Name…… Signature……

School…… Index No……..

545/1

CHEMISTRY

Paper 1

July/August 2015

1 ½ hours

WAKISSHA JOINT MOCK EXAMINATIONS

Uganda Certificate of Education

CHEMISTRY

Paper 1

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

This paper consists of **50** *objective-type questions.*

Answer **all** *questions.*

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

Use pen and write clearly, do not use pencil.

For examiner's use only

Turn Over

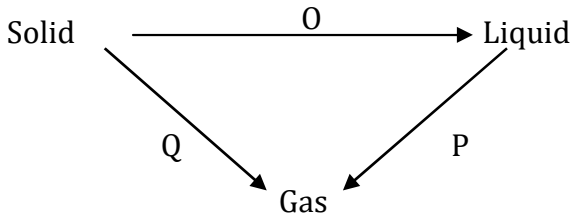
1. Which of the following is not true about mixtures?

   A. Their properties are average.
   B. Their elements are chemically combined.
   C. Their substance are physically separated.
   D. Their composition is variable.

2. Which one of the following is most suitable method for obtaining cream from milk?

   A. Chromatography.
   B. Centrifugation.
   C. Sublimation.
   D. Crystallisation.

3. Their diagram below shows the three physical states of matter.



   O, P and Q are respectively represents;

   A. Melting, Sublimation and evaporation.
   B. Freezing, Condensation, evaporation.
   C. Sublimation, Condensation, melting.
   D. Melting evaporation sublimation.

4. The most efficient method for separating a mixture of sodium chloride and iron (III) chloride is

   A. Sublimation.
   B. Decantation.
   C. Filtration.
   D. Crystallization.

5. Which of the following is an oxidation process only?

   A. Melting of candle.
   B. Rusting of ion.
   C. Displacement of copper ions by zinc metal.
   D. Formation of white precipitate y ammonia solution.

6. The substance which conducts electricity when molten but not when solid is

A. A metalic element.
B. Non-metalic element.
C. An ionic compound.
D. A covalent compound.

7. Which one of the following is the correct order of purifying river water for domestic use?

A. Aeration, filtration, sedimentation.
B. Filtration, aeration, sedimentation.
C. Sedimentation, aeration, filtration.
D. Sedimentation, filtration, aeration.

8. A hydrocarbon compound consists of 82.76% carbon and rest being hydrogen. The simplest formula of the hydrocarbon compound is

A. C_2H_2
B. CH_2
C. C_2H_3
D. C_4H_6

9. Which one of the following pairs of ions forms Scum with soap solution?

A. Ca^{2+} and Zn^{2+}
B. Mg^{2+} and Fe^{2+}
C. Mg^{2+} and Ca^{2+}
D. Fe^{3+} and Al^{3+}

10. When heated strongly copper(II) mutate leaves a solid residue the colour of the residue is

A. Reddish – brown (hot) grey (cold).
B. Reddish – brown (hot) black (cold).
C. Green (hot), black (cold).
D. Black (hot), black (cold).

11. Which one of the following elements burns in air to form a solid that dissolves in water to form a colorless solution that turns blue litimus paper red?

A. Phosphorus.
B. Sodium.
C. Sulphur.
D. Magnesium.

12. What is the volume of 0.1M sodium hydroxide solution will react completely with $10cm^3$ of 0.1M sulphuric acid, $2NaOH\ (aq) + H_2S0_4(aq) \rightarrow Na_2S0_4 + H_2O_{(l)}$

A. $5cm^3$
B. $10cm^3$
C. $20cm^3$
D. $25cm^3$

13. Which of the following is a monomer for proteins

A. Urea.
B. Glucose.
C. Fructose.
D. Amino acids.

14. The change from Cu2+ to Cu involves the

A. Loss of protons.
B. Loss of electrons.
C. Gain electrons.
D. Gain of protons.

15. When $100cm^3$ of 2M sodium hydroxide solution is neutralized with $100cm^3$ of 2M hydrochloric acid, the temperature rises by 2.6^0C. The molar heat of neutralization of sodium hydroxide by hydrochloric acid is C = 4.18 joules.

A. 2.174kg
B. 10.4 kg
C. 2.48kg
D. 20.08kg

Turn Over

16. Which of the following is best explanation for increasing surface area of the reactants in the chemical reaction?

A. Increase the kinetic energy.
B. Increase the amount of reactants.
C. Increase the rate of collision of the particles.
D. Decrease the kinetic energy.

