

231/2 CHEMISTRY (2013)
KCSE Trial Exam
MARKING SCHEME

1.a)i) –Scale $\frac{1}{2}$

–Each spot $\frac{1}{2}$.

ii) A and C (both 2)

b) Heat the mixture NH_4Cl -SUBLIMES $\frac{1}{2}$ CaCl_2 is left behind $\frac{1}{2}$

(Penalize $\frac{1}{2}$ mk if NH_4Cl Condenses)

c) (i) Distillation /Fractional Distillation.

ii) shake the mixture in a separating funnel.

Allow the layers to separate $\frac{1}{2}$ Drain the bottom Layer $\frac{1}{2}$

2. a) Mass number// total number of protons and neutrons.

b)(i) NP_2 ; accept CaCl_2

(ii) P, R, S; All have three energy levels (all $\frac{1}{2}$ mark)

(iii)S: It has the larger atomic Radius 1mk

(iv) P and U (both) 1mk

c)(i) 1-Ionic // Electrovalent

11-Metalic

(ii) IV- It has the lowest melting point//boiling point OR The melting point of sulphur is 113°C

3(a) A-Carbon (iv)oxide rej. CO_2

B-Ammonia rej NH_3

b) i)Ammonium Chloride

ii) Sodium Hydrogen Carbonate

c) P: $\text{NH}_4\text{HCO}_3 (\text{aq}) + \text{NaHCO}_3 (\text{aq}) \longrightarrow \text{NaHCO}_3 (\text{aq}) + \text{NH}_4\text{Cl} (\text{aq})$.

R : $\text{Ca}(\text{OH})_2(\text{aq}) + 2\text{NH}_4\text{Cl}(\text{aq}) \longrightarrow \text{CaCl}_2(\text{aq}) + 2\text{NH}_3(\text{g})$

d) Calcium chloride-Drying Agent

e) –Making glass

–Softening hard water

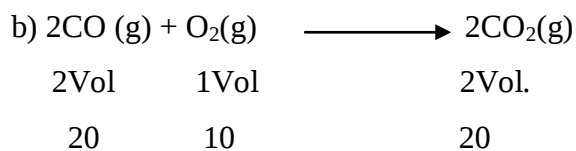
–Making sodium silicate used in making detergents.

–Paper industry

ii) a) -Thistle funnel should be dipped into the reactants

-The delivery tube from flask with H_2SO_4 should not dip into the acid

- The acid should be arranged last near the gas jar.

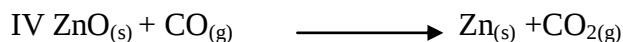
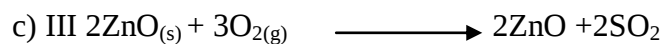


CO excess by $30 - 20 = 10 \text{ cm}^3$

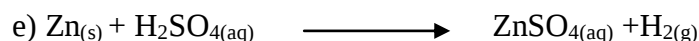
4 a) Zinc blende ZnS

b) II froth flotation

VII electrolysis



d) sulphuric acid manufacture because production of sulphuric (IV) Oxide (SO_2)



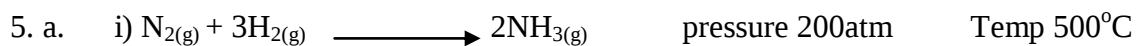
moles of $\text{H}_2 = \frac{1.2}{24} = 0.05 \text{ moles}$

Mole ratio Zn: H_2

1:1

Moles of Zn = 0.05 moles

R.A.M = $\frac{3.27}{0.05} = 65.4$
Zn



ii) Exothermic, as temperature increases yield decreases

iii) Yield increases as forward reaction is favoured where molecules are few

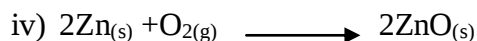
b. catalyst lowers the activation energy and minimum energy is used



6.a) i) collection over water.

ii) I-Displace air inside the aspirator

iii) II-Absorb /Remove water (CO_2)



v) Argon

b) i) I-Fractional distillation

ii- U-Argon/oxygen

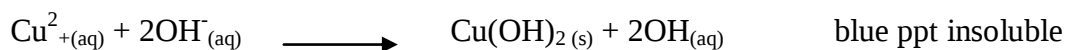
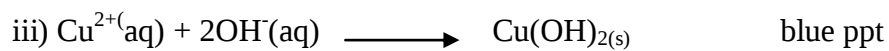
V-Oxygen/Argon

ii) Air subjected to rapid compression and expansion repeatedly of a pressure of 200 atmospheres and allowed to cool to a temperature of 200 c.

c) Manufacture of ammonia

7. i) Cu^{2+}

ii) blue precipitate insoluble in excess



b. i) B Zinc Chloride

C Copper

