

Uganda Certificate of Education

End of term one 2019 S.3

CHEMISTRY

Paper 1

2 hours

INSTRUCTIONS

Answer all the questions.

- Which of the following substances is a mixture?
A. Diamond B. Polyethene C. steel D. wool
- Which of the following compounds is unsaturated hydrocarbon
A. CH_4 B. C_2H_4 C. C_3H_8 D. C_4H_{10}
- 12.7g of metal R, reacts with 11.3g of oxygen to form an oxide. Which one of the following is the formula of the oxide of R? (O=16, R=27)
A. RO_2 B. R_2O C. R_2O_3 D. R_2O_2
- Which one of the following statements is false about nitrogen? It
A. Is diatomic C. does not react with metals
B. Forms about 78% by volume of air D. is Colourless
- The red brown coating formed when iron nail is left in moist air for a long time is
A. Hydrated iron(II) oxide
B. Hydrated iron(III) oxide
C. Anhydrous iron(III) oxide
D. Anhydrous iron(II) oxide
- Separation of a mixture by fractional distillation depends on
A. Solubility of the compounds
B. Different but close boiling points of components
C. Difference in rates of movement of components
D. Difference in melting points of components
- Which of the following pairs of compounds are in the same homologous series?
A. Ethane and ethyne C. Ethyne and methane
B. Ethene and ethyne D. ethane and methane
- An oxide of a metal reacts with both sodium hydroxide and hydrochloric acid. The oxide formed is said to be
A. Acidic B. basic C. neutral D. amphoteric
- Green pigments of a leaf can be separated by
A. Distillation B. sublimation C. precipitation D. chromatography
- An example of a normal salt is
A. $Mg(HCO_3)_2$ B. Na_3PO_4 C. $Ca(HCO_3)_2$ D. $NaHCO_3$
- Which one of the following is not an acid anhydride?
A. Sulphur dioxide C. Carbondioxide
B. Chlorine D. nitrogen dioxide
- Hydrogen does not reduce the oxide of Z but reduces the oxide of Y more readily than reduces the oxide of X. The order of reactivity of the elements X, Y and Z starting from the most reactive is
A. X, Z, Y B. Z, X, Y C. Y, X, Z D. Y, Z, X

13. Which one of the following substances will give up its water of crystallization to the atmosphere when left in dry air?
- Hydrated copper(II) sulphate
 - Hydrated sodium carbonate
 - Phosphorous (V) oxide
 - Sodium hydrogen carbonate
14. Which of the following gases diffuses fastest? (C=12, O=16, H=1, N=14)
- Carbon dioxide
 - Methane
 - nitrogen dioxide
 - ammonia
15. Which one of the following compounds softens hard water?
- Na_2CO_3
 - $CaCl_2$
 - $MgSO_4$
 - $Ca(OH)_2$
16. An oxide of an element is made up of 50% M. the simplest formula of the oxide is (M=32, O=16)
- MO
 - M_2O
 - MO_2
 - M_2O_3
17. The formula of the sulphate of an element Z is $Z_2(SO_4)_3$. The likely atomic structure of Z is
- ${}^{27}_{12}Z$
 - ${}^{24}_{12}Z$
 - ${}^{35}_{17}Z$
 - ${}^{23}_{11}Z$
18. Which of the following gases whose molecular formulae are given can be prepared by dissolving a solid in water?
- NO_2
 - SO_2
 - O_2
 - CH_4
19. The reactivity of the elements X, magnesium and Y is X, Mg, Y. Which one of the following statement is true about an atom N below M in the periodic table?
- When Y is added to a solution of X in water X is precipitated
 - Magnesium and Y react with cold water
 - Magnesium and Y react with steam
 - X and magnesium react with steam
20. The atomic structure of element M is ${}^{24}_{12}M$. Which of the following statement is true about an atom N below M in the periodic table?
- Forms a chloride of the formula NCl
 - Forms a sulphate of the formula $N_2(SO_4)_3$
 - Forms a sulphate of the formula NSO_4
 - Forms a cation of the type N^{3+}
21. Which of the following mixtures can be separated by applying heat to the mixture?
- Sugar and sand
 - Iron (III) chloride and sand
 - Sulphur And iron fillings
 - Sodium chloride and sodium sulphate
22. Concentrated Sulphuric acid acts as a dehydrating agent when it reacts with
- Copper(II) sulphate crystals
 - Sodium hydroxide
 - Magnesium metal
 - Zinc oxide
23. In preparation of oxygen gas in the laboratory, manganese oxide is a
- Reactant
 - Catalyst

