

**Candidate's Name**.....

**Signature**.....

**545/1**

**CHEMISTRY**

**Paper 1**

**2024**

2 hours

**Uganda Certificate of Education**

**CHEMISTRY**

**Paper 1**

2 hours

**INSTRUCTIONS TO LEARNERS:**

➤ This paper consists of five questions;  
Answer **all** items. Answers to all items must be written in the spaces provided.

### Item 1

Periodic table is the arrangement of elements in their increasing order of atomic number. It also involves the study of useful mineral elements arranged in columns and row. Refer to the support tool provided in fig 1

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu	
87 Fr	88 Ra	89 Ac	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr	

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

- (a) The arrangement of elements in column is referred to as..... and in rows as..... (1 score)
- (b) What is the collective name given to elements in  
 Group (I) ..... (1 score)  
 Group (II) ..... (1 score)  
 Group (VII) ..... (1 score)  
 Group (VIII) ..... (1 score)
- (c) From fig 1, it is observed that each atom of an element occupies a unique position, giving it a unique number called atomic number. Each atom of an element weighs a certain mass called atomic mass/mass number.  
 (i) Explain what is meant by the terms atomic number and atomic mass of a given element (2 scores)

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 .....  
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(ii) Name the element numbered 15 and write its electronic configuration. (2 scores)

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.....

(d) Name the element numbered 30 and write a balanced equation for its reaction with dilute sulphuric acid. (2 scores)

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.....

(e) Write the formulae and names of compounds formed between atoms of elements numbered

(i) 19 and 17 (2 scores)

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.....

(ii) 13 and 8 (2 scores)

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.....

(iii) 1 and 16 (2 scores)

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## Item 2

Carbon is an element which exists vastly in nature, both in pure forms and in combined forms.

(a) Identify 4 cases where carbon is found in nature (2 scores)

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(b) Name the term used to describe the different forms of carbon that exist in the same physical state. (1 score)

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(c) Identify three different forms of carbon that exist in the same physical state (3 scores)

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(d) Some of the combined forms of carbon in the environment include carbon dioxide, which is one of the greenhouse gases

(i) Name two other greenhouse gases (2 scores)

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(ii) What are the sources of greenhouse gases? Explain what these gases do in the atmosphere. (2 scores)

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(iii) Give 3 uses of carbon dioxide in the environment (3 scores)

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(iv) There are process which require carbon dioxide in the environment to take place, thus reducing it while others release it in the environment. Identify processes which increase and decrease it in the atmosphere.

Increasing processes. (2 scores)

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Decreasing processes. (2 scores)

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(c) Show ways in which Rocks are useful to man. (3 scores)

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**Item 4**

1. Water bodies areas cover a bigger part of the earth's surface than dryland, water in them is of different qualities and possess different properties, some of which must be changed to make it fit for an intended purpose. In one way or another, human activities and practices have greatly affected water quality, making it unfit for an intended use. Fig 2 is river Nile



(a) State how you can test for the purity of water. (2 scores)

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(b) Name the chemical substance used to test for water state what is observed when the named substance is treated with water. (2 scores)

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(c) Identify human activities and practices which affect water quality in the environment. (4 scores)

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(d) List in order, the stages involved in water treatment. (3 scores)

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(d) There has been a concern about water supplied in Kabalega S.S community, this water is hard

(i) Explain what you understand by the term hard water. (1score)

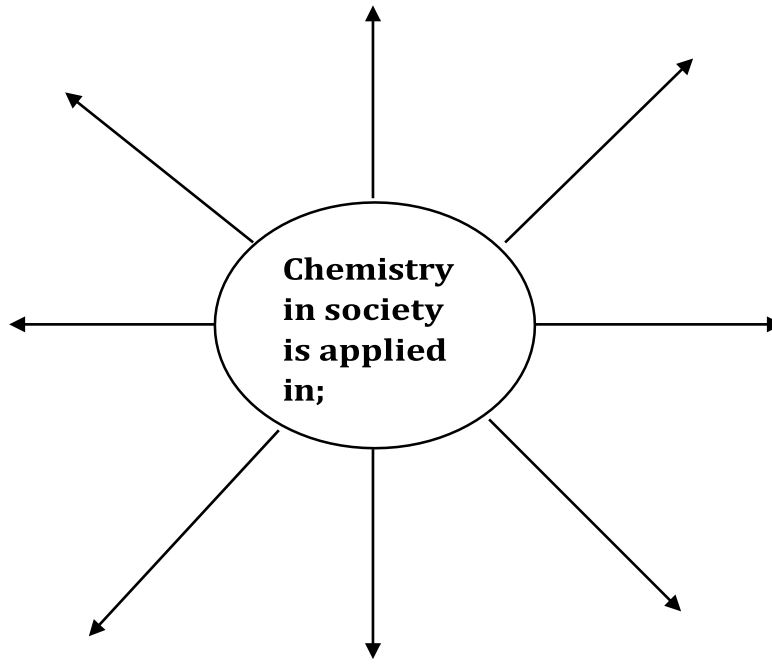
.....  
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(ii) Outline measures that can be taken to make this water soft. (4 scores)

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**Item 5**

Chemistry involves the study of matter, its composition and changes that occur to it when subject to different conditions. It is divergently involved in many aspects of our lives in the society. Complete the following mind map by indicating human practices and activities that require chemical products, stating the chemical products used. (16 scores)



**END**

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