

545/1
CHEMISTRY
PAPER 1
2020
1½HRS

ST. BRUNO SERUNKUMA SENIOR SECONDARY SCHOOL GGOLI
SELF ASSESSMENT EXAMINATION
Uganda Certificate of Education
MAY, 2020

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.
- Do not use a pencil.

FOR EXAMINERS USE ONLY

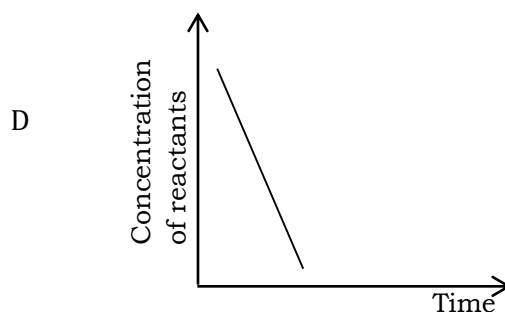
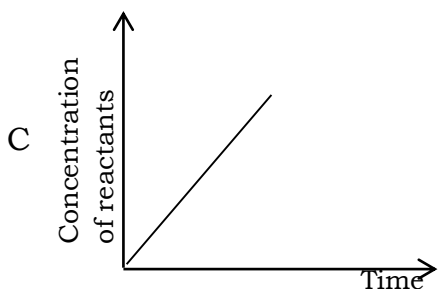
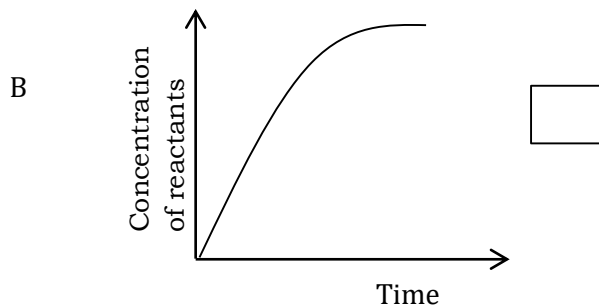
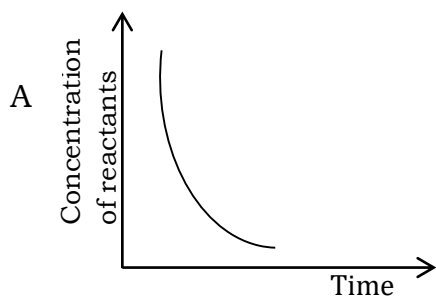
- Which one of the following gases dissolves in water to form an acidic solution?
 A. Nitrogen
 B. Carbon monoxide
 C. Ethene
 D. Carbon dioxide.
- Which of the following is a monomer of proteins?
 A. Glucose B. Amino acids C. Isoprene D. Ethene
- The atomic number of element Z is 17. In which group of the periodic Table is Z?
 A. I B. II C. VII D. IV
- Which of the following is not true about element M, with electronic configuration of 2.8.3?
 A. It conducts heat and electricity
 B. It is a metal
 C. It dissolves in dilute acids to give hydrogen
 D. Its valencies are 1,2 and 3
- Element X reacts with Chlorine to form a compound with formula XCl_4 . The formula of the Oxide of X is
 A. X_2O B. XO C. XO_2 D. XO_4
- Carbon burns in Oxygen according to the following equation: $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$
 The amount of heat evolved when 480g of carbon is burnt completely in Oxygen is:-(Molar heat of combustion of carbon is $2.2 \times 10^{-7} \text{ kJmol}^{-1}$ C=12)
 A. $480 \times 12 \times 2.2 \times 10^{-7}$

- B. $\frac{480 \times 12}{2.2 \times 10^{-7}}$
- C. $\frac{2.2 \times 10^{-7} \times 12}{480}$
- D. $\frac{2.2 \times 10^{-7} \times 480}{12}$

7. Which one of the following is the process by which the property of rubber is improved by treating rubber with sulphur?
 A. Polymerisation
 B. Vulcanisation.
 C. Hydrogenation
 D. Esterification.
8. Most metals react with dilute mineral acids to form.
 A. Hydrogen gas and the salt of the metal.
 B. Hydrogen only.
 C. The salt of the metal and water.
 D. The salt of the metal only.
9. Which of the following ions reacts with ammonia to form a precipitate that dissolves in excess ammonia solution?
 A. $\text{Pb}^{2+}_{(\text{aq})}$ B. $\text{Fe}^{2+}_{(\text{aq})}$ C. $\text{Ca}^{2+}_{(\text{aq})}$ D. $\text{Cu}^{2+}_{(\text{aq})}$
10. What name is given to the reaction leading to the formation of soap from oil?
 A. Hydrogenation
 B. Degradation
 C. Saponification
 D. Polymerization
11. Which of the following metals will react with Oxygen to form an amphoteric oxide?
 A. Zinc. B. Iron C. Copper D. Magnesium.
12. Aluminium reacts with hydrochloric acid according to the following equation.
 $2\text{Al}_{(\text{s})} + 6\text{HCl}_{(\text{aq})} \longrightarrow 3\text{H}_{2(\text{g})} + 2\text{AlCl}_{3(\text{aq})}$
 The volume of Hydrogen formed when 5g of Aluminium reacted with excess acid is (Al=27; One mole of a gas occupies 22400 cm³ at s.t.p)
 A. $\frac{5 \times 22400}{3 \times 2 \times 27}$ cm³
 B. $\frac{5 \times 3 \times 22400}{2 \times 27}$ cm³
 C. $\frac{27 \times 3 \times 22400}{2 \times 5}$ cm³
 D. $\frac{5 \times 2 \times 22400}{3 \times 27}$ cm³
13. The metal which can be extracted from its ore only by electrolysis is
 A. Copper B. Magnesium C. Zinc D. Iron
14. Which one of the following methods is most suitable to prepare a pure dry sample of Lead (II) sulphate?
 A. Direct synthesis
 B. Neutralization
 C. Reacting lead with sodium hydroxide.
 D. Precipitation
15. Which of the following molecular formula is that of an alkene?
 A. C₄H₆ B. C₃H₆ C. C₃H₈ D. C₂H₂
16. Which of the following nitrates will decompose to give a metal when strongly heated?
 A. Silver nitrate
 B. Calcium nitrate.

