Name ..... Centre / Index No. .....

Signature .....

P525 / 3
CHEMISTRY
(PRACTICAL)
Paper 3
Nov. / Dec. 2008
3¼ hours

UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Advanced Certificate of Education

CHEMISTRY

PRACTICAL

Paper 3

3 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

Answer **all** *questions.*

Record your answers on this question paper in the spaces provided.

Mathematical tables, slide rules and silent non-programmable calculators may be used.

Reference books (i.e. text books. Books on qualitative analysis, etc.) should **not** *be used.*

Candidates are **not** *allowed to start working with the apparatus for the first 15 minutes. This time is to enable candidates to read the question paper and make sure they have all the apparatus and chemicals that they may need.*

For Examiners' Use Only			
Q.1	Q.2	Q.3	Total
24	30	15	69

3. You are provided with an organic substance **Z**. You are required to determine the nature of **Z**.

Carry out the following tests on **Z** and record your observations and deductions in the table below.

TESTS	OBSERVATIONS	DEDUCTIONS
(a) Burn a small amount of **Z** on a crucible lid or spatula end.	Colourless liquid burns with a yellow non-sooty flame ✓ Reject: orange flame, non-luminous flame	Aliphatic, saturated compound (or with low C:H) ✓ Accept: low carbon content for C:H) Reject: low MM to mean low C:H
(b) To about 1 cm^3 of **Z**, add about 1 cm^3 of dilute sodium hydroxide solution	No observable change ✓ OR: Readily miscible / soluble in [illegible] to form a colourless solution.	Probably carboxylic acid, ketone, aldehyde, alcohol ✓
(c) To about 1 cm^3 of **Z**, add 2to 3 drops of neutral iron(III) chloride solution and warm. Accept No brown ppt ∴ CH_3COO^- absent	No observable change ✓ - No violet/purple colouration - Accept the brown colour of neutral iron(III) chloride remains/persists - or Z acquires brown colour of iron(III) chloride - Reject: yellow/brown solution formed - Reject orange solution to reflect the colour of $FeCl_3$	Phenol ✓ or CH_3COO^- absent.

Turn Over

TESTS	OBSERVATIONS	DEDUCTIONS
(d) To about 1 cm^3 of **Z**, add about 1 cm^3 of water. Shake and allow to stand. Test the resultant solution with litmus paper and divide the solution into two portions.	Miscible / soluble in water to form a colourless solution that turns blue litmus red. Reject: [illegible]	Carboxylic acid present. A[illegible] salts of [illegible]
(i) To the **first** portion of the solution, add 1cm^3 of sodium hydrogen carbonate solution.	Effervescence; Colourless gas that turned lime water milky and blue litmus red. Colourless solution remained.	Carboxylic acid confirmed
(ii) To the **second** portion of the solution, add 2 to 3 drops of 2,4 dinitrophenyl hydrazine solution (Brady's reagent).	Yellow / orange precipitate	Methanoic (HCOOH) acid confirmed or H-C(=O)-
(e) To about 0.5 cm^3 of **Z**, add about 1cm^3 of Tollen's reagent, warm and allow the mixture to stand.	Immediate cloudness followed by a silver mirror on warming. Reject: grey precipitate. Reject: black ppt, white ppt	Methanoic acid confirmed. Reject carboxylic acid

(f) From your results above, deduce the nature of compound **Z**.

Saturated Aliphatic hydroxy acid / Methanoic acid (2)

1.5