THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
DIPLOMA IN SECONDARY EDUCATTION EXAMINATION

732/1 **CHEMISTRY 1**

Time: 3 Hours **Year: 2023**

Instructions.

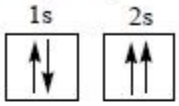
1. This paper consists of sections A and B with a total of **Fourteen (14)** questions.
2. Answer **all** questions from section A and **four (4)** questions from section B.
3. Section A carries **forty (40)** marks and section B Carries **sixty (60)** marks.
4. Cellular phones are **note** allowed in the examination room.
5. Write your **examination Number** on every page of your answer booklet(s).

SECTION A (40 Marks)

Answer all questions from this section. Each question carries 4 marks.

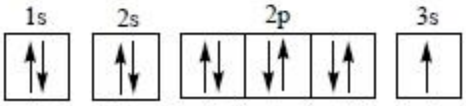
1. Observe/study each electronic configuration and suggest the violated rule/principle.

(a) *Beryllium, Be:*



(b) *Carbon, C:*

(c) *Sodium, Na:*



2. Justify the following facts by using the knowledge from chemical kinetics:
   (a) Some foods require higher temperature during cooking.
   (b) Fresh fruits and vegetables are stored in a refrigerator.
   (c) Some foods require baking soda (NaHCO3) during cooking.

3. Study the following reactions then write the rate expression in respect to the concentration of the reactants and products:
   (a) NO_2 (g) + CO (g) ----------→ CO_2 (g) + NO (g)
   (b) $S_2O_8^{2-}$(aq) + $3I^-$ (aq) --------→ $2SO_4^{2-}$(aq) + I_3^-(aq)
   (c) $2N_2O_5$(g) [O]----------→ $4NO_2$ (g) + O_2(g)

4. (a) How many moles are there in 35.8 g of magnesium ribbon?
   (b) Justify that 3.58 moles of zinc granules contain 232.7 g.

5. What will happen to a buffer solution made of CH_3 COOH and CH_3 COONa when the following solutions are added?
   (a) Dilute HCl
   (b) Dilute NaOH

6. Examine the IUPAC names of the given complexes and justify the observation of each case.
   (a) $\left[Fe(CN)_6\right]^{4-}$
   Hexacyanoiron(II)

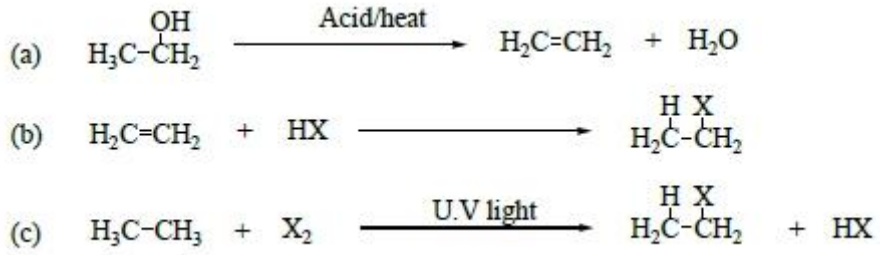
(b) $\left[Cu\left(NH_3\right)_4\right]SO_4$

Tetraamminecopper(II) sulphate

(c) $\left[Cr\left(H_2O\right)_4Cl_2\right]Cl$

Tetraaqudichlorochromate(III) chloride.

7. Suggest and give reason whether the reaction is free radical substitution, elimination or electrophilic addition.



8. Suggest six components that are essentials to design Chemistry teacher's guide for Form II secondary school.

9. The introduction of ICT has brought the development in different areas, especially the educational sector. Briefly explain any four significances of ICT in the teaching of Chemistry.

10. Suppose you have administered Chemistry tests among Form II and III students and the results were as follows:
Form II: 65, 67, 95, 41, 25, 55, 41, 71, 41 and 51.
Form III: 77, 67, 66, 71, 68, 72, 69, 75, 61 and 76.

a) Calculate the spread for each of the test scores.
b) What do the two spread values in 10 (a) mean?

SECTION B (60 Marks)

Answer all questions from this section. Each question carries 15 marks.

11. Bondeni Village is facing a serious water pollution problem in its water sources. Suggest six ways to overcome the problem.

12. (a) Explain the phenomenon of isomerism.

    (b) Outline the two types of isomers exhibited by alkenes by citing one example in each.

    (c) Draw and give the IUPAC names of alkenes that will be obtained from the dehydration of the following compounds:

    (i) 2 – methylpentan-3-ol

    (ii) Propan – 2 – ol

    (iii) 3-methylbutan – 2 – ol

    (iv) 4,5 – dimethylhexan – 3 – ol

13. (a) Justify the statement that advancement in chemistry resulted into more negative impacts on the environment.

    (b) Identify six teaching and learning materials.

14. Always primary standard reagents are used to standardize secondary standard reagents. In four points, evaluate the effectiveness of anhydrous sodium carbonate in standardizing hydrochloric acid.