NAME.....INDEX No.....

Signature.....
545/1
Chemistry
Paper 1
July /August 2017
1 ½ hours

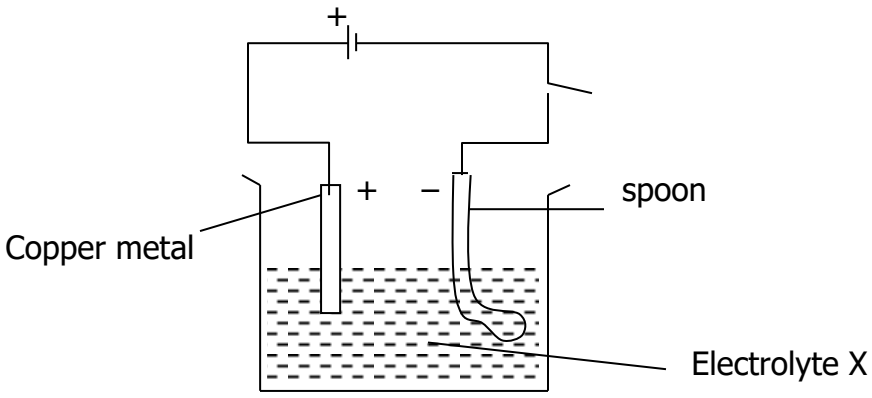
KAYUNGA SECONDARY SCHOOLS HEAD TEACHERS AND PRINCIPALS ASSOCIATION (KASSHPA)
Uganda Certificate of Education
JOINT MOCK EXAMS 2017
CHEMISTRY
PAPER ONE
1 HOUR 30 MINUTES

INSTRUCTIONS TO CANDIDATES

- Attempt all questions by filling the correct answer in the box on the right hand side of each question
- Do not use a pencil

FOR EXAMINERS' USE ONLY		
MARKS		

1. The diagram below shows how a spoon is electroplated. What is the name of the electrolyte x used?



A. Molten copper(ii) chloride
B. Dilute hydrochloric acid
C. Aqueous copper(ii) sulphate
D. Aqueous sodium chloride

2. Some fuels have to be burnt in oxygen for energy to be released. To which fuel does this statement not apply?

A. Hydrogen
B. Coal
C. Methane
D. Uranium

3. Iron(ii) ions in FeO reacts with oxygen to form Fe_2O_3. Which statement about the iron ions is correct?

A. Iron(ii) ions are oxidized because they gain oxygen
B. Iron(ii) ions are reduced because they lose oxygen

C. Iron(iii) ions are oxidized because they gain oxygen

D. Iron(iii) ions are reduced because they lose oxygen

4. The formula of the chloride of metal M is MCl_3. The formula of the nitrate of M is

A. MNO_3

B. M_2NO_3

C. $M(NO_3)_3$

D. $M_3(NO_3)_2$

5. Which one of the following is formed when magnesium burns in carbondioxide?

A. Carbon monoxide

B. Carbon

C. Magnesium nitride

D. Magnesium hydrogen carbonate

6. Calcium hydrogen carbonate decomposes on heating as

$Ca(HCO_3)_{2(aq)} \longrightarrow CaO_{(s)} + H_2O_{(l)} + 2CO_{2(g)}$

What volume of carbondioxide will be evolved at s.t.p when 54g of the hydrogen carbonate are heated.

(Ca = 40, H = 1, C = 12, O = 16, molar volume of gas at s.t.p = 22.4dm^3)

A. $\frac{2\ x\ 22.4\ x\ 54}{162}$ dm^3

B. $\frac{162}{2\ x\ 22.4\ x\ 54}$ dm^3

C. $\frac{162}{54\ x\ 22.4}$ dm^3

D. 54 x 22.4 dm^3

7. Which cation forms a green precipitate with sodium hydroxide solution?

A. Cu^{2+}

B. Fe^{3+}

C. Fe^{2+}

D. Al^{3+}

8. The hydroxide that will turn brown when exposed to air is

A. Copper (ii) hydroxide

B. Lead (ii) hydroxide

C. Iron(ii) hydroxide

D. Iron(iii) hydroxide

9. Which of the following pairs of metals make the alloy called bronze?

A. Zinc and lead

B. Copper and Zinc

C. Copper and Tin

D. Lead and tin

10. Which of the following metals is extracted by electrolysis?

A. Zinc

B. Copper

C. Sodium

D. Lead

11. Permanent hardness in water can be removed by

A. Adding calcium hydroxide

B. Boiling

C. Adding sodium carbonate

D. Adding sodium hydroxide

12. Which of the following is formed when a mixture of ethanol and concentrated sulphuric acid is heated at 180^0C?

A. Ethane

B. Ethene

C. Hydrogen

D. Water

13. 1M sulphuric acid is a better electrolyte than a 1M ethanoic acid because

A. Ethanoate ions are not good conductors

B. Sulphuric acid is more ionized

C. Sulphuric acid and water produce a lot of heat

D. Sulphate ions (SO_4^{2-}) are divalent ions

14. 0.02 moles of calcium chloride is dissolved in water to make 250cm^3 of solution. What is the concentration of chloride (Cl^-)

