**NYATIKE SUB-COUNTY JOINT EVALUATION EXAMS**

**CHEMISTRY 1**

**JULY/AUGUST 2014**

**MARKING SCHEME**

1. (a) Cooking vessels \_Its a good conductor for heat √

 Over head cables- Its light/low density does not rust /conducts electricity –any correction

 (b) Solution of wood ash contains KOH which reacts with aluminium oxide layer became its amphoteric √

2. (a) Gas K is hydrogen gas √

 (b) Calcium hydroxide was formed, which is a weak base √

 (c) Ca(s) +2H2O Ca(OH)2(aq)+H2(g)

Penalize ½ mark for wrong state symbols if not balanced give (O)

3. (a) K-ammonium chloride √

 (b) Sublimation √

4. Atomic number is the number of protons in an atom √ while mass number is the total number of protons and neutrons √

5. (i)

**Concentration**

**Time**

**F(g) √ ½**

**E(g) √ ½**

 (ii) Concetration of F increases with time because it’s a product, it is being formed √. While concentration of E decreases with time because it’s a reactant, its being used up √

6. An insoluble lead (II) Sulphate is formed, which hinders further reaction

7. The solution turns blue, because the crystal dissolves and the blue colour spreads through √ ½ diffusion

8. (a) B+ has more energy levels than A+, hence electrons in A+ are attracted more strongly by nucleus √

 (b) C2+ has greater nucleus charge than A+ hence electrons in C2+ are attracted more strongly √

9. (a) Grahams law of diffusion states the rate of diffusion of a gas is inversely proportional to the square root of its density at constant temperature and pressure √

 

 

 

10. (a) Water vapour acts as a catalyst √

 (b) 2H2S(g) + SO2(g)  2H2O(l) +3S(s)

 (c) H2S/Hydrogen sulphide √

11. Colour of sugar turns brown √ ½ to black Conc. Sulphuric (VI) acid dehydrates sugar forming carbon and water √

12. (i) Soap detergent √

 (ii) Soapless detergent √

 (iii) B √

 (iv)B √

13. (i) 2N2O(g) + C(s) CO2(g) +2N2(g)

 (ii) Ammonium nitrate when heated directly may explode √ ½ while a mixture of ammonium chloride and sodium nitrate when heated does not explode √ ½

 (iii) Nitrogen (I) Oxide has a characteristic sweet, sickly smell √

14. (a)(i)

**H2S**

 (ii) Iron (II) sulphide/FeS √ ½

 Solid J: Fused calcium chloride /CaCl2 √ ½

 (b) 2HCl(aq) + FeS(s) H2S(g) + FeCl2(s)

15. (a) Nuclear fusion is a process whereby smaller nuclide combine to from a larger one at high temperatures. While nuclear fission is whereby a larger nuclide splits to form smaller one when hit by neutron √

230

90

230

 Th Pa + e

-1

0

91

 (c) Tracing up take of nutrients e.g Phosphorous by plants

 Production of new variety of crops with higher yield/more resistant to pests and diseases/with early maturity (any correct one)

16. (a) Polystyrene √

H

H

H

O

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(b) C = C

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17. Hydrogen chloride is highly soluble √

18. (a) CH3CH2OH(aq)+ 3O2(g) 2CO2(g) + 3H2(l) √

 (b) 

 RMM of CH3CH2OH=46

 0.92g produced =27.3kJ

 46g=

 =-1365KJ/mol

19. (a) Haematite/siderite √

 (b) CaCO3(s)  CaO(s) + CO2(g) √

 CaO(s) + SiO2(s)  CaSiO3(l) √

20. Zn(s) + 2HCl(aq) ZnCl2(aq) +H2(g)

Moles of HCl= 100x0.2

 1000

 =0.02moles √ ½

 Mole ratio 1:2 √ ½

 Moles of Zinc that reacted

 =0.02x ½ =0.01 √ ½

 Mass of zinc that reacted =0.01x65

 =0.65g √ ½

 ∴Excess Zinc =1.96-0.65 √ ½

 =1.31g

21. To magnesium oxide, add excess HNO3 √ ½ HCl or H2SO4. Add NaOH or KOH or NH4OH to the mixture √ ½ filter √ ½ and dry √ ½ the residue between two filter papers

22. 2x-10=0

 2x=10

 x=+5 √

23. (a) Dynamic equilibrium is an equilibrium whereby the rate of forward reaction is equal to the rate of backward reaction √

24. Q = It=

 0.5x(32x60+10) √ ½

 =0.5x1930

 =965C √ ½

 0.22g=965C

 ∴44g = 44x965

 0.22 √ ½

 =193000C √ ½

 No of F= 195000 √ ½

 96500

 =2F

 Charge =2+ √

25. (a) Thermal cracking is the breaking down of long chain hydrocarbons by means of heating. White catalytic cracking is whereby long chain hydrocarbons are broken down by catalysis process. √

 (b) CFC-Chlorofluorocarbons causes global warming by depleting the ozone layer √

26. (a) Frasch Process √1

 (b) Melt the solid sulphur √

 ©(i) Insoluble in water √1

 (ii) Unreactive in water √1

27. (a) It is the amount of heat required to convert one mole of a substance into vapour at a constant temperature

 (b) I mole of H2O=2+16=18g

 If 18g=41.1KJ

 ∴1g = 1 x 41.1

 18

 =+2.283KJ √1

 Without a sign penalize ½ mk

28. (a) Reference electrode √ ½

 Eθ=0.00volts

 (b)(i) I.At electrode Q:

 Q(s) Q2+(aq) +2e- √ ½

 II. At electrode T:

 T+(aq) +e- T(s)

 Or

 2T++2e 2T(s) √ ½

(ii) Emf=Eθ reduction-Eθ oxidation

 =(-0.83)-(-1.37) √ ½

 =-0.83+1.37

 =+0.54volts √ ½