NAME -------------------------------------------------- CLASS ----------------------------- ADM NO ---------------

GATITU MIXED SECONDARY

CHEMISTRY FORM 2

3RD TERM 2013

TIME : 2 HRS

1. State and explain the change in mass that occurs when lead (ii) carbonate is heated in open crucible.

 1mk

1. Give two factors that make separation by chromatograpgy possible. 2mks
2. Fractional distillation of liquefied air is used to separate three components of air after the removal of some other compounds.
3. Identify the three components of air that are separated by fractional distillation 1 ½ mk
4. Identify the other components of air that are removed from air before fractional distillation of liquefied air and explain how they are removed. 4 ½ mks
5. a. Name the type of Bunsen burner flame that is preferred for heating in the laboratory. 1mk
6. Give two properties of flame named in (a) above that makes it to be preferred. 2mks
7. The diagram below represents a set up for the laboratory preparation of oxygen gas



1. Name solid R 1mk
2. Identify the method used to collect oxygen gas. 1mk
3. Give one commercial use of oxygen gas. 1mk
4. The PH of soil from a farm was found to be 5.5 which is too acidic for crop production.
5. Name a compound that could be recommended for addation to the soil (1mk)
6. What would be the two functions of the substance recommended (2mks)
7. a) Define electrolysis (1mk)

(b)the diagram below represents a set up for the electrolysis of molten lead (ii)bromide.

(i)show the direction of the flow of Pb2+ and Br- ions (1mk)

(ii)Explain why the electrolysis of lead(ii)bromide does not occur in solid state (1mk)

1. using dots (.) and crosses (x ) to represent electrons,show bonding in sulphur(iv)oxide (2mks)
2. The diagram below shows an allotrope of carbon

(a)define an allotrope (1mk)

b)i) identify the allotrope of carbon whose structure is drawn above (1mk)

ii) Give one use of the allotrope (1mk)

1. The electron arrangement of both ions X2+ & Y3- are 2.8.8

a)write the electron arrangement of X &Y (2mks)

b)write the formula of the compound formed between X &Y (1mk)

11.An experiment was set up as shown in the diagram below

1. name liquid P (1mk)
2. what is the purpose of the pump?(1mk)
3. identify another substance formed when candle wax burns in air (1mk)

12.A student used the set up shown below to study the reaction of magnesium with steam. It was carried out for ten mins.

a)what observation would be made in gas F is ignited? (1mk)

b)explain why sand soaked in water was heated first before the magnesium ribbon was heated (1mk)

c)Write an equation for the chemical reaction that took place in the boiling tube.(1mk)

13. explain how you would prepare dry crystals of cupper(ii)sulphate given cupper(ii)oxide and dilute sulphuric(vi)acid (3MKS)

14.The set up below was used to investigate properties of the components of air.

I) state two observations made during the experiment (2mks)

ii) After the experiment the water in the trough was tested with blue and red litmus paper.state &explain the observations made.(2mks)

15. Hydrogen has atomic no 1.it can be placed in two groups of periodic table.identify them and explain why it can be placed in them.(3mks)

16.a)Explain briefy why lead(ii)chloride cannot be prepared from lead (ii)carbornate and dilute sulphuric acid.(2mks)

b) Name a suitable method you can prepare lead(ii)chloride(1mk)

17. The diagram below was set up to separate a mixture of sodium chloride and iodine.

a) Identify solids A&B (2mks)

b) name the method of separation used (1mk)

18.The table below shows the mass numbers of isotopes of an element and their % abundance.

|  |  |
| --- | --- |
| Mass number of isotope | Percentage abundance |
| 39.0 | 92.0 |
| 40.0 | 2.0 |
| 41.0 | 6.0 |

Determine the relative atomic mass of the element (2mks)

1. Define mass number (1mk)

19.A heated piece of sodium metal was lowered into a gas jar full of chlorine gas as shown in the diagram below.

I) name the piece of apparatus labeled Y (1mk)

ii) state one observation made.(1mk)

(iii) write a chemical equation for the reaction that took place (1mk)

20. Reactivity increases down group 1 while it increases up group vii. explain.(3mks)

21. One method of preventing an iron object from rusting is by coating with zinc.name the method (1mk)

ii) Explain why prevention of rusting is possible by this method. (2mks)

22.In an experiment to study conductivity & effect of electricity on substances the following observations were made.

|  |  |
| --- | --- |
| **Substances** | **Electrical conductance in**  |
| Solid state | Aqueous/molten state |
| **A** | Does not conduct | Conducts |
| **B** | Conducts | Conducts |
| **C** | Does not conduct | Does not conduct |

a) which of the substances is:

i) a metal ( 1mk)

ii) Likely to be giant covalent structure (1mk)

iii) Explain why substance A conducts electricity in aqueous or molten state and not in solid state (2mks)

23.The diagram below represents bonding in aluminium chloride

a)identify the bolds labeled X &Y (2mks)

b)what would be the effect of solution of the compound in water on litmus paper? (1mk)

24.carbon dioxide neither burns nor supports combustion. However,when a burning magnesium ribbon is lowered in a jar of carbon(iv)oxide it continues to burn in it.explain. (2mks)

b)state 1 property of carbon(iv)oxide that makes it suitable for use as a fire extinguisher apart from the one mentioned above.

25.The table below shows observation made when when halogens are bubbled into test tubes containing solutions of halides A,B &C

a tick means a reaction takes place and across means no reaction took place.Study the table and answer the questions that follow.

|  |  |
| --- | --- |
| **Halogen** | **Halides ions in solution** |
| **A** | **B** | **C** |
| **I2** | x | x | X |
| **Br2** | √ | x | X |
| **Cl2** | √ | √ | x |

i)identify halides present in A,B &C (3mks)

A

B

C

26.Give 2 reasons why during preparation of salts it is advisable to heat the solution to saturation then allowing it to cool in order to crystalise instead of heating to dryness (2mks)

27. Define

a)neutralization reaction (1mk)

b) ionization energy (1mk)

28. Explain why?

i)sodium metal is soft and can be cut with a knife while magnesium is harder and cannot be easily cut with a knife. (3mks)

ii)silicon (iv)oxide is a solid with high melting point while silicon(iv)chloride is a liquid at room temperature.explain (3mks)

29.Define a salt. (2mks)

ii)Name the four types of a salt (2mks

b)Classify the following as soluble or insoluble

|  |  |
| --- | --- |
| Salt | Soluble or insoluble |
| Lead (II) Nitrate |  |
| Barium sulphate |  |
| Calcium carbonate |  |
| Zinc chloride |  |

c)Study the experiment below

State and explain the observations made (3mks)

d)what properties of anhydrous calcium chloride makes it suitable as adrying agent? (1mk)

30.In an experiment to determine the proportion of oxygen in the air,copper turnings are packed in excess in long combustion tube connected to two syringes of 120cm3 each in volume.the syringe A contains 120cm3 of air while syringe B is closed and empty as shown below.

After air is passed over heated copper turnings slowly and repeatedly,until there is no further change,95.5cm3 of air remained in the syringe A while B was closed and empty.

I)why was copper turnings used in excess? (1mk)

(ii)Why should air be passed over heated copper turnings slowly? (1mk)

iii)State one observation made during the reaction (1mk)

iv)Determine the percentage of oxygen used up during the experiment (2mks)