Name……. **Index No…….**

School…… **Candidate's Signature……**

Date ……..……..

233/3
CHEMISTRY
PRACTICAL
Paper 3
July/August 2010
2 ¼ Hours

BUNGOMA JOINT EVALUATION TEST - 2010
Kenya Certificate of Secondary Education (K.C.S.E)

233/3
CHEMISTRY
PRACTICAL

Instructions to candidates
- Write your name and index number in the spaces provided above.
- Sign and write the date of examination in the spaces provided above.
- You are **NOT** allowed to start working with the apparatus for the **first 15 minutes** of the 2 ½ hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all chemicals and apparatus that you may need.
- Mathematical tables and electronic calculators may be used for calculations
- **All** working must be clearly shown where necessary
- Answer **all** the questions in the **spaces provided** in the question paper

FOR EXAMINER'S ONLY

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1 2 3	22 09 09	
TOTAL		

This paper consists of 8 printed pages .Candidates should check the question paper to Ensure that all the pages are printed as indicated and no questions are missing

1. You are provided with:

- 1.60g of a dibasic acid H_2X labeled solid P
- Solution Q containing 1g of sodium hydroxide in 250cm^3 of the solution.
- Phenolphthalein indicator

You are required to:-

- Prepare 250cm^3 of solution P using solid P
- Determine the value of X in the formula (H_2X)

A PROCEDURE I

Place all of solid P in a 250cm^3 beaker. Add about 100cm^3 of distilled water to the beaker. Swirl until all the solid dissolves. Transfer the solution into a 250cm^3 volumetric flask. Top up with distilled water to the mark and label it solution P.

Using a measuring cylinder transfer about 100cm^3 of solution P into a 250cm^3 beaker. Preserve the rest in the volumetric flask for procedure II.

Pipette 25cm^3 of solution Q into a clean conical flask. Add 3 drops of phenolphthalein indicator to the 25cm^3 solution in the conical flask. Fill the burette with solution P from the beaker. Titrate until the colour disappears. Repeat two more times and record your results in the table below.

Table 1

Titre	1st	2nd	3rd
Final burette reading (cm^3)			
Initial burette reading (cm^3)			
Volume of solution P used (cm^3)			

(4mks)

i) Calculate the average volume of solution P used (1mk)

ii) Calculate the Molarity of solution Q
(Na = 23, O = 16, H = 1) (2mks)

iii) How many moles of sodium hydroxide (NaOH) were pipetted (1mk)

iv) How many moles of the acid, solution P reacted with 25cm^3 of solution Q (2mks)

v) How many Moles of H_2X were present in 1.60g of solid P (2mks)

vii) Determine the value of X in the formula H_2X (2mks)

B PROCEDURE II

You are provided with

- Acidified Potasium Manganate VII solution L.
- Solution P dibasic acid (H_2X)
- A stop watch
- Thermometer

You are required to determine how the rate of reaction of Potassium Manganate VII with the dibasic acid, solution P varies with change in temperature.

Using a 10ml measuring cylinder place $1cm^3$ portions of solution L ($KMnO_{4(aq))}$ into five test tubes. Using a clean $50cm^3$ measuring cylinder place $19cm^3$ of solution P into a boiling tube. Insert a thermometer in the solution P in the boiling tube and warm using the Bunsen burner flame, until the solution P attain a temperature of 40^0C. Place the boiling tube in a test tube rack, then add the first portion of solution L and at the same time start a stop watch. Record the time taken for the purple colour of the mixture to decolourise and record the time in table II below. Repeat the experiment by using $19cm^3$ of solution P at temperatures of 50^0C, 60^0C, 70^0C and 80^0C.

Complete the table II by computing $^1/_t$ sec^{-1} row

Table II

a) (4mks)

Temperature of solution P (^0C)	40^0C	50^0C	60^0C	70^0C	80^0C
Time for colour to disappear (t) sec					
$^1/_t$ (Sec^{-1})					

(4 mks)

b) Using the graph paper provided (Grid provided) Plot a graph of $^1/_t$ sec^{-1} (y – axis) against temperature ^0C (3mks)

c) From the graph determine the time taken for decolourization of the mixture if the temperature of the solution K was 65^0C (1mk)

d) How does the rate of reaction of potassium Manganate (VII) with dibasic acid (H_2X) vary with temperature (1mk)

2. You are provided with Solid E. Carry out the tests below and record your obserbation and inferences in the spaces provided.

a) To half of solid E, place in a clean dry test tube. Heat gently then strongly. Test any gases produced with blue and pink litmus papers.

Observations	inferences

(2mks) (1mk)

b) Place all the remaining solid in a clean dry boiling tube. Add about $15cm^3$ of distilled water and shake thoroughly.

Observations	inferences

(½mk) (½ mk)

c) To all the solution in (b) above, add about $10cm^3$ of sodium sulphite solution provided then filter.

Observations	inferences

(1mk) (1mk)

i) To about $2cm^3$ of the filtrate, add ammonia solution dropwise until in excess.

Observations	inferences

(1mk) (1mk)

ii) To about $2cm^3$ of the filtrate, add 3 drops of lead (II) nitrate solution, then warm to boiling

Observations	inferences

(½ mk) (½ mk)

3. You are provided with solid F. Carry out the tests below. Record your observations and inferences in the spaces provided.

a) Place about half of solid F on a metallic spatula and burnt it using a non-luminous flame

Observations	inferences

(1mk) (1mk)

b) Place the remaining solid F in a clean boiling tube and add about $10cm^3$ of water and shake thoroughly.

i) To about $2cm^3$ of the solution F, put the universal indicator paper provided.

Observations	inferences

(½ mk) (½ mk)

ii) To about $2cm^3$ of solution F, add $2cm^3$ of acidified potassium dichromate (VI) and warm to boiling

Observations	inferences

(1mk) (1mk)

iii) To about $2cm^3$ of solution F, add three drops of bromine water

Observations	inferences

(1mk) (1mk)

Iv) To about $2cm^3$ of solution F, add three drops of acidified potassium manganate (VII) solution; then warm

Observations	inferences

(1mk) (1mk)