17. Hard water does not lather readily and leaves scum when treated with soap. This is because hard water contains

A. Particles of insoluble calcium carbonate.
B. Soluble salts of calcium and magnesium.
C. Dissolved carbon oxide.
D. Particles of insoluble sulphate.

18. $7.2dcm^3$ of gas has a mass of 0.82g calculate the relative molecular mass of gas Q.
[1 mole of a gas occupies $24scm^3$ at room temperature].

A. $\frac{0.82 \times 24}{7.2}$

B. $\frac{24 \times 7.2}{0.82}$

C. $\frac{0.82 \times 7.2}{24}$

D. $\frac{0.82}{24 \times 7.2}$

19. A solid when treated with dilute hydrochloric acid gives off a gas which turns limewater milky. This tells us that

A. It contained a carbonate.
B. It was zinc carbonate.
C. It contained powdered carbon.
D. It was a mixture of carbon and metal oxide.

20. Chlorine gas can be prepared in the laboratory by heating concentrated hydrochloric acid with

A. Hydrogen peroxide.
B. Lead (II) oxide.
C. Copper(II) oxide.
D. Manganese (IV) oxide.

21. The number of moles of ammonium ions contained in 250cm3 of 0.1M ammonium carbonate solution is.

A. 0.030
B. 0.050
C. 0.075
D. 0.925

22. Which of the following best explains any anhydrous substance.

A. It never contains water.
B. Its always a powder.
C. It is not a salt.
D. It always changes colour when water is put on it.

23. The molecular formulae of the first three members of the alkane family are

A. CH_3, C_2H_6, C_3H_8

B. CH_2, C_2H_9, C_3H_6

C. CH_4, C_2H_4, C_3H_8

D. CH_4, C_2H_6, C_3H_8

24. Which of the following is best description of an ore?

A. A purified metal.

B. The oxide of a metal.

C. Amixture of rock and a metal compound.

D. Amixture of a rock and a metal oxide.

25. Which of the observed is moving from left to right across a period in the penodic table?

A. Non-metalic character increases.

B. Metallic character increases.

C. Number of energy levels decreases.

D. Number of energy levels increases.

26. Sulphur reacts completely with concentrated nitric acid to form

A. Sulphur dioxide.

B. Hydrogen sulphide.

C. Sulphuric acid.

D. Sulphur dioxide.

27. What volume of air will provide enough oxygen for the complete combustion of 2g phosphoric at room temperature [P =31, 1 mole of gas = 24 dm^3 at room temperature]

$4P_{(s)}$, + $5O_{2(g)}$ $P_4O_{10(s)}$ ⟶

A. 4.8dm^3

B. 9.7 dm^3

C. 12dm^3

D. 24dm^3

28. What mass in grams of sodium carbonate penta hydrate $Na_2Co_3.10H_2O$) is contained in 100cm^3 of 0.1M solution. [Na = 23, H = 1, C = 12, O = 16]

A. $\frac{0.1 \times 10.6 \times 1000}{100}$

B. $\frac{106 \times 0.1 \times 100}{1000}$

C. $\frac{286 \times 0.1 \times 1000}{100}$

D. $\frac{106 \times 0.1 \times 100}{1000}$

29. Halogens are placed in the same group of the penodic table because they

A. Are all gases at room temperation.

B. All have seven electrons in the outer shell.

C. All form compounds with hydrogen.

D. All contain the same number of shells.

30. Starches and sugars belongs to the class of compounds known as

Turn Over

A. Allotropes.

B. Isotopes.

C. Hydrocarbons.

D. Carbohydrates.

31. Which of the following is formed when animal bone is heated without contact with air?

A. Magnesium Sulphate.

B. Iron(II) phosphate.

C. Calcium phosphate.

D. Zinc sulphate.

32. The substance that is produced at the anode when a concentrated solution of potassium iodide is electrolyzed.

A. Potassium.

B. Hydrogen.

C. Oxygen.

D. Iodine.

33. The formula of the Sulphate of an element Q_2 in Q_2 $(SO4)_3$. The likely formula of the chloride of the same element is

A. Q_2Cl

B. Q_3Cl

C. QCl3

D. QCl

The electronic configuration of the atoms of elements P, Q, R and S are 2:8:3:2:8:5 2:8:7 and 2:8:7 respectively. Use it to answer question 34 and 35.

