233/1
CHEMISTRY
PAPER 1
FORM 4

Kenya Certificate of Secondary Education

END OF TERM II EXAMINATION
MARKING SCHEME

1.a) Water 1

(b) Oxygen is only slightly soluble in water.

(c) Used in welding and cutting metals (oxy-acelytene flame. Used in Hospitals to ais patients with
respiratory problems. Metal extraction.. Metal extraction (To turn ore to oxide: For fuels eg To burn hydrogen to provide energy for space rockets.

2.a) $2AgO_3 \xrightarrow{heat} 2Ag + ZNO_2 + O_4$
(g) (s) (g) (g)

b) $2\ FeSO_4 \xrightarrow{heat} Fe_2O_3 + SO_2 + SO_3$
(s) (s) (g) (g)

c) $2NaHCO_3 \xrightarrow{heat} Na_2CO_3 + CO_2 + H_2O$
(s) (g)

3.i)Fermentation 1

ii) Ethane is non- polar hence does not interact with polar water molecules unlike ethanol which is polar.

4.i) -1e 1

ii) $\frac{N}{50} = (\frac{1}{2}) = \frac{N}{50} = \frac{50}{32}$
Any other method.

iii) –Testing absorption of phosphorous from the fertilizer use radio active phosphorus- 31

5.a) Carbon (IV) Oxide and carbon (ii) oxide
b) Carbon (IV) oxide – Fizzy drinks 1
- Fire extinguisher – Freezing material carbon (II) oxide.
-As fuel - In meta extraction

6.(i) 0.5 x (32 x 60) + 10
0.5 x 1930 = 965 C ½

0.44 965C $\frac{88 \times 965}{0.44}$ = 193 000C
88g

Charge of X $= \frac{1930}{965} = +2$ ½

ii)$P(OH)_2$

7. r – ethanol 1

a)II S - chloro ethane 1

b) T – Dehydration 1

8. 60 cm^3 = 50 SEC

80cm^3 (80 x

9.Salt Y -1 .At 50^O c only 82g of the 120g salt dissolves.

ii) 120 – 82 ½

= 38g ½

10.a) Moisture of water ½ and oxygen /air ½

b) –Tin coating is non –toxic 1

- Tin coating is unreactive 1

- Does not corrode easily

11.i)Add the colourless liquid to anhydrous copper (II) sulphate which colour changes from white to blue ½

OR Anhydrous cobalt (II) Chloride which colour changes from blue to pink. (Any correct)

ii) Determine its refractive index 1

Determine its density which is 1g/cm^3

Determine its boiling point as 100^o C or freezing point as O^o C

12. I) Copper pyrite ($CUFeS_2$) 1

ii) $CUFES_2 + F4O_2 \rightarrow CU\ 5 + 2(FeO + 3\ SO_3$

(s) (g) (s) (s) (g)

iii) Pollute environment due to SO_2 gas which causes Acidic rain and can lead to leaching of soil/
corrosion of house roof tops .
iv) = Making cooking 1 utensils = Electrical wires.
= Making roofing sheets = coms and ornaments
= making alloys

13.a) Ca ½ and Mg^{2+} ½

ii) When hardwater is passed through the resin, magnesium 1 or calcium are retained in the resin.

14.a) staff bridge 1

b) Fce = E_{R} - E_{2} = + 0.80 -) -0.13) 1
= 0.93V - 3 –

15. Conisation energy is the energy required to remove an electron from an atom in gases state while electron affinity is the energy released when an atom in gaseous state gains an electron. ½

16. $CuCO_3$ ½ = $\frac{64 \times 100}{124}$ ½ = 51.61 % copper by mass

17. Alkaline earth metals 1

18. a) Magnesium metal conducts due to presence of delocalized elections 1.

b)Molten magnesium chloride conducts since it contains free ions. 1

19. X – Base ions

i) X

II) R

iii) T

20.A) allotrope – Two or more forms of the same physical state of an element existing under standard conditions.

b) Graphite atoms are bounded by covalent bonds to form layers which are held by weak van –derwaals
forces making layers slides easily over each other. In Diamond there are only covalent bonds.

21. a) 100 – 25 = 75 CM^3

b) $C_X H_y + O_2 \rightarrow H_2O$
15cm^3 75cm^3 ; 45 = 1: 5: 3 1
Hence $C_X H_y + 5O_2 \rightarrow 3CO_2 + 4H_2O$ ½

22.a) aluminium has more delocalized electrons than sodium making it have strong metallic bonds hence
Higher melting point.

b) Chlorine molecule is smaller compared to that of sulphur. Thus the van-der-waats forces in chlorine
are weaker . 1 ½ .

23. i) anhydrons calcium chloride 1
ii) Cooper (II) Oxide turns from Black to brown 1
iii) Hydrogen gas reduces copper (II) oxide to copper metal which is brown. 1

24. a) $NaCl_{(s)} + H_2SO_{4(aq)} \rightarrow NaHSO_4 + HCl_{(g)}$ i

b) =React HCl gas with iron to form iron (II)

Chloride and hydrogen gas ½

=React HCl gas with ammonia gas to form white fumes of ammonium chloride . ½

C_ -Used in large scale manufacture of HCL acid

-Used in manufacture of polymers such as PVC

25.The Red litmus paper remains red. This is because dry chlorine gas does not bleach.

26.By adding aqueous sodium chloride to separate solution of the ions. In case of lead ions (Pb^2) ions

White precipitates will be observed while no precipitate form in case of calcium ions.

27. (a) Phenol / phthalein indicator 1

(b)

Acid	Base	Neutral
Lemon juice	wood ash	Sodium chloride 2

28. RFM $Ca(NO_3)_2$ = 40 + 28 + 96 = 164

Thus 164 = 1 mole

8.2 ?. 8 X 1 = 0.05 MOLES

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