TRIAL ONE EVALUATION TEST
CHEMISTRY PAPER 3 (PRACTICAL)
233/3

NAME .... **INDEX NO**...........................

SIGN .... **DATE** ....

TIME 2 ¼ HOURS.

Instruction

➢ **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 the 2 ¼ hours allowed for this paper.**

➢ **All working must be clearly shown where necessary.**

➢ **Mathematical table and silent calculators can be used.**

Question	Maximum score	Students' score
1	20	
2	10	
3	10	
Total	40	

1. You are provided with;
   - Alkaline solution labeled B.
   - 1.0 M hydrochloric acid labeled A.
   - Dilute dibasic acid labeled Q.

You are required to standardize B with A and obtain molar heat of neutralization of B using dilute dibasic acid.

PROCEDURE I

(i)   Place solution A in a clean $50cm^3$ burette.
(ii)   Using 25ml pipette, place $25cm^3$ of solution B in a conical flask.
(iii)   Add 2 drops of phenolphthalein indicator and titrate with solution A.
(iv)   Record your results in table I repeat two times and complete the table.

	I	II	III
Final burette			
Initial burette reading cm^3			
Volume of solution A used cm^3			

(4mks)

Calculate the;
(a) Average volume of solution A used.   (1mk)

   ....

   ....

(b) Moles of A that reacted with 25 cm^3 of solution B.   (1mk)

   ....

   ....

(c) Moles of solution B that reacted with $25cm^3$ of solution A given that the cation of alkaline solution has a charge + 1.   (2mk)

....

....

(d) Concentration of B in moles per litre.   (1mk)

....
PROCEDURE II
(i)   Using a measuring cylinder, measure 50 cm^3 of solution B in a 250mls plastic beaker.
(ii)   Measure the temperature of B and record in table II below.
(iii)   Using a measuring cylinder, measure 10cm^3 of Q and add into the plastic containing 50 cm3 of solution B. stir the mixture using a thermometer and record the highest temperature in the table II below.
(iv)   Repeat this procedure by adding 10cm^3 of solution Q for five times while recording the highest temperature formed. Complete table II below.

Total volume of solution Q in cm^3	0	10	20	30	40	50
Volume of solution B in cm^3	50	50	50	50	50	50
Highest temperature change						

                                                                                                (4mks)

(a) On the grid provided plot a graph of temperature (y-axis) against volume of solution Q (x-axis. (3mks)

(b) From the graph. Find;

   (i)   Volume of the solution Q required to neutralize 50 cm ^{3} of solution B. (1mk)

   ....

   ....

   (ii)   Highest temperature change.   (1mk)

   ....

   (iii) Determine the molar heat of neutralization of solution B. (Density = 1g/cm3, specific
          heat capacity = 4.2 kj/kg/k. molar mass of B = x grams)   (2mks)

   ....

   ....

2. You are provided with solid Z carry out the test below and record your observation and
   inferences in the spaces provided.
   (a) Place about a third of solid Y in a dry test-tube and heat strongly.

   Observations   **(1mk)**

   ....

   ....

   Inference   **(1mk)**

   ....

   ....

(b) Put a spatulaful of Z in a boiling tube. Dissolve with distilled water and divide into four portions.

Observations   (½ mk)

....

....

Inferences   (½ mk)

....

....

(i)   To the first portion add sodium hydroxide droo wise until excess.

Observation.   (½ mk)

....

....

Inference.   (½ mk)

....

....

(ii)   To the second portion add ammonia solution drop wise until excess.

Observation   (½ mk)

....

....

Inference   (½ mk)

....

....

(iii)   To the third portion is suspected to contain Lead II ions. Give the test and observation that are to be made to confirm presence of Lead II ions.

Test   **(1mk)**

....

....

Inference   **(1mk)**

....

....

(iv)   Carry out the test above to confirm the presence of Lead II ions.

Test   **(1mk)**

....

....

Inference   **(1mk)**

....

....

(v)   To the fourth portion add few drops of Barium Nitrate solution.

Observation   **(½ mk)**

....

....

Inference   **(½ mk)**

....

....

3. You are provided with slid S. Carry out the tests below and write your observations and inferences.

(a) Using a clean metallic spatula. Heat solid P in a non luminous flame.

Observation   (½ mk)

....

....

Inference   (½ mk)

....

....

(b) Dissolve remaining solid S in 10cm3 of distilled water in a boiling tube. Pour solution in four portions.

Observation   (1mk)

....

....

Inference   (1mk)

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(i)   To the first portion and 3 drops of acidified Potassium permanganate.

Observation (½ mk)

....

....

Inference (½ mk)

....

....

(ii)   To the second portion add a few drops of solution S and few drops of solution x. warm the solution.

Observation (1mk)

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....

Inference (1mk)

....

....

(iii)   To the third portion add spatula full of sodium carbonate provided.

Observation (1mk)

....

....

Inference (1mk)

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....

(iv) **To the fourth portion, determine the PH of the solution using universal indicator paper.**

Observation (1mk)

....

....

Inferences. (1mk)