OK

Total Score

Name.....

School .....

Roll No .....

Republic of Somaliland

Somaliland National Examination Board

Form Four

Chemistry

Examination

JUNE 2021

TIME 2 HOURS

Plus 10 minutes for reading through the paper

INSTRUCTIONS TO CANDIDATES

This paper consists of **10** printed pages.

Count them now. Inform the invigilator if there are any pages missing.

Exam consists of two Parts:

PART 1:	Multiple choice Questions	40 Marks
PART 2:	Structured Questions	60 Marks
	TOTAL	**100 Marks**

- Answer ALL questions in Part 1 and 2.
- Extra papers and Mobile Not Allowed.

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

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Part One: Multiple Choice

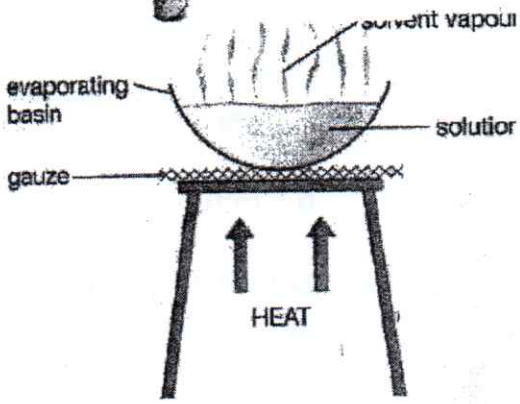
(20 X 2 Marks = 40 Marks)

1. The apparatus shown below is called



   a. Funnel filter
   b. Wash bottle
   c. Dropper
   d. Pipe

2. Name of the separation technique shown below is:-



   a. Filtration
   b. Distillation
   c. Decantation
   d. Evaporation

3. Which gas is NOT found in clean air:-
   a. Carbon dioxide
   b. Carbon Monoxide
   c. Nitrogen
   d. Oxygen

4. Which pollutant found in air does NOT have an effect to the respiration:-
   a. Carbon Monoxide
   b. Lead compounds
   c. Oxides of Nitrogen
   d. Sulphur dioxide

5. Which products formed at the electrodes when a concentrated solution of sodium chloride is electrolyzed?

	Cathode(-)	Anode(+)
A	Hydrogen	Chlorine
B	Hydrogen	Oxygen
C	Sodium	Chlorine
D	Sodium	Oxygen

6. Which raw shows the condition for manufacturing Sulphuric acid?

	Pressure (atm)	Temperature /C^0	Catalyst
A	2	450	Vanadium (v) oxide
B	2	250	Iron
C	200	450	Iron
D	200	250	Vanadium (v) Oxide

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7. Iron forms an Oxide with formula Fe_2O_3. What is the relative formula mass of this Oxide?
   a. 176
   b. 100
   c. 136
   d. 160

8. Water is formed when 48g of Oxygen react with 6g of hydrogen. What mass of Oxygen combines with 2g of hydrogen?
   a. 12g
   b. 16g
   c. 96g
   d. 144g

9. How many grams are there in 2 moles of HNO_3 (RAM:- H=1, O=16, N=14).
   a. 120g
   b. 126g
   c. 106g
   d. 100g

10. How many moles are there in 64 grams of Oxygen molecules (O_2)?
   a. 2 moles
   b. 4 moles
   c. 3 moles
   d. 1 mole

11. Q^+ is an ion of element Q, what has the highest value:-
   a. Nucleon number
   b. Number of electrons
   c. Number of neutrons
   d. Number of protons

12. Rubidium is in group1 metals, which statement is not correct about Rubidium:
   a. It has high melting point in lithium
   b. Has one electron in its outer shell
   c. Reacts with chlorine to form RbCl
   d. It reacts vigorously with cold water

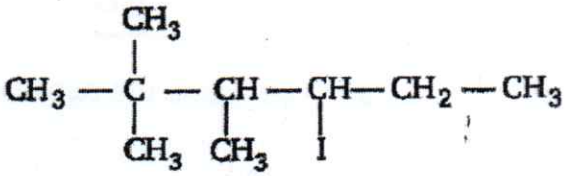
13. Which element will have the largest atomic radius
   a. Magnesium
   b. Potassium
   c. Rubidium
   d. Sodium

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14. Which pairs of elements will react together most violently:-
    a. Chlorine and Lithium
    b. Chlorine and Potassium
    c. Iodine and Lithium
    d. Iodine and Potassium

15. Which atom has two more electrons than an atom of noble gas:-
    a. Aluminum
    b. Bromine
    c. Calcium
    d. Rubidium

16. The correct IUPAC name of the compound shown below is:-



    a. Hexane
    b. 2,2, trimethyl hexane
    c. 2,2,3 trimethyl hexane
    d. 2-dimethyl hexane

