***Q1\ Identify the oxidizing and reducing agent in the following reaction?***

*1) NO2 +H2O HNO3 +HNO2*

*(2) BeCl2 +H2O [Be (H2O) 4] Cl2*

*(3) Zn +NaOH +NaNO3 Na2ZnO2 +NH3 + H2O*

*(4) H3PO4 +Ca(OH)2 Ca3(PO4)2 +H2O*

***Q2\ Gives suitable answer for the following:***

***1- HClO4 and KMnO4 are oxidizing agent while HCl and MnCl2 are reducing agent***

***2- There are similarity of hydrogen with group one and halogen.***

***4- 3Li has chemical property like 11Na and 12Mg.***

***5- CaH2 is salt like hydride while H2S is covalently hydride.***

***6- Ionization energy of 15P is greater than of 16S.***

*)*

***7- (AsH3 NH3) each one are have more reducing property and why?***

***Q3\ A\******Arrange the following atoms according to increases of:***

***1-*** *Atomic radius ( 12Mg ,87Fr ,13Al ,38Sr ,51Sb ,9F ,6C).*

*2- Boiling point (H2O, H2S, H2Se, H2Te) .*

***3-*** *Acidity (PH3 ,H2S , HCl),*

***Q4\ Balance* the redoxe equation by**: 1- Oxidation state methods. { Cu2S +HNO3 Cu (NO3)2 +NO +H2SO4 +H2O }

***Q5\ Complete the following reaction.***

***1- Sr + H2  →***

***2- LiH + AlCl3 →***

***3- NaH + Na2SO4  →***

***4- H2SO4  +Zn →***

***Q6/\ How the following elements occurs in nature.***

*1)* *Beryllium 2)* *Caesium*

***Q7\ Complete the following chemical reactions with Electronic balancing.***

1- S + NaOH

2- CuCl2  + SO2 + H2O

3 - KIO3  + Cu(NO3)2.3H2O

*Q8/Write oxidation state of sulfur and give an example with name for each oxidation state?*

*Q9/There are three tests for qualitative analysis of Sodium thiosulfate, Write chemical reactions for these tests?*

*Q4/……………………method used for find purity percentage for Sodium thiosulfate, and ………………*

*method used for find %Cu+2 in copper (II) iodate dehydrate.*

Q10/*The origin of soluble impurities is the sea water. Solar sea salts and rock salt is --------------------- , ----------------- , ----------------------- , ---------------------- .*

*Q11/What is the role of KI that used in determination of %Cu+2 in its salt?*

*Q12/Why we used HCl in final step of purification of table salt.*

***Q13/*** *In quantitative analysis for sodium thiosulfate (0.75 gm)of sodium thiosulfate was dissolve in water to prepare (100 ml) solution. In a conical flask (1 ml) of CH3COOH was added to(15 ml ,0.085 N) of KI3 solution and titrated with sodium thiosulfate, the volume that need to reach end point =33.2 ml ,calculate % purity for Na2S2O3.*

Q14 ⁄ Prepare the following salts and balance the chemical reactions (in details):

1. Potassium manganate.
2. Copper (I) Iodide
3. Sodium thiosulfate.
4. Chromium Alum.
5. Potassium chromate. (25 marks)

Q15⁄ Give suitable answer for the followings using chemical reactions if needed:

1. How many oxidation state of copper? Give an example for each of state.
2. Addition of (BaCl2) in the purification of cooking salt?
3. Define the type of titration which is used in determination of %Al+3 in it ´s salts?
4. There are two types of salts? Give an example with formula for each type.
5. Additions of (HNO3) in the final step of preparation of potassium periodate.

**Q16/** 1**-**How you can prepare (0.05N),(500ml) of Potassium permanganate in basic medium?

2**-** Arrange the following compound {CuF, CuBr, CuI, CuCl} as increasing stability

and explain why?

3**-** Write the structure of sodium thiosulfate?

4**-** Write thestructure of phenol red indicator?

**Q17** ⁄ Quantitative analysis for sample of sodium thiosulfate (0.45 gm) was dissolved in water to prepare (50 ml). (1ml) of acetic acid was added to (10 ml),( 0.095 N) of KI3 and titrated with prepared sodium thiosulfate, the volume that needed to reach end point by use the

starch as indicator is (35 ml). Calculate the percent of purity of sample? (30 marks)

***Q18\ Write a method for preparing the following.***

*1) Beryllium nitride:*

*2) Phosphine:*

*3) Aluminum carbide:*

*4)Lithium monoxide:*

*5) Sodium cyanide*

***Q19\ Complete the following reaction.***

*1- Al2O3 +N2 +C →*

*2- CaC2 + H2O →*

*3-*  *Si2Cl6 + 3LiAlH4 →*

*4- KO2(s) + HCl(aq) ⎯→*

*5- Ca(PO4)2+ SiO2 + C →*

*6- CS2 + Cl2 →*