R&PUBL IC OF SOMALILAND

FORM FOUR EXAMS, 2018

CHEMISTRY

2018

NATIONAL EXAMINATION BOARD

SomExams

01

Total Score

NAME: .....

ROLL No: .....

SCHOOL NAME: .....

Republic of Somaliland

Somaliland National Examination and Certification Board

FORM FOUR

EXAMINATION

Chemistry

June 2018

TIME: 2 HOURS

Plus 10 minutes for reading through the paper

INSTRUCTIONS TO CANDIDATES:

- This paper consists of 13 printed pages with the cover page.
- Inform the invigilator if there are any missing or extra pages.
- Answer ALL questions
- All answers must be written in the spaces provided.
- If you make a mistake, cross out the incorrect answer clearly and write your correct answer.

PART TWO: 20 MULTIPLE CHOICE QUESTIONS **[40 MARKS]**

PART THREE: 6 STRUCTURED QUESTIONS **[60 MARKS]**

TOTAL MARKS [100 MARKS]

Use this page for rough work. It will NOT be marked.

Part One Circle the correct Answer (40 Marks)

1. Aluminum is extracted from its ore by the process:-

   a) Roasting in air
   b) Heating with carbon
   c) electrolysis
   d) Heating with carbon monoxide

2. Methyl orange indicator, the color of alkaline solution is:-

   a) red
   b) yellow
   c) blue
   d) pink

3. Which of the following atoms has the lowest atomic radius

   a) Carbon
   b) Sodium
   c) Magnesium
   d) Chlorine

4. In the Haber process mixture of two gases is compressed to a pressure about:-

   a) 100 Atm presser
   b) 150 Atm p
   c) 200 Atm
   d) 50 Atm

5. Which of the following is an Isomer of Hexane

   a) 2 methyl butane
   b) 2- methyl Hexane
   c) 2- Methyl Pentane
   d) 2- methyl heptane

6. The number of moles in 88 gram of CO_2 is:- (Ram= C=12, o=16)

   a) 0.5 Mole
   b) 1 Mole
   c) 2 Moles
   d) 3 Moles

7. Which of the following is a non-polar molecule:-

   a) Oxgen
   b) Water
   c) Hydrogen flouride
   d) Hydrogen Chloride

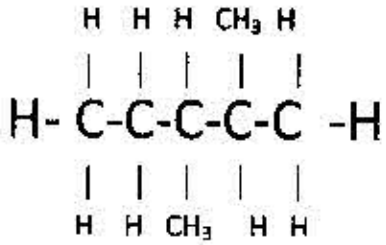
8. The reaction between alcohol and carboxylic acids produce:-

   a) Esters
   b) Aldyhides
   c) Ketons
   d) Alkenes

9. The electronic configuration of potassium is 2,8,8,1 potassium atom is in:-

   a) Group 2 and Period 8
   b) Group 8 and period 1
   c) Group 1 and period 4
   d) Group 2 and period 4

10. The name of the compound with the structural formula below is



   a) 4,3 - dimethyl pentane
   b) 3,3 dimethyl pentane
   c) 2,3 dimethyl pentane
   d) 1,4 dimethyl pentane

11. A substance that increase the rate of reaction is:-

   a) Oxidizing agent
   b) Reducing agent
   c) Conversion
   d) Catalyst

12. The formula mass of SO_2 is:

a) 64 g
b) 32 g
c) 16 g
d) 40 g

13. $Na_2SO_4 + BaCl_2 (ag) \longrightarrow BaSO_{4(S)} + 2NaCl_{(ag)}$

the above reaction is:-

a) Oxidation reaction
b) Precipitation reaction
c) decomposition reaction
d) Neutralization reaction