A. 0.08M

B. 0.16M

C. 0.04M

D. 0.02M

15. Which of the following can not be found in the nucleus of an atom?

A. Proton

B. Neutrons

C. electrons

D. Nucleons

16. An element X can be represented as $^{235}_{92}X$. The number of neutron is

A. 92

B. 235

C. 143

D. 327

17. Hydrogen reacts with chlorine as shown below.

$H_{2(g)} + Cl_{2(g)} \longrightarrow 2HCl_{(g)}$

The volume of hydrogen chloride formed when $60cm^3$ of hydrogen is reacted with $70cm^3$ of chlorine at s.t.p is

A. $20cm^3$

B. $80cm^3$

C. $130cm^3$

D. $120cm^3$

18. When 1.0g of carbon is burnt in excess oxygen, the heat produced raises the temperature of $400cm^3$ of water by 20^0C. The molar heat of combustion of carbon is

(C = 12, density of water = $1g/cm^3$, S.H. C of water is 4.2 $KJkg^{-1}k^{-1}$)

A. 400 x 4.2 x 20 x 1 $KJmol^{-1}$

B. 0.4 x 4.2 x 20 x 12 $KJmol^{-1}$

C. $\frac{400\ \ 4.2}{20\ \ 12}$ $KJmol^{-1}$

D. $\frac{0.4\ x\ 20}{4.2\ x\ 12}$ $KJmol^{-1}$

19. The substance that sublimes when heated is

A. Carbon

B. Phosphorous

C. Sulphur

D. Dry ice

20. Which of the following aqueous solution will react with magnesium to produce hydrogen?

A. PH = 2

B. PH = 7

C. PH = 14

D. PH = 11

21. Which of the following is an acid salt?

A. $KHCO_3$

B. NH_4Cl

C. $NaNO_3$

D. $CuSO_4$

22. The solid that does not change in mass when heated is;

A. Sodium carbonate

B. Copper(ii) carbonate

C. Magnesium

D. Carbon

23. Which of the following is an alkene?

A. C_2H_4

B. C_3H_4

C. C_4H_6

D. C_4H_{10}

24. In which period of the periodic table is the element $^{37}_{13}X$?

A. 2

B. 3

C. 4

D. 5

25. An oxide of a metal X, contains 72.42% X, what is its empirical formula?

(O = 16, X = 56)

A. XO

B. X_2O

C. XO_2

D. X_3O_4

26. The formular of the ion formed when excess equeous ammonia is added to aqueous copper (ii) sulphate is

A. $[Cu(OH)_2]^{2+}$

B. $[Cu(OH)_2]^{2-}$

C. $[Cu)NH_3)_4]^{2+}$

D. $[Cu(NH_3)_2]^{2+}$

27. Lead (II) nitrate solution is added to a solution of potassium iodide. Which of the following is formed?

A. A white precipitate

B. A yellow precipitate

C. A colourless solution

D. A red solution.

28. Which one of the following can you use to test for sulphur dioxide?

A. Acidified potassium manganate(vii)

B. Chlorine water

C. Anhydrons copper(ii) sulphate

D. Cobalt chloride paper.

29. Which one of the following processes decreases the concentration of cabondioxide in the atmosphere?

A. Combustion

B. Respiration

C. Photosynthesis

D. Rusting

30. Copper(ii) carbonate decomposes as shown below.

$CuCO_{3(s)} \longrightarrow CuO_{(s)} + CO_{2(g)}$

The mass in grams, of copper(ii) oxide formed when 20g of copper(ii) carbonate is completely decomposed is

(Cu = 64, C = 12, O = 16)