17. Which of the following is an alkene:-
    a. CH_2
    b. CH_4
    c. C_3H_6
    d. C_6H_6

18. Halogeno Alkanes naturally found are:-
    a. Abundent
    b. Rare
    c. Plenty
    d. Pro-found

19. Ethene react with Y to produce:-

Y is:- **Ethene +Y** $\longrightarrow$ **Ethanol**

    a. Hydrogen
    b. Oxygen
    c. Steam
    d. Yeast

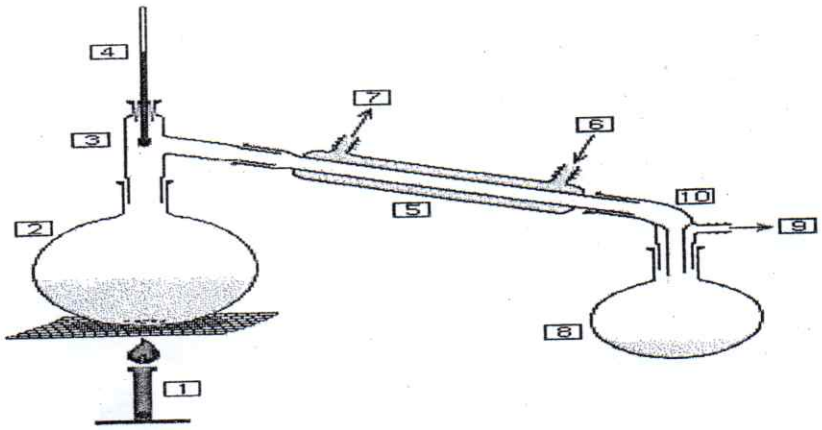
20. The mass percent of Oxygen in water (H_2O) molecule is:-
    a. 80
    b. 88
    c. 100
    d. 78

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PART TWO Structured Question

(10 X 6=60 marks)

1. The apparatus shown below is one of the separating technique for Mixtures



a. Give Name the above separating technique? (2 Marks)

.....

.....

b. Name the water purified the above separating technique? (2 Marks)

.....

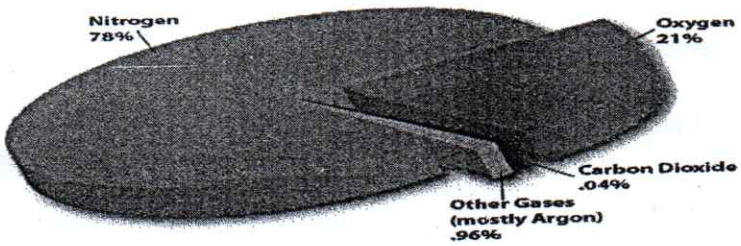
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c. State two uses of the water purified in these ways? (2 Marks)

.....

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2. The Major gasses in air are 79% nitrogen and 20% Oxygen:



a. Name another gaseous element in the air? (2 Marks)

.....

.....

b. State compounds in air? (2 Marks)

.....

.....

c. Two pollutants in air are CO and NO describe how Carbon Monoxide is formed? (2 Marks)

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3. A compound X contain 54.54% Carbon and 9.9% of hydrogen and 36.37% of Oxygen

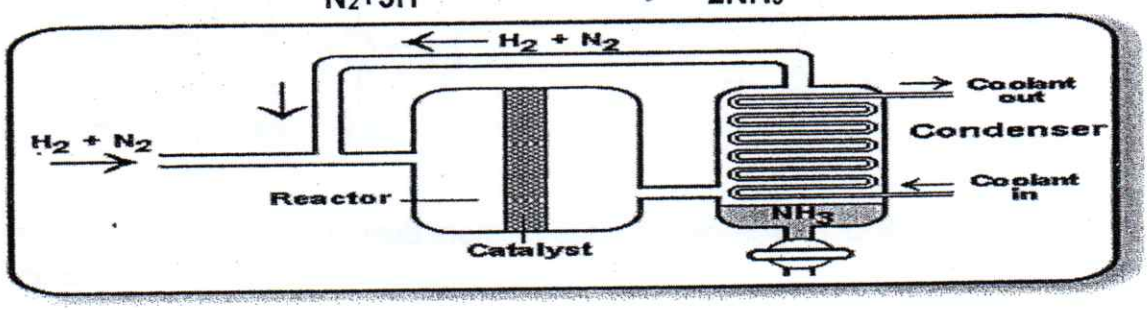
   a. Define the following term:-
      i. Empirical Formula: (1 Marks)
      .....
      .....

   b. Calculate the empirical formula of the above compound? [RAM:- C=12, H=1, O=16] (3 Marks)
      .....
      .....
      .....
      .....

   c. Compound X has a relative molecular mass of 88. Calculate the molecular formula? (2 marks)
      .....
      .....
      .....

4. Ammonia is made by Haber process:-

$$N_2 + 3H \longrightarrow 2NH_3$$



   a. Describe how hydrogen and nitrogen gases are obtained? (2 Marks)
      .....
      .....
      .....

   b. The above reaction is carried out at high pressure state the advantages of high pressure (2 Marks)
      .....
      .....

   c. State two major uses of Ammonia? (2 Marks)
      .....
      .....

