



AITEL EXAMINATION
UGANDA CERTIFICATE OF LOWER SECONDARY CURRICULUM
END OF YEAR 2023
S.2 CHEMISTRY

Time: 2:15hours

NAME:..... STREAM:.....

Signature.....

INSTRUCTIONS

This paper consists of two sections A and B. Attempt all questions in this section. Section A consists of questions that require short responses while section B consists of a question that requires you to write detailed responses.

SECTION	MARKS	COMMENT
A		
B		

SECTION A

1. The agricultural sector is a bedrock of Uganda's economy. In 2021, agriculture contributed around 23.8% to the economic growth of Uganda. Chemistry plays a pivotal role in the strength of Uganda's agricultural sector through improved agricultural productivity.



Explain briefly 3 ways how chemistry has enabled the presence of such variety of quality fruits in Nakasero market. (03marks)

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2. Classify each of the following as either physical or chemical change

a). Hydrochloric acid reacts with potassium hydroxide to produce a salt, water and heat. (1mk)

a) A soft piece of pure sodium metal is sliced and placed on water.(1mk)

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b) Water is heated until it begins to boil and produce steam.(1mk)

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c) The compound Potassium chlorate decomposes (breaksdown) into Potassium chloride solid and oxygen. (1mk)

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d) Iron metal rusts.(1mk)

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3a). Discuss the method of separation you will use for separation of iron from sand. (3mks)

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b). Name two solid substances that can be purified by sublimation.(2mks)

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a). When solid iodine was heated, it directly changed into a violet vapor without melting.

(i) What name is given to this process?(1mk)

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(ii) Name another two substances that can undergo a similar process like iodine.(2mks)

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4(a) Why should we recycle materials? (2mks)

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b) What are problems involved in recycling plastics?(4mks)

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c) Describe the dangers of using plastics to the environment and man.(5mks)

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d) Suggest two possible solutions to the dangers plastics pose to the environment you have written in (c)above.(2mks)

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5. Complete the table below well (15marks)

Element	Sulphur	Beryllium	Potassium	Nitrogen	Aluminium
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Symbol					
Atomic number					
Electronic structure					
Electronic configuration					

6 (a) The table below show the component of air and its percentage composition by volume, you are required to fill in the blank spaces. (05 marks)

Component	Percentage composition by volume
Nitrogen
Carbon dioxide
.....	0.03%
.....	0.9%
Oxygen

(b) Identify the component of air which can be detected by (03 marks)

Glowing splint

Anhydrous copper (II) sulphate

Calcium hydroxide solution

C). Christine forgot her mother's hoe in the garden on Monday evening. When she went to pick it on Friday evening, she found that the hoe had developed some brown color on its surface. Explain what happened to the hoe and give the factors that were involved in the process.

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7(a). What do you understand by the following terms.

i). Atomic number

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ii). Mass number.

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b). Draw the structure of magnesium atom, use it to State the;

i). Positions of subatomic particles

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ii). Charges on the subatomic particles.

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SECTION B

Kafanka Henry a Journalist at New Vision.



Every home in Uganda has either been infected or affected by HIV and AIDS. They have either lost a relative or have suffered a loss of a bread winner. Air pollution has gone steps a head of HIV in affecting Ugandans as it has claimed more lives than HIV, Daniel Okello, the director incharge of environment at Kampala Capital City Authority (KCCA), has said. "We lost 23,000 people in 2019 due to HIV in Uganda. In the same period, 26000 people died as a result of cardiovascular diseases linked to air pollution," he said. Okello was speaking during the launch of the air quality awareness week at the Uganda Media Centre in Kampala, May 4/11. The event, themed "Be air aware, be prepared", attracted top officials from the National Environment Management Authority (NEMA), Makerere University and Ministry of Health, who called for increased awareness and actions to curb air pollution. Okello mentioned of two

types of air pollution - outdoor pollution and household or indoor pollution which are all greatest environmental threat to human health around country pointing out Kampala; Mukono and Jinja with the poorest air quality, which is five times way above the critical threshold of World Health Organization. Okello said indoor air pollution resulting from cooking with biomass fuel particularly charcoal, firewood, coal, burning of organic fuels such as kerosene, burning of grass and waste products. Which are all carbon based. Partial combustion of these fuels leads to emission of carbon monoxide gas, which is poisonous if inhaled. Worse than indoor air pollution, headed, is outdoor air pollution include old cars spewing fumes. As the cars burn fuels, such as diesel and petrol topower engines, they release poisonous gases such as carbon monoxide and also lead frommotor vehicle emissions, dust from unpaved roads and construction sites, factories releasefumes filled with Sulphur dioxide gas which leads to acid rains and carbon monoxide gas which is poisonous. Burning of wastes including plastics, produces dioxins and furans, which cause cancer. Dr Ivan kimuli from Makerere University's lung institute said they have done studies that indicate that 11% of the population suffers from asthma and that was being aggravated by poor air quality and the same study indicated that children in rural settings had "better and less damaged lungs" than those in urban settings, who were exposed to pollutants in the air.

NEMA's director for environment monitoring and compliance, Waiswa Ayazika, said: "the government is currently making a clear plan to improve air quality involving every body's responsibility to save the current and future generation."

(a) State what is meant by the term "air pollution"? (02marks)

(b) From the article; state the different types of air pollution and outline how each type of air pollution is caused. (08marks)

(c) From the article, state the main air pollutants and show their effects to man. (08marks)

(d) Suggest a reason why Kampala, Mukono and Jinja have the poorest air quality which is five times away above the critical threshold of World Health Organization? (02marks)

(e) Suggest any 5 solutions that can be adopted into the government's strategic plan of how air pollution in the country can be greatly reduced (05marks)

END