

**PRESIDENT'S OFFICE**  
**REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**  
**GAIRO DISTRICT COUNCIL**  
**FORM TWO JOINT EXAMINATION - 02**  
**CHEMISTRY**

032

18<sup>TH</sup> MAY 2023

Time 2:30 Hrs (pm)

**INSTRUCTIONS**

1. This paper consists of three (3) sections A, B and C with a total of ten (10) questions.
2. Answer all questions in the spaces provided.
3. The following atomic masses may be used:  
[H = 1, O = 16, S = 32, Ca = 40, Na = 23, K = 39, C = 12]

**SECTION A (15 Marks)**

1. For each item (i) - (x), choose the correct answer from among the given alternatives and write its letter in the space provided.
  - i. A scientist was required to carry investigation of the powdered materials found in the area of crime. He made the possible guess of what the powder could be and went to the laboratory for experimentation. What was he trying to test in his experiment?  
A. Data  
B. Hypotheses  
C. Problems  
D. Observation
  - ii. Most of the time; the red buckets full of sand are expected to be seen in petrol station. This is because in petrol station the fire breaks out expected to happen is \_\_\_\_ that can be extinguished by sand.  
A. Class A fire  
B. Class B fire  
C. Class C fire  
D. Class D fire.
  - iii. Swimming pools are usually bubbled with chlorine gas before letting people have fun in it. The aim of doing this process is to:  
A. remove bad and noxious smell  
B. killing disease causing organisms  
C. making water attractive  
D. making water syrup.
  - iv. Which of the following chemical species have the same number of electrons?  
A.  $K^+$ ,  $Ca^{2+}$ ,  $Cl^-$  and Ar  
B. Cl, Be,  $Al^{3+}$  and  $O^{2-}$   
C.  $O^{2-}$ ,  $Ca^{2+}$ , H and  $Mg^{2+}$   
D.  $Na^+$ ,  $Mg^{2+}$ ,  $Be^{2+}$  and Li.
  - v. An element has the atomic number 19 and a mass number of 39. How many number of protons and neutrons are found in the nucleus of this element?  
A. 19 protons and 20 neutrons  
B. 20 protons and 19 neutrons  
C. 19 protons and 19 neutrons  
D. 20 protons and 20 neutrons.
  - vi. One of the most interesting thing that chemists focus/pay attention when they make study of a chemical substance is \_\_\_\_\_.  
A. Its force of attraction  
B. Its shape  
C. Its properties  
D. Its smell and colours.
  - vii. Separation of mixture by fractional distillation process is made possible if the constituents of the mixture differs in their:

- A. Boiling points
  - B. Melting points
  - C. Vapourizing points
  - D. Freezing point.
- viii. What will be the combining power of element T in the compound  $T_2X$ ?
- A. 1
  - B. 2
  - C. 3
  - D. 4.
- ix. One of the following series of methods explain the best ways of separating salt when mixed with sand.
- A. Evaporation, filtration and decantation
  - B. Decantation, evaporation and filtration
  - C. Sedimentation, evaporation and filtration
  - D. Decantation, filtration and evaporation.
- x. Which one of the following is not a product formed by the use of knowledge of Chemistry in agriculture?
- A. Fertilizers
  - B. Weed killers
  - C. Animal vaccines
  - D. Paints

2. Match the uses of the laboratory apparatuses in LIS A with its corresponding names from LIST B by writing its letter beside the number of the corresponding item in the table provided.

LIST A	LIST B
i. Used to spread heat and reduce the amount of soot getting into heating apparatuses.	A. Tripod stand
ii. Used to support beakers and flasks during heating process.	B. Reagent bottles
iii. Used to transfer the specific amount of liquid into the beakers/flask.	C. Wire gauge
iv. Used for keeping chemicals in small quantities when conducting chemical experiments.	D. Crucible
v. Used to add liquids dropwise	E. A pair of tongs
	F. Winchester bottles
	G. Pipette
	H. Dropper

### SECTION B (70 Marks)

#### All questions in this section

3. (a) Form one students attended a fire fighting seminar held at fire station. In the seminar they learned different ways on how to prevent fire. Which four ways were expected to be learnt by the students?
- (b) In an experiment, two iron nails A and B were used, Nail "A" was painted with reddish colour materials and nail 'B' was left naked. Both nails A and B were placed in a moist environment. After one-month weight of each nail was determined.
- i. Which of the two nails 'A' and 'B' would be heavier than before? \_\_\_\_\_  
Reason: .....

