233/3

CHEMISTRY

PAPER 3

MARCH /APRIL 2016

21/4HOURS

 ASUMBI GIRLS HIGH SCHOOL PRE-MOCK 2016

 KENYA CERTIFICATE OF SECONDARY EDUCATION

 233/3

 CHEMISTRY

 PAPER 3

INSTRUCTIONS TO CANDIDATES

Answer ALL questions in the spaces provided in the question paper

You are not allowed to start working with the apparatus for the first 15 minutes of 2 1l4 hours allowed for this paper

This time is to enable you read through the question paper and make sure you have all chemicals and apparatus that you may need

All the working must be clearly shown where necessary

Electronic calculators and mathematics tables may be used

Candidates should confirm that this paper has 7 printed pages and that no page missing

 For Examiners Use Only

Questions Maximum score candidate score

1 20

2 12

3 08

Total 40

1. You are provide with:

 2.0g of XHCO3 labeled solid A

 0.0581M hydrochloric acid labeled solution B

You are required to determine

 (a) Molar enthalpy of reaction between hydrochloric acid and solid A

 (b) Molar mass of solid A

Procedure I

Measure 50cm3 of solution B into beaker and note its temperature .Add the entire solid A and immediately start the stop watch.Read the temperature after every half a minute and record the temperature in table in table I below .Label the resulting solution A1 and keep it for use in procedure II

Table 1

Time (min) 0 ½ 1 1.5 2 2.5 3

Temperature 0C 25 26 27 28 28 26 24

 (4mark)

(a) Plot a graph of temperature (Y-axis) against time (3mark)

(i) From your graph ,determine T (1mark)

(ii) Calculate the enthalpy change for the reaction (density of solution is 1g/cm3,SHC=4.2J/g/K) (1mark)

(iii) Calculate the molar enthalpy of reaction between hydrochloric acid and solid A(solid A is in excess) (2mark)

Procedure II

Transfer solution A1 from procedure I and 250 ml volumentric flask ,top it up to the mark using distilled water ,label the resulting solution as solution A2

Pipette 25cm 3 of solution A2 into a conical flask ,add 2 drops of monthly orange indicator ,Fill a burette with solution B and titrate against solution A till end point.Record your readings in the table below .Repeat the procedure to complete Table II below

Table II

 1 2 3

Final burette reading (cm3) 26.0 26.0 26.0

Initial burette reading (cm3) 0.0 0.0 0.0

Volume of solution B used (cm3) 26.0 26.0 26.0 (4mks)

(a) Calculate the average volume of solution B used (1mk)

(b)Calculate the moles of solution B used (1mk)

(c) Calculate the molesof XHCO3 in solution A2 used in the reaction (1mk)

(d) Calculate the number moles of XHCO3 in solid A (1mk)

(e) Determine the molar mass of XHCO3 (1mk)