**3KNT FRATERNITY 2017**

**TERM II FORM IV EXAM**

**MARKING SCHEME CHEMISTRY PAPER I**

Upper solvent front

1. 

Lower solvent front

1. x and z
2. y
3. Check on the diagram

2i.Mass will increase due to oxidation of copper

ii.The mass will reduce due to the formation of gaseous product that escape in air

iii.The mass will reduce due to the decomposition of the nitrate to gaseous products.

3a. Pink

 Pink

b.0.1m sodium hydroxide has a higher pH than that of 0.1M aqueous ammonia. This is because sodium hydroxide dissociate fully to release hydroxyl ions while ammonia solution dissociates partially to release hydroxyl ions in a reaction

4a. Crystals will turn from white to blue

b.Determine the melting point and boiling point

Sharp when pure

c.Causes global warming, climate change and green house effect

5a. 3H2(g) + Fe2O3(s) \_\_\_\_\_\_\_\_\_\_\_2Fe(s) + 3H2O(l)

b. A grey solid was formed

A colourless liquid on cooler parts of the tube

c.The excess hydrogen gas is burning in air

6.Heat the mixture \dry ice will sublime

Add water to the mixture

Filter

Filtrate is CaCl(l) residue BaSO4

Heat the filtrate and allow crystals to grow

7a. S-2.8

 T=2.8.4

b.Atoms are covalently bonded together to form giant atomic structure

Atoms of U are bonded covalently to form molecule. The molecule are then held together by weak vander waal forces to form simple molecular structure

8a. 16

b.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ion  | Number of protons  | No of electrons  | Mass number  | Electron arrangement  |
| A- | 17 |  | 37 |  |
| B4+ |  | 14 |  | 2.8.4 |

9ai.

i) 

ii

i

b. blue turns red

 Red remains red

10.Diamond has higher boiling point than graphite. Because atoms in diamond are bonded together by strong covalent bonds throughout the structure while in graphite, atoms are joined together by covalent bond to form layers.

These layers are joined by weak vander wall forces to form graphite structure.

11. Heat ZnCO3 solid in a test tube to obtain ZnO. Add a certain volume of dilute HNO3 the ZnO little at a time while stirring till in excess.

Filter the unreacted ZnO, add aqeous NaOH

12i. Kerosene floats on water, therefore the kerosene continues to burn, CO2 cuts off the supply of oxygen.

ii. CO

13a. No heating

 b.Solid melts and the ions become mobile

 c. Q2+ + 2e-\_\_\_\_\_\_\_\_\_\_Q(s)

14. At constant temp, volume mass of a gas is inversely proportion to pressure

b.

TSO2= √MMSO2

TO2  MMO2

TSO2 = 64

 50 32

TSO2=70.7sec

15. Mass of H in H2O = 2/8x14.4=1.6g

 Mass of C in CO2=12/44x23.466=6.4g

|  |  |
| --- | --- |
| C  | H  |
| 6.4 | 1.6 |
| 6.4/2=0.535 | 1.6/1=1.6 |
| Ration 1 | 3 |

CH3

16. P1V1/T1=P2V2/T2 770x2/298=760/273xV2

 V2= 270x770/760x298

17.

|  |  |
| --- | --- |
| 2NaOH H2SO4Molarity of NaOH Moles of NaOH that reacted 0.1----1000 = 20x0.1/1000 =0.002mol?.......20Moles of H2SO4 = 0.001Molarity of H2SO4= 0.001x1000/8 | NaSO4 + H2O4/40=0.1m=0.125 |

18a. Loss of water of crystallization when salts are exposed to air

b.Pellet absorb water from the atmosphere forming a solution because pellets are deliquescent.

19a. 1-brom-1chloro 222-try-fluoro ethane

b.Deplete the ozones layer allowing dangerous ray to penetrate.

20a.The higher solubility of ammonia gas

b. OH-

c. To increase the surface area of dissolving thus prevent the sucking back

1. Oxygen gas
2. Nitric gas

22.



b.FeS(s) + 2HCl(aq) \_\_\_\_\_\_\_\_\_\_FeCl(aq) + H2S (g)

c.Dry the gas

23a. Hydrogen gas

 b.Increase the surface area of dissolving

 c.Manufacture of drugs

Sewage treatment

Generation of iron resin.

24. By reacting them with Mg, Na2CO3 separately.

HCl reacts vigourously than ethanoic acid

b. CH3COOH + NaOH\_\_\_\_\_\_CH3COONa+H2O

25b.

a.This is a molecule that has a partially negatively charged end and a partially positively charged end within its structure

 DH+

26i 2C s + 3H2 C2H6

 2O2 3/2O2 7/2O2

 2 CO2 + 3H2O

ii.ΔHf=ΔH1+ΔH2-ΔH3

=(2x-394) + (3x-286) – 1560

= -86g/mol

27i.It will favour the forward reaction

 More product will be formed

ii. It will favour the backward reaction

 More of the reactant is formed.