)

iii) Add five drops of dilute nitric (v) acid to the mixture in (ii) above

Observation inferences

(1mk) (1mk)

iv) To the last portion, add few then excess drops of sodium hydroxide.

Observation inferences

(1mk) (1mk)

e) Give the formula of cat ion and anion present in substance E.

Cat ion

Anion