14. One mole of any gas can Occupy

a) 26 dm^3
b) 24 dm^3
c) 25 dm^3
d) 27 dm^3

15. The PH of strong acids is between:-

a) 6-7
b) 1-2
c) 8-9
d) 10-14

16. Which of the following is an allotrope of sulphure:

a) Diamond
b) Graphite
c) Monoclinic
d) Contact process

17. Catalyst used for the preparation of oxygen in the laboratory is

a) Vanadium (v) Oxide
b) Magnesium (v) Oxide
c) Manganese dioxide
d) Magnesium Oxide

18. Which of the following is ionic compound?

a) Carbon dioxide
b) potassium chloride
c) Ammonia
d) Nitrogen dioxide

19. The most common reaction of alkenes is

a) Substitution reaction
b) addition reaction
c) Hydrolysis reaction
d) rearrangement reaction

20. P-sub-shell contains maximum number of

a) 2 electrons
b) 6 electrons
c) 4 electrons
d) 5 electrons

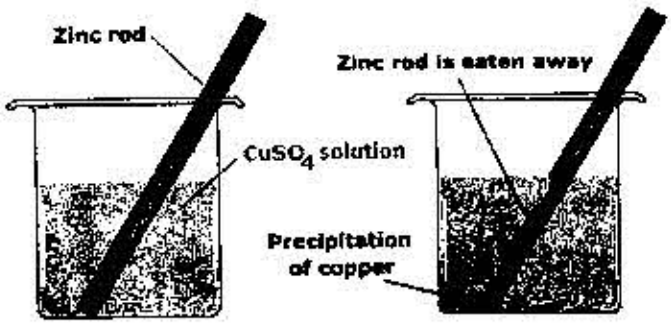
Part two Structured Questions (60 marks)

1. The table below shows the properties of metals and non-metals

No	Properties	Metal or Non-Metal
1	Good conductors of heat and electricity	
2	Insulators	
3	They form positive ions	
4	They form negative ions	
5	They form basic Oxide	
6	They form acidic	

a) Using the above table which is metal property and which is non-metal property?

b) in chemistry lab a student add Zinc metal with a copper(ii) sulphate as show below



$Zn_{(s)} + CuSO_{4(aq)} \longrightarrow$ _____ + _____

i. Name the products formed in the above reaction?

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ii. Give the name of the above reaction?

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iii. Briefly Explain why Zn takes the place of Copper in the Solution?

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c) Metals can be extracted from their ores by using different methods state three different extraction methods?

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d) List four metals and state their uses in everyday life?

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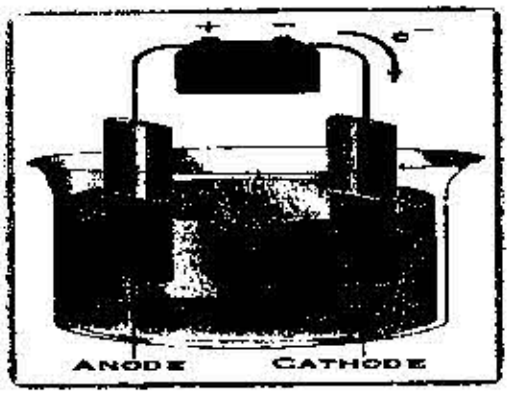
(10 Marks)

2. Dilute Sulphuric acids was electrolyses as show the diagram below



a) What is electrolysis and electrolyte?

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b) Write down the half equation for the reactions expected at each electrode:-

i. Anode :_____

ii. Cathode: _____

c) Name the substance that is formed at the Cathode?

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d) State the substance that is formed at anode?

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e) Find the quantity of electricity used when 2 ampere of electricity is passed through dilute sulphuric acid in 30 seconds?

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(10 Marks)

3. Magnesium sulphate ($MgSO_4$) is one of the salts that is prepared in the laboratory:-

a) What is the formula mass of $MgSO_4$? (RAM = Mg=24, O=16, S=32)

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b) Calculate the molar mass of $MgSO_4$?

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c) How many grams are there in 0.5 mole of $MgSO_4$?