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5. Ammonium nitrate NH_4NO_3 is an Important fertilizer:-

   a. Calculate the relative formula mass of NH_4NO_3 (RAM:- N=14, O=16, H=1) (2 Marks)

   .....
   .....
   .....
   .....

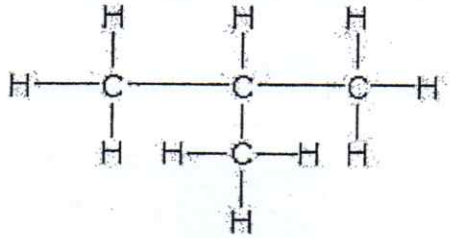
   b. Calculate the mass percent of Nitrogen in ammonium nitrate? (2Marks)

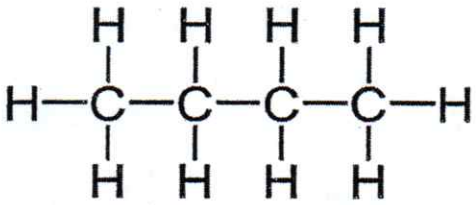
   .....
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   c. Calculate the mass percent of Oxygen in Ammonium nitrate? (2Marks)

   .....
   .....
   .....

6. The structural formula of two hydrocarbons are shown below:-





   a. The above hydrocarbons are Isomers describe why they are Isomers? (2 Marks)

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   .....
   .....

   b. Distinguish between structural Isomerism and stereoisomers? (2Marks)

   .....
   .....
   .....
   .....

   c. State the two types of stereoisomers? (2 Marks)

   .....
   .....
   .....
   .....

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7. The symbols of four particles are shown below

A	B	C	D	E
K^+	Cl^-	S	Mg^{2+}	Ar

a. Calculate the number of electrons in A and D? (2 Marks)

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.....
.....

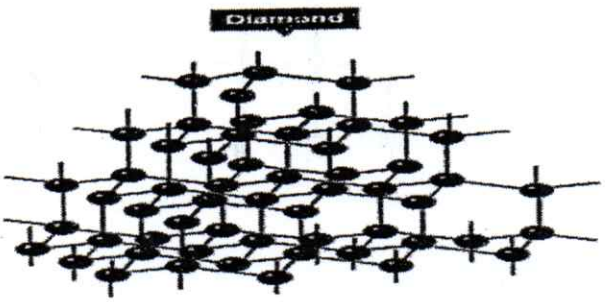
b. Write down the electronic configuration in *SPDF* OF particle A and D? (2 Marks)

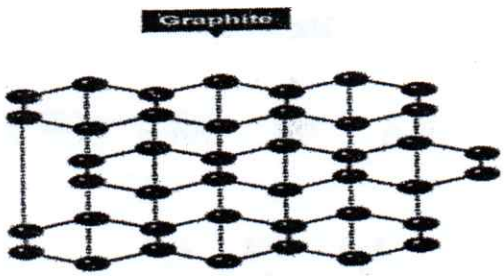
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c. State Pauls exclusive principle and spin pairing (2 Marks)

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8. Diamond and graphite are two naturally occurring forms of Carbon





a. Name the type of structure in Diamond? (2 Marks)

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.....

b. Explain why diamond has a higher melting point? (2 Marks)

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.....

c. Explain why graphite can act as a lubricant? (2 Marks)

.....
.....
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9. Below is five elements in the periodic table

A	B	C	D	E
Na	K	Mg	Ca	Cl

a. Element A and C which one is more reactive? Explain your answer? (2 Marks)

.....

.....

b. Element A and E which one has a larger atomic radius? Explain your Answer? (2 Marks)

.....

.....

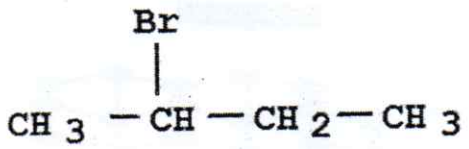
c. Element A and B which one has a higher first ionization energy? Explain your Answer? (2 Marks)

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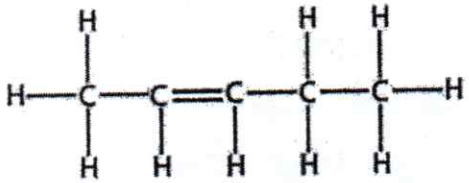
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10. Below is the structure of several Organic Compounds:-

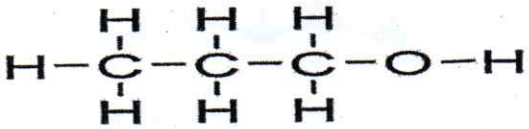
A.



B.



C.



a. Give the IUPAC name of compound B? (2 Marks)

.....

.....

b. Give the homologous series and general formula to which compound B belongs to? (2 Marks)

.....

.....

c. If Compound B reacts with Oxygen, Name the product formed? (2 Marks)

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