### Name………………………………………..Centre/Index No.…………/.…… Signature…………………………………...

**545/1**

## **CHEMISTRY**

Paper 2

**August, 2019**

2 hours

##### **JINJA JOINT EXAMINATIONS BOARD**

###### **Uganda Certificate of Education**

**MOCK EXAMINATION - AUGUST, 2019**

**CHEMISTRY**

**Paper 1**

1 hour 30 Minutes

**INSTRUCTIONS TO CANDIDATES**

**This paper consists of 50 objectives – type questions,**

**Answer all questions**

**You are provided to write the correct answer: A, B C or D in blue or black, ink in the box provided on the right-hand side of each question.**

**Do not use pencil. Any questions answered in pencil will not be marked.**

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| --- |
| **FOR EXAMINER’S USE ONLY** |
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|  |

1. Which of the following liquid mixture is separated using fractional distillation

method?

A. Diesel and petrol.

B. Diesel and cooking oil.

C. Kerosene and water.

D. Water and petrol.

2. Which one of the following substances when heated undergoes a chemical change?

A. Platinum wire.

B. Iodine crystals.

C. Zinc oxide powder.

D. Magnesium ribbon.

3. Bronze is an alloy of

A. Copper and Zinc.

B. Copper and Tin.

C. Tin and Lead.

D. Zinc and Lead.

4. Which of the following sodium salts when heated strongly will decompose to give

oxygen?

A. Sodium Sulphite.

B. Sodium Sulphate.

C. Sodium Nitrate.

D. Sodium Nitrite.

5. The PH of solution P, Q, R, S, are 14, 9, 2 and 7 respectively. Which one of the

following solution will suitably react with Magnesium (II) Carbonate to form

carbon dioxide?

A. P.

B. T.

C. R.

D. Q.

6. When 0.288g of an oxide of X was reduced using carbon monoxide, 0.256g of X

was obtained. The empirical formula of the oxide is (X = 63.5, O = 16).

A. XO.

B. XO2.

C. X2O3.

D. X2O.

7. The rate of reaction between zinc and dilute hydrochloric acid would be increased

by the addition of

A. copper (II) sulphate.

B. manganese (IV) oxide.

C. finely divided iron.

D. vanadium (V) oxide.

8. The formula of the chloride of X is XCl2. The formula of the carbonate of X is

A. XCO.

B. X2CO3.

C. X2(CO3)3.

D. X3(CO3)2.

9. The mass of 3 x 10-3 atoms of magnesium is

(Atomic mass of magnesium = 24, Avogadro’s number = 6 x 1023).

A. 

B. 

C. 

D. 

10. Which oxide produces a solution with a PH between 1and 7 when reacted with water?

A. Calcium oxide.

B. Carbon dioxide.

C. Potassium oxide.

D. Carbon monoxide.

11. Why is argon gas used to fill electric lamps?

A. It conducts electricity.

B. It glows when heated.

C. It is less dense than air.

D. It is non-reactive.

12. The flow chart shows stages in the treatment of river water to produce drinking

water.

River Settling Stage X Stage Y Drinking

Water tanks water

**X Y**

A. Distillation Chlorination.

B. Filtration Chlorination

C. Distillation Filtration.

D. Sedimentation Distillation.

13. Which one of the following solutions contains the same number of moles of

hydrogen ions as the number of sodium ions in 50.0cm3 of a 0.2M sodium

sulphate?

A. 100cm3 of a 2M hydrochloric acid.

B. 100cm3 of a 0.2M sulphuric acid.

C. 0.73g of hydrochloric acid.

D. 0.33g of sulphuric acid.

14. Which one of the following salts will dissolve in water to form a solution that

turns red litmus blue?

A. Sodium carbonate.

B. Ammonium sulphate.

C. Ammonium Chloride.

D. Sodium chloride.

15. Which of the following is not a property of Group I metals?

A. They are reducing agents and react with air

B. They are soft and can be cut down with a knife.

C. They produce acidic solutions when reacted with water.

D. They react rapidly with water producing hydrogen gas.

16. A mixture of two substances X and Y was heated and the damp red litmus paper

turned blue as indicated in the figure.

Damp red litmus paper

X and Y

Gentle heat

Which of the following were the solutions were used as X and Y?

**X Y**

A. Aluminium nitrate Hydrochloric acid

B. Aluminium nitrate Sodium Hydroxide.

C. Aluminium chloride Hydrochloric acid.

D. Ammonium chloride Sodium Hydroxide.

17. Which of the following is the major product at the cathode when concentrated

sodium chloride solution is electrolysed using platinum electrodes?