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d) How many moles are there in 180g of Magnesium sulphate?

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(10 Marks)

4. The table below shows some isotopes of different elements:-

No	Element	Symbol	Isotopes	
1	Chlorine	CL	$^{35}_{17}Cl$	$^{37}_{17}Cl$
2	Carbon	C	$^{12}_{6}C$	$^{14}_{6}C$
3	Magnesium	Mg	$^{24}_{12}Mg$	$^{26}_{12}Mg$

a) Define the term Isotopes?

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b) Write down the electronic arrangement of chlorine atom in Sp,d,f form?

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c) Write down the electronic arrangement of magnesium atom in boxes form?

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d) State the two rules / laws

a) Paul exclusive principle?

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b) Hund's rule?

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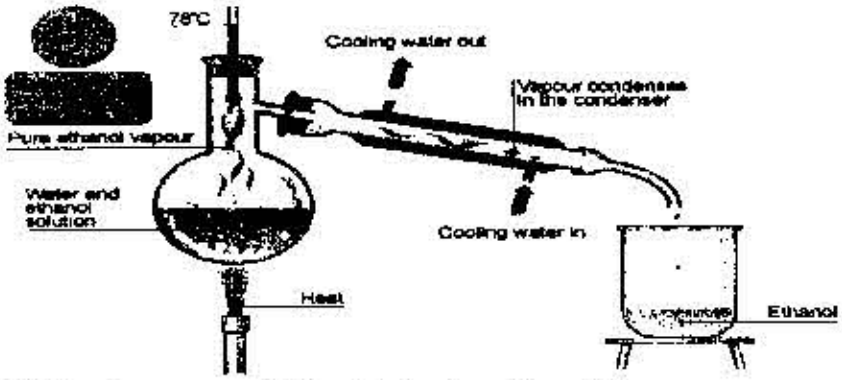
e) Draw a cross, dot diagram of chloride ion and Magnesium ion (Mg^{2+})

(10 Marks)

5. Alcohol are the third family of Organic compound, ethanol is best known of all.



a) State two ways of Manufacturing ethanol?

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b) State some properties of ethanol?

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c) look at this reaction below:-

Ethene + Water $\rightleftharpoons$ _____

i. Name the product formed in the above reaction?

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ii. To complete the above reaction what are the conditions needed?

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iii. Write a balanced equation for the reaction.

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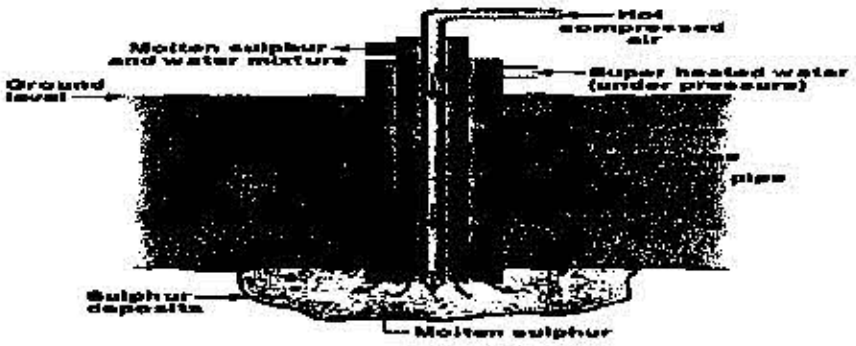
(10 Marks)

6. Sulphuric occurs as free element in huge underground sulphur beds:



Frasch process for the extraction of sulphur (or mining of sulphur).

a) Name the process of extracting sulphur from underground beds?

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b) When extracting sulphur, supper heated water ($165c^{0}$) is injected into the deposit, state the reason or function for this water?

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c) Sulphuric acid is the most manufactured chemical in industries each year:-

i. Name the process of manufacturing sulphuric acid in industries?

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ii. State the raw material used in the above process (i)

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(10 Marks)

.....End.....