A. $\frac{20\ x\ 80}{124}$

B. $\frac{20\ x\ 124}{80}$

C. $\frac{44\ x\ 80}{124}$

D. $\frac{44\ x\ 124}{80}$

31. The properties of solutions of hydrogen chloride in methyl benzene and in water differ because

A. Hydrogen chloride is not very soluble in methyl benzene

B. In methylbenzene solution no ions are present.

C. Water is slightly ionized and contain H^+ ions

D. Methyl benzene is a non – electrolyte

32. Which one of the following can be prepared by direct synthesis from its elements?

A. Copper(ii) sulphate

B. Sodium chloride

C. Lead(ii) nitrate

D. Sodium carbonate

33. Which one of the following shows an oxidation reduction reaction

A. $Cu^{2+}_{(aq)} + Zn_{(s)} \longrightarrow Cu_{(s)} + Zn^{2+}_{(aq)}$

B. $Pb^{2+}_{(aq)} + 2Cl^{-}_{(aq)} \longrightarrow PbCl_{2(aq)}$

C. $Mg^{2+}_{(aq)} + CO^{2-}_{(aq)} \longrightarrow MgCO_{3(s)}$

D. $H^{+}_{(aq)} + OH^{-}_{(aq)} \longrightarrow H_2O_{(l)}$

34. Which of the following gases reduces iron ore in the blast furnance?

A. Nitrogen

B. Carbondioxide

C. Carbonmonoxide

D. Sulphurdioxide

35. Which one of the following is an artificial polymer?

A. PVC

B. Rubber

C. Cellulose

D. Starch

36. Magnesium reacts with chlorine as shown below

$Mg_{(s)} + Cl_{2(g)} \longrightarrow MgCl_{2(g)}$

How many cm^3 of chlorine at r.t.p will react completely with 0.30g of magnesium?

(1 mole of a gas at r.t.p occupies $24dm^3$, Mg = 24)

A. $\frac{0.3 \ x \ 24 \ x \ 1000}{24}$

B. $\frac{0.30 \ x \ 24 \ x \ 24}{1000}$

C. $\frac{0.30 \ x \ 24 \ x \ 1000}{24 \ x \ 2}$

D. $\frac{0.3 \ x \ 24}{24}$

37. A bottle containing sodium hydroxide was left for a long time. It was difficult to open the bottle because of white solid that stuck the stopper which was

A. sodium hydrogen canbonate
B. sodium carbonate
C. Calcium hydrogen carbonate
D. Calcium carbonate

39. A colourless gas R dissolves in water to form an alkaline solution. The gas be confirmed by using

A. A blue litimus paper
B. Hydrogen chloride
C. Lime water
D. Silver nitrate

40. Which one of the following gases cannot be collected by over water method?

A. Carbondioxide
B. Hydrogen chloride
C. Hydrogen
D. Nitrogen

In each of the questions 41 to 45 , one or more of the answers given may be correct. Indicate the correct answer as follows.

A. If 1, 2, 3 only are correct
B. If 1, 3 only are correct
C. If 2, 4 only are correct

D. If 4 only is correct.

Summary of instructions			
A	B	C	D
1, 2, 3 only correct	1, 3 only correct	2, 4 only correct	4 only correct

41. Examples(s) of physical changes is/are

1. Heating ice
2. Heating of ammonium chloride
3. Heating iron(iii) chloride
4. Burning a piece of paer.

42. Which of the following salt(s) is/are prepared by precipitation?

1. $BaSO_4$
2. Na_2SO_4
3. $PbSO_4$
4. K_2SO_4

43. Which of the following nitrates will decompose on heating to form a nitrite.

1. Magnesium nitrate
2. Sodium nitrate
3. Zinc nitrate
4. Potassium nitrate

44. Which one of the following substances will reduce copper(ii) oxide?

1. Carbon
2. Carbon monoxide

3. Hydrogen gas
4. Oxygen gas

45. Chlorine reacts with cold potassium hydroxide solution to form
    1. Potassium hypochlorite
    2. Potassium chloride
    3. Water
    4. Potassium chlorate

Answers to question 46 – 50 should be selected as follow.

A. If both assertion and reason are true statements and reason is a correct explanation of the assertion.

B. If both assertion and reason are true statement but reason is not a correct explanation of the assertion.

C. If the assertion is true but reason is incorrect.

D. If the assertion is incorrect but reason is true statement.

SUMMARY OF INSTRUCTIONS

	Assertion	**Reason**
A	True	True (reason is a correct explanation)
B	True	True (reason is not a correct explanation
C	True	Incorrect
D	Incorrect	True

	Assertion	Reason
46.	Chlorine is a diatomic gas **because**	it has a high boiling point.
47.	Temporary hardness of water is caused by magnesium and calcium ions. **because**	These metals form solutions of sulphates
48.	Hydrogen chloride conducts electricity **because**	Hydrogen chloride is soluble in water
49.	Concentrated sulphuric acid is used to dry ammonia gas **because**	ammonia is an alkaline gas
50.	Copper displaces hydrogen from an acid **because**	copper is lower than hydrogen in in reactivity series

END