

SUGGESTED SCORING GUIDE BY;

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School Signature: (Signature)

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545/1
CHEMISTRY
Paper 1
July/August 2026
2 hours



Total Weighted Score		
Initials		

WAKISSHA JOINT MOCK EXAMINATIONS Uganda Certificate of Education

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INSTRUCTIONS TO CANDIDATES:

- This examination paper consists of two sections A and B.
- It has six examination items.
- Section A has two compulsory items.
Responses to section A must be written in the spaces provided.
- Section B has two parts; I and II.
Respond to only one item from each part.
- Responses to section B must be written in the answer booklet(s)/sheets provided.
- Respond to four items in all.
- Responses to each item in section B should start on a fresh page.
- Any additional item(s) responded to will not be scored.

Item No	Basis Code	Weighted Score	Scorers' Initials
1	T	06	K-I
	D	03	K-I
	E	04	K-I
2	C	06	K-I
	X	04	K-I
	I	03	K-I
_(3/4)	P		
	S		
	B		
_(5/6)	N		
	M		
	Be		
	Total Weighted Score		



Turn Over

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CS CamScanner

CS CamScanner

SECTION A

Respond to all the items in this section in the spaces provided.

Item 1

The Nakubungo Women group in Mukono district makes laundry soap from palm oil, caustic soda and water, as an income generating activity. The members in the area have used the soap for some time but it forms stains on white clothes making them dull, hence getting perturbed of what to do. In their bid to find a solution, a local Non Government Organisation (NGO) has donated cartons of a powdered agent to the group to test the quality of washing with the available water. You have been tasked by the group leader as a chemistry student in the holiday to prepare a report to the women group.

Task

As a chemistry learner,

- (a) State the categories of the cleaning agents and explain how they work

The Nakubungo Women group were making soapy detergent. A local Non Government Organisation donated soapless detergent. Both soapy and soapless detergents work by reducing the surface tension between the water and the dirt since they contain two parts; hydrophobic and hydrophilic, whereby the hydrophobic part attracts the dirt since it hates water, and the hydrophilic part dissolves in water to form lather. And on constant agitation, the dirt is removed due to the process of emulsification. The cloth can then be hung under sunshine.

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Basis code	T
Score	06

CI - category identified.

F - function.

NB: for F, accept any other alternative

$$2CI + 4F = 06$$

$$1CI + 4F = 05$$

$$0CI + 4F = 00$$

Deny all scores for wrong category.

- (b) Describe the side effect(s) associated with the laundry agents.

The laundry agents contain surfactants which are acidic in nature thus causing itching of the hands while using them during washing. This can be mitigated by washing with plenty of clean water on the affected area.

Si - side effect identified

Se - side effect explained

Sm - side effect mitigation

NB: accept any other side effect of both soapy and soapless

$$Si + Se + Sm = 03$$

$$Si + Sm = 02$$

$$Si + Se = 00$$

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Basis code	D
Score	03

Deny all scores for no mitigation.

Deny all scores for only one sided side effect

(must for both soapy and soapless)

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(c) What are;

(i) the similarities of the laundry agents

Both soapy and soapless laundry agents are effective in soft water like rain water. ✓ ⁵

^{S - Similarity} Both soapy and soapless laundry agents contain two parts; hydrophilic and hydrophobic parts. ✓ ⁵

2S = 02

1S = 00

(ii) the differences between the Non - Government Organisation (NGO) agent and that made by the women group.

The Non-Government Organisation agent is effective cleaning agent in both soft and hard water while that one made by the women group is effective in only soft water thus leaving some stains on the clothes. ✓ ^D

^{D - Difference} The Non-Government Organisation agent is non-biodegradable while that one made by the women group is biodegradable. ✓ ^D

2D = 02

1D = 00

Deny scores for E; once a learner identifies only one similarity or one difference.

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Basis code	E
Score	04

Item 2

Wars in different areas of the world have complicated the shipping of goods mainly paraffin to different countries including Uganda. Community members of a certain area in Western Uganda do not receive enough paraffin yet they depend on it for domestic purposes.

The government of Uganda has advised members to start producing Biogas from organic materials. The main component of Biogas is methane but it is produced with other bi-products which are carbon dioxide and hydrogen sulphide.

Community members have approached you and would like to know more about Biogas production.

Task

(a) Explain the category of products produced together with methane and how methane can be isolated from other products.

Carbondioxide, hydrogen sulphide and methane are all covalent compounds because they are formed by sharing of the outermost energy level electrons between non-metal atoms of Carbon and Oxygen atoms, hydrogen and Sulphur, Carbon and hydrogen respectively. ✓ ^R

Products are first liquified ^P at very high pressure and low temperature and then fed into a fractionating ^P column where methane can be separated from other products by fractional distillation of liquid air since the products have different ^P boiling points.

OK: Since hydrogen sulphide and carbon dioxide ^P are soluble in water, the products can be separated by water scrubbing. Methane can thus be separated from other products ^P.
 C - category
 R - Reason
 pf - purification
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Basis code	C
Score	06

- (b) Explain the suitability of methane as a fuel gas.
 $C + R + 3Pf = 06$
 $C + R + 2Pf = 04$; $C + R = 03$

Methane has low boiling points, thus can easily be separated from other products; cooled, stored and transported ^P.

Methane burns with a clean blue flame in presence of plenty of oxygen thus suitable for fuel use ^P.

Methane has a low density thus light during transportation and for fuel use ^P.

Methane is a gas at room temperature thus can easily be ignited ^P.

P - property.

At least $2Ps = 04$

$2 - 3Ps = 03$

- (c) Explain the dangers associated with biogas production. (to the environment)
 Deny some scores for any property not clearly explained.

During the use of biogas, methane which is the main component, burns in plenty of oxygen to produce carbon dioxide which accumulates in atmosphere, traps ^{Di} light and heat from sun, thus leading to global warming ^{Di}. This can be mitigated by use of other fuel alternative like electricity ^{Dm}.

The production of biogas pollutes ^{Di} the air since it leads to the production of toxic

gases like hydrogen sulphide which smell badly in the environment increasing risks ^{De} of respiratory and other diseases.

This can be mitigated by purifying the biogas well in a closed chamber to avoid escaping of the toxic gases ^{Dm}.

Basis code	I
Score	03

Di - Danger
 De - Explanation
 Dm - Mitigation

$Di + De + Dm = I = 03$

$Di + De = 00$

Deny scores for no mitigation of any danger.
 Deny scores for no explained global warming.

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