**GATITU MIXED SECONDARY SCHOOL**

**END OF TERM 1 EXAMS**

FORM 3 CHEMISTRY

1. Naturally occurring lead has the isotopes 206pb and 208 Pb in the ratio of 1:1. Calculate the relative atomic mass of the lead (2mks)

2. Study the following chart for the lab preparation of dry nitrogen gas

N2

N2

H2O

N2

O2

H2O

co2

N2

O2

H20

Step 1 step2 step 3

a) State what happens in step 1,2 and3(3mks)

b) Name the compounds used in step 1 and 2 respectively (2mks)

3. Chlorine can be manufactured by electrolysis of the brine in the mercury cathode cell

a) Write equation for the reaction at the

i) Anode

ii) Cathode (2mks)

4 a) An element B is below calcium in the same group in the periodic table .Write the equation for the reaction o f B with water (1mk)

b) A

Steam flame

Magnesium powder

heat

i) State the two observations that will be made in the tube as the heating is carried out (2mks)

ii) What substances was

a) Burning at A

b) Produced at A (2mks)

c) Write a word equation for the reaction in the tube

5. When potassium manganete (IV) reacts with concentrated hydrochloric acid, chlorine gas is produced,. Write a balanced equation to represent this reaction (2mks)

b) Element X has two isotopes. Two thirds of 33x and one third 30 x . What is the relative mass of the element X(2mks) 16 16

6 a) Elements A, B and C have atomic number 17, 19 and 20 respectively

What are the valencies of A and B respectively (1mk)

b) To which group of the periodic table do A, B and C belong (1 ½ mks)

c) In which period do elements A and C lie (1mk)

d) Which of the three elements is a non metal (1mk)

e) Write the formula of the compounds formed when

i) B reacts with a

ii) C reacts with oxygen (2mks)

f) The mass numbers of A and B are 35 and 39 respectively . How many

I) Neutrons des A have

ii) Protons does B have (2mks)

7. Draw an electron dot –cross diagram to show how bonding takes place in water ( O=8,H=1) (2mks)\

8. A gaseous hydrocarbon has the following composition 85.7% carbon, 14.3% hydrogen and has a molecular mass of 56. Determine the molecular formula of the hydro carbon (c=12, H=1) (3mks)

b) The volume of a given mass of a gas is 250cm3 at 27c and 720mmhg. What will be the volume at S.T.P (3mks)

c) A known volume of ozonised oxygen diffuses through a small hole in 55 seconds whereas the same amount of oxygen mixed with chlorine takes 67 seconds under the same conditions. Determine the molecular mass of the ozone (C=35.5),O=16) (3mks)

9. The diagram below shows the relationship between the p physical states of the matter. Study it and answer the question that follows

Steam

A C

Water

Ice

B D

a) Name the process labeled A to D (4mks)

b) What is a mixture? Give three examples (2mks)

c) List any three methods used to separate mixtures (1 ½ mks)

10. Study the set-u p blow and answer the questions that follow

a) Indentify gas X (1mk)

b) Write a word equation for the reaction liberating gas X (2mks)

c) What is the purpose of anhydrous calcium chloride in the u tube (1mk)

d) Name the methods used to collect the gas and the reason why it is collected in that method (2mks)

e)Name an other compound that would serve the same purpose as anhydrous calcium chloride (1mk)

D

11. Study the flow chart and answer the quest on that follow

calcium oxide B step 2

Sodium

Carbonate

E

Ammoniated

Brine

C+D

B + ammonium

Chloride

Water

Calcium

Carbonate

step

1 ammonium chloride

A

step3

a) Name substances A, B, C,D and E (2 ½ mks)

b) What processes take place in steps 1,3, and4 (3mks)

c) Write the chemical equation for the reactions that take place in the steps 1, 2,3, and 4 (4mks)

12. Study the flow chart and answer the questions that follow

White solid A

Brown gas B

Colorless gas C

White ppt E

Yellow solid D

when cold

Colourles solution

a) Indentify sub stances A,B, C, D, and E (2 ½ mks)

b) Name the process I

c) Write a balanced equation for the formation of B,C and D for the solid A (3mks)

d) Describe the test for the colourless gas C (1mk)

13,. The flow chart be low shows a sequence of the reaction starting with copper . Study it and answer the question s that follow

Copper ii nitrate

Solid R

Copper ii nitrate

Copper ii

nitrate

Copper metal

a) Indentify

i) Gas P

ii) Reagent Q

iii) Solid R

iv) Reagent X

b) Write an equation for the reaction between

i) Solid R and dilute nitric (V) acid (2mks)

ii) Copper Ii and Reagent Q(2mks)

14. Define the following words

i) Isotopes

ii) Allotropes

iii) Hygroscopic salts

iv) Deliquescent salt

v) Efflorescent salts (5mks)

15. State Charles law and give its mathematical expression (2mks)

b) A fixed mass of a gas has a volume of 280 cm2 at a temperature of 57 c and 880 mmhg pressure. Calculate the volume it would occupy at 82c and 880mmhg (3mks)

16. State the Boyles law (2mks)

d) State the grahams law of diffusion (2mks)

17. An organic compound consist of 84,90 % carbon and 15.10 % hydrogen, its relative molecular mass is 70. Calculate the molecular formula of the compound (3mks)

18. Name two reagents for the preparation of carbon (ii) oxide gas (2mks)

b) Give four differences between graphite and diamond (2mks)

c) Give two uses of carbon (iv) oxide gas (2mks)

19. Calculate the time taken for a given volume of methane gas to diffuse through a small hole if the same volume of sulphur IV oxide under the same conditions (takes80 seconds) (h=1,C=12,O=16,S=32) (3mks)

ALL THE BEST

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