A. Chlorine.

B. Hydrogen.

C. Oxygen.

D. Sodium.

18. Which of the following statements is not correct about the extraction of iron

in a blast furnace?

A. The raw materials are haematite, limestone and coke.

B. Molten iron is formed at the base of the blast furnace.

C. Iron (III) oxide is reduced to iron by carbon dioxide.

D. Calcium oxide reacts with acidic impurities.

19. Which of the following substance is suitably used for drying ammonia?

A. Concentrated sulphuric acid.

B. Anhydrous calcium chloride.

C. Calcium oxide.

D. Phosphorous (V) oxide.

20. Lead (II) Nitrate reacts with Sodium chloride solution according to the following

equation:

Pb(NO3)2(aq) + 2NaCl(aq) PbCl2(s) + 2NaNO3(aq).

The mass of Lead (II) chloride formed when 33.2g of Sodium chloride is

dissolved and reacted with excess Lead (II) Nitrate is (Na = 23, Cl = 35.5,

Pb = 207, N = 14).

A. g

B. g

C. g

D. 

21. The rate of reaction between 0.1g of magnesium (Mg) and excess hydrochloric

acid was followed by measuring the mass of magnesium present at regular time

intervals. The acid in experiment (X) was less concentrated than in experiment

(Y). Which of the following graph shows the results of the experiment?

A. B.

Mass of Mg

Mass of Mg

X Y

Y X

Time Time

Mass of Mg.

Mass of Mg

X

Y

Y

X

C. D.

Time Time

22. Which changes occur when a metal is oxidised?

A. It gains an electron.

B. It gains a proton.

C. It becomes negatively charged.

D. It becomes positively charged.

23. Sulphur dioxide is produced by the reaction

2SO2(g) + O2(g) 2SO3(g) ΔH = -195Kj.

Which change in conditions would produce a greater amount of Sulphur trioxide at

equilibrium?

A. Adding a catalyst.

B. Increasing the pressure.

C. Increasing the temperature.

D. Removing some SO2 and O2.

24. Which of the following hydroxides will dissolve in Ammonia solution?

A. Fe(OH)2 and Al(OH)3.

B. Fe(OH)3 and Zn(OH2).

C. Cu(OH)2 and Zn(OH)2.

D. Pb(OH)2 and Al(OH)3.

25. Ammonia reacts with Lead (II) oxide according to the following equation

2NH3(g) + 3PbO(s) 3H2O(aq) + N2(g) + 3Pb(s).

The volume of Nitrogen produced when 6.0g of Lead (II) oxide reacts with

Ammonia at s.t.p. is (N = 14, H = 1, O = 16, Pb = 207; one mole of gas

occupies 22.4dm3 at s.t.p.).

A. 

B. 

C. 

D. 

26. The electrolysis of dilute sulphuric acid using platinum electrodes is shown in the

figure below:-

+ -

Platinum electrodes

Dilute sulphuric acid.

Which of the following observations would be made at each electrode at the start of electrolysis?

**Anode** **Cathode**

A. Colourless gas. Colourless gas.

B. Colourless gas. White fumes.

C. White fumes. Colourless gas.

D. White fumes. White fumes.

27. Aluminium bottle caps do not corrode in buried soil. Which of the following

explains the observation?

A. Aluminium is alloyed with other metals.

B. Aluminium is protected by an oxide layer.

C. Aluminium does not react with alkalis.

D. Aluminium does not react with acids.

28. Which one of the following is not of property of Lead (II) oxide?

A. It is soluble in sodium hydroxide solution.

B. It is brown when hot and yellow when cold.

C. It is soluble in water and a reducing agent.

D. It is soluble in hydrochloric acid.

29. Which one of the following is a displacement reaction?\

A. Cl2(g) + 2Kl(aq) I2(s) + 2KCl(aq).

B. Cl2(g) + 2HF(aq) F2(g) + 2HCl(aq).

C. Br2(g) + 2KCl(aq) Cl2(g) + 2KBr(aq)..

D. I2(s) + 2KCl(aq) Cl2(g) + 2KI(aq).

30. Element **P** reacts with cold water while **R** reacts with steam. **T** displaces **P**

from solutions of its salt. Which one of the following is the order of

reactivity of elements beginning with the most reactive?

A. T,P,R.

B. T,R,P.

C. P,T,R.

D. P,R,T.

31. 18cm3 of an acid H2X was neutralised by 25cm3 of a 0.05M sodium carbonate.

Which one of the following is the molarity of the acid?

A. 

B. 

C. 

D. 

32. Which one of the following is observed when chlorine water is exposed to

sunlight?

