# TANZANIA HOME & ONLINE STATIONERY

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# CHEMISTRY FORM FOUR

**Instructions**

1. This paper consist of section A,B and C with a total of eleven (11) questions
2. Answer all questions from section A and B and only two (2) questions from section C
3. Section A carriessixteen (16) marks and section B carriesfifty four (54) marks and C carries thirty (30) marks
4. All writing should be in blue or black ink except for drawings which should be in pencil
5. Write your assessment number at the top right corner of every page.
6. The following constant may be used,
   - Atomic masses; $H = 1,\ O = 16, Cl = 35.5, Ca = 40, Na = 23, C = 12$
   - Avogadro`s number =6.02x$10^{23}$$mol^{-1}$
   - G.M.V at S.T.P =22.4$dm^3mol^{-1}$
   - 1Faraday =96500coulombs
   - Standard temperature =273k
   - 1 litre = 1dm3=1000$cm^3$
7. Table below is for examiner`s only

| QUESTION NUMBER | PUT A TICK FOR ATTEMPTED QUESTION | SCORE | EXAMINER`S INITIAL |
|---|---|---|---|
| 01 | | | |
| 02 | | | |
| 03 | | | |
| 04 | | | |
| 05 | | | |
| 06 | | | |
| 07 | | | |
| 08 | | | |
| 09 | | | |
| 10 | | | |
| **TOTAL** | | | |

**SECTION A**(16 marks)

Answer all questions in this section

1. For each of the following items (i-x) choose the correct answer from among the given alternatives and write it`s letter besides the item number in the answer booklet (s) provided.

i) Which equation represents the combustion of methane with the product collected at 12℃?

A. $CH_{4_{(L)}} + 20_{2_{(g)}} \rightarrow CO_{2_{(g)}} + 2H_{2O_{(L)}}$

B. $CH_{4_{(L)}} + 20_{2_{(g)}} \rightarrow CO_{2_{(l)}} + 2H_{2O_{(g)}}$

C. $CH_{4_{(g)}} + 20_{2_{(g)}} \rightarrow CO_{2_{(g)}} + 2H_{2O_{(g)}}$

D. $CH_{4_{(g)}} + 20_{2_{(l)}} \rightarrow CO_{2_{(g)}} + 2H_{2O_{(L)}}$

E. $CH_{4_{(L)}} + 20_{2_{(g)}} \rightarrow CO_{2_{(g)}} + 2H_{2O_{(L)}}$

ii) Which substance can be reduce when heated with carbon?

A. Aluminium Oxide
B. Calcium carbonate
C. Iron (III) Oxide
D. Magnesium Oxide
E. Sodium Oxide

iii) In the following equilibrium equation $2SO_{2_{(g)}} + O_{2_{(g)}} \rightarrow 2SO_{3_g}$, the forward reaction is exothermic, which change would increase the production of Sulphur trioxide at equilibrium.

A. Increase temperature
B. Decrease temperature
C. Decreasing Sulphur dioxide concentration
D. Decreasing pressure
E. Adding catalyst



iv) Which carbonate is most stable to heat?

A. Calcium carbonate
B. Lead (ii) Carbonate
C. Copper (ii) Carbonate
D. Iron (ii) Carbonate
E. Zinc Carbonate

v) Substance X liberated chlorine gas from potassium chloride. The behavior of X is described as

A. An oxidizing agent
B. A reducing agent
C. A catalyst
D. Bleaching agent
E. An oxidizing and reducing agent

vi) Which among of the following is agricultural chemical product made by the application of chemistry

A. Drugs
B. Pesticides
C. Yeast
D. Cement
E. Clothes

vii) A current of 0.2A was passed through an electrolyte for 16 minutes and 40 seconds. What is the quantity of electricity produced in coulombs?

A. 2000C
B. 1000C
C. 0.20C
D. 7686C
E. 200C

viii) Which of the following compound does not belong to alkenes homologous series?
A. $C_2H_4$
B. $C_3H_6$
C. $C_5H_{10}$
D. $C_4H_8$
E. $C_6H_{14}$

ix) Aluminium does not react with water and does not corrode much in air because?
A. It is below hydrogen in the reactivity series
B. It form stable carbonate which prevent reactions
C. It is very stable
D. The metal is covered with a protective coating of an oxide
E. Aluminium ions have positive charges

x) When burning fuel produce a blue colour it means there is
A. Adequate supply of Oxygen without production of soots
B. Inadequate supply without production of soots
C. Adequate supply of oxygen with production of more heat
D. Inadequate supply of oxygen with production of soots
E. Adequate supply of oxygen with production of less heat