- ii. Mention the other three ways apart from painting that could be used to prevent the action taking place on nail 'B'.
4. Form one students went to the laboratory and found six bottles on the table with different contents:

- Bottle A: iron pieces and sand
- Bottle B: iodine and sand
- Bottle C: alcohol and water
- Bottle D: sodium chloride and water
- Bottle E: kerosene and water

If they were required to separate those contents; suggest the best method that could be used:






- i. Bottle A contents separated by \_\_\_\_\_
  - ii. Bottle B contents separated by \_\_\_\_\_
  - iii. Bottle C contents separated by \_\_\_\_\_
  - iv. Bottle D contents separated by \_\_\_\_\_
  - v. Bottle E contents separated by \_\_\_\_\_
5. (a) Form two students were arguing if water is a compound or a mixture. They went to their brothers in form three to seek for the correct explanation. What could be the possible explanations of what water is?  
Water is \_\_\_\_\_  
Because: (Give 4 reasons)
- (b) Matter undergoes physical change or chemical change when subjected to a certain condition. For each of the following processes indicate what kind of changes has happened to the substances mentioned?
- i. Burning a candle wax \_\_\_\_\_
  - ii. Decaying of meat \_\_\_\_\_
  - iii. Dissolution of common salt in water \_\_\_\_\_
  - iv. Souring of milk \_\_\_\_\_
  - v. Sublimation of iodine from the mixture with sand. \_\_\_\_\_

6. (a) A Gas M was prepared in the laboratory by form two students. It was found that gas M could harden the oil into margarine but also rarely found in the atmosphere due to its low density.
- i. Identify gas M .....
  - ii. Mention two chemical reagents that can be used to prepare gas M in the laboratory.....and.....
  - iii. Write down the word equation which represent a chemical reaction taking place in preparation of gas M. ....
  - iv. State how gas M can be identified chemically and uniquely?.....
- (b) Water used in urban areas is usually needed in large scales and it has to be obtained from rivers and lakes with a lot of impurities. Outline four ways of how the concerned authority take/follow in order to make sure that this kind of water reaches the community when it is safe and clean for human consumptions.

7. (a) State the meaning of an atom. ....
- (b) (i) A scientist named as John Dalton carried out experiments in 1808 investigating about matter. He then developed his own four ideas which were then developed into atomic theory of matter in which he said: Give those theories
- (ii) Dalton's ideas were modified by other emerged scientists (Thomson and Rutherford) upon further discoveries in which they said. Give four modifications of Dalton's theory about the atom
8. (a) Mrs. Mlugani was addressing the villagers about the uses of water for economic values. What four values will she tell the villagers?
- (b) Fill the missing details of the arbitrary element given in the table below.

ELEMENT	Atomic number	Mass number	Number of proton	Number of electrons	Electronic configuration
P	17	35	(i)___	(i)___	(iii)___
Q	(iv)___	40	20	(v)___	(vi)___
R	(vii)___	12	(viii)___	(ix)___	2:8
S	4	9	5	4	(x)___

9. Give the meaning of the following warning signs and state one way of handling substances carrying those signs.

	warning signs	meaning	handling
(a)	Flammable 		
(b)	Corrosive 		
(c)	Toxic 		
(d)	Explosive 		
(e)	Harmful 		

**SECTION C (15 Marks)**  
**Answer this question**

10. (a) Enjodari wants to select a good fuel for domestic uses in her home, what things should she consider? (Mention six (6) points)
- (b) Give four reasons for why coal is not a best choice of fuel for domestic purposes despite of its high heat content?