34. Which of the elements will combine to form compound that can conduct electricity in aqueous or molten form.

A. P and Q
B. P and R
C. Q and R
D. P and S

35. Which of the pairs of element form a covalent compound?

A. Q and R
B. P and Q
C. Rand S
D. P and S

In the blast furnance, iron is obtained according to the equation.

$Fe_2O_3 + 3CO_{(g)} \longrightarrow 2Fe_{(s)} + 3CO_{2(g)}$

36. The mas of iron obtained from 40tonnes of iron(III) oxide is [Fe =56, O =16, C =12]

A. 8 tonnes.
B. 14 tonnes.
C. 16 tonnes.
D. 28 tonnes.

37. The volume of ammonia gas at s.t.p that will be produced when $20cm^3$ of nitrogen reacts with hydrogen gas according to the equation $N_2(g), 3H_2(g) \longrightarrow 2NH_3(g)$

A. $10\ cm^3$
B. $20\ cm^3$
C. $30cm^3$
D. $40cm^3$

38. Separation of dyes of ink by chromatography depends on

A. The different boiling point of dyes in ink.
B. The freezing point of substances.
C. The solubility of the dyes in solvent.
D. The size of the chromatography paper.

39. Which one of the following is an example of a non-bio degradable substance?

A. Wood.

B. Silk.

C. Wool.

D. Polyethene.

40. The molarity of a solution made by dissolving 2.5g of sodium carbonate in $50cm^3$ of solution is (Na = 23, C= 12, O = 16)

A. 0.47M

B. 0.25 M

C. 0.35 M

D. 0.60M

In each of the question 41 – 45 one / more of the answers may be correct. Read each question carefully and then indicate the correct answer as: A, B, C or D according to the following.

A. If 1, 2 and 3 only are correct.

B. If 1 and 3 only are correct.

C. If 2 and 4 only are correct.

D. If 4 only is correct.

Instructions Summarised.

A	B	C	D
1, 2, 3 only	1 and 3 only	2 and 4 only	4 only

41. Which one of the following is /are uses of graphite?

1. Making drilling bits.
2. Making electrodes.
3. Making jewelry.
4. Making lubricants.

42. The yield of sulphuric acid in contact process is increased by:

1. Using moderate temperature.
2. The presence of vanadium (v) oxide.
3. Increasing pressure.

4. Using excess oxygen.

43. The following (are/is) use(s) of chlorine on a large scale.
    1. Sewage treatment.
    2. To bleach wood-pulp in paper making.
    3. Preparation of soap.
    4. In water purification.

Turn Over

44. Which of the following gases is /are used as coolants in refrigerators?
    1. Carbondioxide.
    2. Sulphurdioxide.
    3. Ammonia.
    4. Chlorine.

45. During purification of river water for domestic use, aluminiumsulphate is add to,
    1. Kill viruses and bacteria.
    2. Remove unwanted colours.
    3. Add aluminium ions.
    4. Coagulate fine suspended particles.

Each of the following questions 46 – 450 consists of an assertion (statement) on the left hand side and a reason on the right hand side.

Select as follows.

A. If both assertion and reason are **true** statements and the reason is the **correct** explanation of the assertion.
B. If both assertion and reason are **true** statements but the reason is **not** the **correct** explanation of the assertion.
C. If the assertion is **true** but the reason is **not** a **correct** statement.
D. If the assertion is **not** correct but the reason is a correct statement.

Instructions Summarised

	Assertion	**Reason**	
A.	True	True	(Reason is a correct explanation)
B.	True	True	(reason is not a correct explanation)

C.	True	Incorrect
D.	Incorrect	Correct

46.	Dilute nitric acid is not used in preparation of hydrogen.	Because	It oxidises hydrogen to water.	
47.	Concentrated sulphuric acid changes sugar from white to black	Because	Concentrated sulphuric acid is an oxidizing agent.	
48.	The enthalapy of combustion of butane is higher than that of ethane.	Because	Butane contains more carbon atom than ethane.	
49.	Copper metal is extracted by electrolysis.	Because	Copper reacts with concentrated sulphuric acid to form copper(II) sulphate.	
50.	Electrolysis of dilute sodium hydroxide solution produces oxygen and hydrogen gas.	Because	Sodium hydroxide solution consists of hydroxide ions and hydrogen ions.	

END