- C. Product
 - D. Gas
24. A hydrocarbon X has 25% hydrogen, its empirical formula is
- A. CH_4
 - B. CH_3
 - C. C_2H_4
 - D. C_3H_4
25. Methane is an
- A. Alkane
 - B. Alkyne
 - C. Alkene
 - D. Alcohol
26. An atom has electronic configuration 2:8:3, to which group and period does the atom belong
- A. ii and 4 respectively
 - B. iii and 3 respectively
 - C. 3 and iii respectively
 - D. 2 and i
27. Potassium reacts vigorously with water than calcium because
- A. Calcium is smaller than potassium
 - B. Potassium gains one electron while calcium gains two electrons
 - C. Potassium is stronger than calcium
 - D. Calcium is more reactive than potassium
28. In fractional distillation, the criteria is
- A. The components are immiscible
 - B. The components have very different boiling points
 - C. The components are miscible and volatile and have very close boiling points
 - D. The components are nonvolatile
29. What is false about potassium
- A. It's a metal
 - B. It's very reactive
 - C. It has valency 3
 - D. It forms a basic oxide
30. When soot is burnt in excess oxygen, the products are
- A. Carbon monoxide and water
 - B. Carbondioxide and water
 - C. Oxygen and water
 - D. Carbondioxide alone

31. The valency of R in $R_2(SO_4)_3$ is
 A. 2 B. 4 C. 3 D. 5
32. The atomic number of element S is 17. In which group of the periodic table is S.
 A. I B. II C. V D. VI
33. Isotopes of an element have got
 A. Same number of protons and neutrons
 B. Same number of electrons and protons
 C. Different number of electrons and protons
 D. Same number of electrons and protons
34. A gas is collected by upward delivery when
 A. It is slightly soluble in water
 B. It is less dense than air
 C. It is a gas with low boiling point
 D. It forms a reaction with water
35. Which of the following solutions would dissolve in water to form a solution that will turn red litmus blue?
 A. Sodium chloride B. Sodium hydroxide C. Sodium sulphate D. sodium nitrate
36. The number of neutrons in the nucleus of an atom $^{37}_{17}X$ is
 A. 17 B. 20 C. 37 D. 54
37. Atoms of elements in the same group of the periodic table have the same number of
 A. Outer shell electrons C. Protons in the nucleus
 B. Electrons outside the nucleus D. Neutrons in the nucleus
38. Which of the following is not a characteristic of a liquid? It has
 A. a definite shape C. mobile molecules
 B. a fixed volume D. weak forces between molecules
39. Which of the gases below does not burn?
 A. nitrogen C. methane
 B. hydrogen D. carbon monoxide
40. Which of the following metals react with steam?
 A. copper C. silver
 B. lead D. iron

For the questions 41-45, the instructions are summarized below.

alternative	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

41. Hydrogen chloride conducts electricity	because	Hydrogen chloride is soluble in water
42. Pollen grains in water are in continuous motion	because	Pollen grains collide with moving water molecules
43. alkali metals are highly electropositive	because	They have one electron in their outermost shell
44. water can be separated from its mixture with cooking oil by using separating funnel	because	Water and cooking oil have different boiling points
45. The pH of Carbondioxide is less than seven	because	Carbondioxide is an acid

For questions 46 -50, the instructions are summarized below:

- 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

46. Which of the following elements has/have allotropes?

- 1. Carbon 2. Phosphorus 3. Sulphur 4. Chlorine

47. Carbon is similar to Sulphur in that both

- 1. Are non-metallic solids 3. Form covalent compounds
- 2. Exist in allotropic forms 4. Form neutral oxides

48. Which of the following substances is/are is reacted with steam?

- 1. Oxygen 3. Magnesium hydroxide
- 2. hydrogen 4. Magnesium oxide

49. Which of the following contain(s) the same number of moles? (C=12, Ca=40, Cu=64, S=32)

- 1. 16g of copper
- 2. 12g of carbon
- 3. 109g of calcium
- 4. 16g of Sulphur

50. These are alkanes

- 1. Methane 2. Ethane 3. Propane 4. Ethene

END