2. The table below is the list of different fire extinguisher and their corresponding chemical composition. Match the fire extinguisher in list A and its corresponding chemical composition in list b by writing letter besides the item number.

| **LIST A** | **LIST B** |
|---|---|
| (i) Foam extinguisher<br>(ii) Halous extinguisher<br>(iii) Dry chemical extinguisher<br>(iv) Blanket extinguisher<br>(v) ABC extinguisher<br>(vi) Wet chemical extinguisher | A. Air pressurized water<br>B. A asbestos<br>C. Potassium acetate<br>D. Carbon dioxide under extreme pressure<br>E. Bromochlorodifluoro methane<br>F. Mono- ammonium phosphate with a nitrogen carrier<br>G. Protein and fluoro protein<br>H. Sodium bicarbonate powder pressurized by nitrogen |

| List a | i | ii | iii | iv | v | vi |
|---|---|---|---|---|---|---|
| List b | | | | | | |

**SECTION B**(54 marks)

Answer all questions from this section

3. a) A sample of water when boiled and then electrolyzed, the conductivity decreased sharply compared to unboiled water.
   (i) Give reason, explain why conductivity was decreased after the sample was boiled?
   (ii) When the person blown through delivery tube in the boiled water the original conductivity was restored. Explain why?

   b) Form four students from Kasamwa secondary school found unlabeled chemical in the laboratory with PH of 7, boiling point of 100℃ and melting point of 0℃. The students were confused whether the chemical was water or not. How can you assure them that the chemical was real water and not other thing?

4. (a) The following are steps to follow in lighting of the Bunsen burner. However these steps are not in correct order; Rewrite them in the correct sequence.
   i) To extinguish the flame, turn off the gas tap to stop the gas flow
   ii) Light the gas at the top of the barrel with a lighted match stick
   iii) Turn the colar to close air hole completely
   iv) Keep your face away from the top of the barrel
   v) Adjust the gas tap until the supply of the gas is enough for a flame
   vi) Turn on the fully to ensure that plenty of the air enters the burner

   (b) Why should the chemistry laboratory exists open outward?

   (c) How could you help a person with bruise caused by hard hit?

5. Both egg shells and oyster shells contains calcium carbonate. The calcium carbonate in the shells is measured by reacting it with an acid.
   a) (i) Using hydrochloric acid, write the chemical equation for reaction
      (ii) Why would the mixture of calcium carbonate and the acid loose mass as they react?
   b) How would you know that?
      (i) The reaction between the shells and the acids has reached the completion
      (ii) There is no more calcium carbonate in the shell
   c) How would your results tell about the amount of calcium carbonate in the eggshells and oyster shell?

6. A metal X (Atomic number 11) burn in chlorine to produce a white solid chloride

(a) (i) By means of diagram illustrates the arrangements of electrons in X both before and After reaction

(ii) Write balanced reaction equation for the reaction between chlorine and X

(b) With reasons, discuss the properties of Y and account for them generally in

i) Melting point

ii) Solubility

iii) Electrical conductivity

(c) (i) If concentrated sulphuric acid were to be added to solid Y, what would you expect to observe?

(ii) Write the balanced equation for the reaction in (c)(i) above.

7. (a) State three applications of saturated hydrocarbons in our daily life.

(b) Account for the following observations

i) Most of petroleum station are built in an open space

ii) Alkanes do not undergo addition reaction but alkenes and alkynes undergoes



(c) In the preparation of fuel (coke) Mr. Alex used a mechanism of decomposing by heating different organic fuel in the absence of air (oxygen)

i) Name the process carried by Mr. Alex while preparing the fuel

ii) What is the aim of the process carried above?

iii) Coke is termed as non- renewable source of energy. Explain why?

8. (a) Giving an example for each, give three uses of matter in daily life

(b) A form three student conducted an experiment to prepare a gas in laboratory by decomposing a certain compound using electricity. She allowed a steady current to flow through the solution for 3 hours at S.T.P =, If the volume of the gas obtained was $4.12dm^3$ and the gas relighted a glowing splint.

i) Name the gas that was produced

ii) Calculate the electricity current that was flowing in the solution

**SECTION C** (30 marks)

Answer two (02) questions from this section

9. Explain how to handle chemicals having the warning sign of flammable, corrosive, harmful, explosive and toxic in the laboratory
10. By giving six points, explain how to maintain soil fertility of a particular area.
11. Explain six effect of water pollution in Mwanza city council.

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