A. A colourless gas which burns with pale blue flame is evolved.

B. A colourless gas is evolved which relights a glowing splint.

C. A colourless gas which bleaches litmus is evolved.

D. The solution turns from green to yellow.

33. Which of the following is true about graphite and amorphous carbon?

A. They have same mass number and are isotopes.

B. They show similar physical properties and are allotropes.

*C.* They have same mass number and are allotropes.

D. They show similar physical properties and are isotopes.

34. A clean piece of magnesium ribbon was added to Copper (II) Sulphate

solution. Which one of the following was observed?

A. The solution remained blue and a brown solid formed.

B. The blue colour of solution faded and a brown solid formed.

C. The solution turned colourless and a grey solid formed.

D. There was no observable change.

35. The atomic number of Y is 7. Which one of the following is not a property of

the oxide of Y?

A. It has low melting point. B. It is an acidic oxide.

C. It is soluble in water. D. It conducts electricity.

36. Propane burns in air according to the following equation:

C3H8(g) +5O2(g) 3CO2(g) + 4H2O(l).

Which one of the following would be the mass of propane

that would burn to produce 950KJ of heat?

(H = 1, C = 12; Molar enthalpy of combustion of propane = - 2220KJmol-1).

A. .

B. g.

C. 

D. 

37. Which one of the following is not true about concentrated sulphuric acid?

A. Reacts with sucrose to form carbon.

B. Reacts with sulphur when hot to liberate sulphur dioxide.

C. Reacts with copper metal to liberate hydrogen gas.

D. Reacts with sodium chloride to form hydrogen chloride.

38. Which of the following is correct about polythene?

A. It is a thermo setting plastic and hydrocarbon.

B. It is a thermo softening plastic and hydrocarbon.

C. It conducts heat and electricity.

D. It is malleable and ductile.

39. Which of the following substance reacts with a sulphate to form a white

precipitate?

A. Zinc Nitrate.

B. Sodium Hydroxide.

C. Barium Nitrate.

D. Hydrochloric acid.

40. The two types of bonds found in the ammonium ion, are

A. covalent and ionic.

B. covalent and dative.

C. metallic and ionic.

D. dative and ionic.

**Each of the questions 41-45 consists of an assertion (statement) on the left hand side and a reason on the right hand side.**

**Select:**

1. **If both the assertion and the reason are true statements and the reason is the correct explanation of the assertion.**
2. **If both the assertion and the reason are true statements but the reason is not a correct explanation of the assertion.**
3. **If the assertion is true but the reason is not a correct statement.**
4. **If the assertion is not correct but the reason is a true statement.**

**SUMMARY OF INSTRUCTIONS**

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 41. | Excessive use of detergent could cause water pollution | because | all detergents are soluble in water. |  |
|  |  |  |  |  |
| 42. | Hydrogen chloride does not conduct electricity | because | hydrogen chloride is  insoluble in water. |  |
|  |  |  |  |  |
| 43. | Concentrated sulphuric acid displaces nitric acid from nitrates | because | Nitric acid is a stronger oxidising agent than concentrated sulphuric acid. |  |
|  |  |  |  |  |
| 44. | Manganese (VI) oxide reacts with concentrated hydrochloric acid to produce chlorine | because | Manganese (IV) oxide  is an oxidising agent. |  |
|  |  |  |  |  |
| 45. | Hydrogen gas can be collected by downward delivery during preparation | because | Hydrogen gas is less dense than air. |  |

**In each of the questions 46-50, one or more answers may be correct. Read each question carefully, and then indicate the correct answer A, B, C or D according to the following:-**

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 are correct.

46. 2g of zinc was reacted with 100cm3 of hydrochloric acid under various

conditions. Which of the following condition(s) would the rate of reaction be

fastest?

1. Zinc powder and 0.5M HCl at 25oC.
2. Zinc granules and 2M HCl at 35oC.
3. Zinc granules and 0.5M HCl at 25oC.
4. Zinc powder and 2M HCl at 35oC.

47. Which of the following is/are observed when a mixture of charcoal and

copper (II) oxide are heated?

1. Lime water turned milky.
2. Black residue formed.
3. Brown residue formed.
4. Lime water remained colourless.

48. Which of the following is/are true about an element with atomic number 3 and

mass 7.

1. It belongs to group V.
2. It forms ionic oxides.
3. It forms acidic oxides.
4. It reacts with dilute acids.

49. A metal forms a hydroxide which is soluble in water. The metal will form a

chloride that

1. is soluble in water.
2. has a high melting point.
3. conducts electricity in aqueous state.
4. is soluble in an organic solvent.

50. Which one of the following metal(s) can be extracted from its oxide by reduction

with Carbon?

* + 1. Copper.
    2. Lead.
    3. Iron.
    4. Magnesium.