- C. Zinc nitrate.
D. Sodium nitrate.

17. Which of the following metals will displace Zinc from its salt in solution?
A. Iron B. Copper C. Lead D. Calcium
18. Which of the following anions will react with lead(II) ions to form a yellow precipitate?
A. $\text{Cl}^-_{(\text{aq})}$ B. $\text{CO}_3^{2-}_{(\text{aq})}$ C. $\text{I}^-_{(\text{aq})}$ D. $\text{SO}_4^{2-}_{(\text{aq})}$
19. A hydro carbon contains 4.8g of carbon and 0.8g of hydrogen. The empirical formula of the hydro carbon is.
C=12, H=1
A. C_2H B. CH_4 C. CH_2 D. C_6H
20. Which of the following is formed when excess concentrated sulphuric acid is heated with ethanol?
A. Hydrogen B. Ethane C. Water D. Ethene
21. 10cm^3 of sulphuric acid reacted completely with 25cm^3 of 0.1M sodium hydroxide solution. The molarity of sulphuric acid is.
A. 0.125M B. 0.250M C. 0.500M D. 1.000M
22. The substance that can react with water at room temperature is.
A. Magnesium. B. Zinc. C. Iron. D. Calcium.
23. Hydrogen peroxide decomposes according to the following equation:
 $2\text{H}_2\text{O}_2_{(\text{aq})} \longrightarrow 2\text{H}_2\text{O}_{(\text{l})} + \text{O}_{2(\text{g})}$. Which one of the following graphs represents how the concentration of the reactants varies with time during the reaction?



24. Which of the following processes does not affect the concentration of carbon dioxide in the atmosphere?
A. Baking of bread. B. Photosynthesis.
C. Rusting of iron D. Respiration.
25. Which one of the following potassium salts will dissolve in water to give a solution that turns red litmus paper blue?
A. K_2CO_3 B. KCl C. KNO_3 D. K_2SO_4
26. 20cm^3 of 0.1M sodium carbonate solution reacted completely with 10cm^3 of dilute hydrochloric acid. The molarity of the acid is.
A. 0.1M B. 0.2M C. 0.4M D. 0.8M
27. The gas that is normally collected by upward delivery is
A. Ammonia B. Chlorine
C. Sulphur dioxide. D. Hydrogen chloride.

28. The numbers of protons, neutrons and electrons in some particles are shown in the table below.

Particle	Protons	Neutrons	Electrons
P	1	1	2
Q	2	2	2
R	3	4	2
T	4	5	4

Which one of the following particles is an ion?

- A. P B. Q C. R D. T

29. Which one of the following compounds does not cause hardness of water?

- A. Calcium sulphate
B. Sodium carbonate.
C. Magnesium sulphate.
D. Calcium Hydrogen carbonate.

30. Which of the following Oxides can be reduced by dried ammonia?

- A. Zinc Oxide
B. Calcium oxide
C. Iron(III) oxide.
D. Copper(II) oxide.

31. In which one of the following equations is carbon dioxide behaving as an oxidising agent?

- A. $\text{CO}_2(\text{g}) + 2\text{NaOH}(\text{aq}) \longrightarrow \text{Na}_2\text{CO}_3(\text{aq}) + \text{H}_2\text{O}(\text{l})$
B. $\text{CO}_2(\text{g}) + \text{CaCO}_3(\text{s}) + \text{H}_2\text{O}(\text{l}) \longrightarrow \text{Ca}(\text{HCO}_3)_2(\text{aq})$
C. $\text{CO}_2(\text{aq}) + \text{C}(\text{s}) \longrightarrow 2\text{CO}(\text{g})$
D. $\text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) \longrightarrow \text{H}_2\text{CO}_3(\text{aq})$

32. Which of the following reactions will not produce hydrogen?

- A. Electrolysis of aqueous sodium chloride.
B. Passing hydrogen chloride over heated copper turnings.
C. Addition of potassium to cold water.
D. Addition of aluminium to hot aqueous sodium hydroxide

33. When compound Y was heated, carbon dioxide was liberated and a residue which was yellow when cold remained. Y is;

- A. Zinc carbonate.
B. Iron(II) carbonate.
C. Lead(II) carbonate.
D. Sodium carbonate.

34. Which of the following will dissolve in dilute nitric acid but not in dilute sodium hydroxide solution?

- A. Fe_2O_3 B. Al_2O_3 C. ZnO D. PbO

35. A concentrated solution of copper(II) chloride was electrolysed using carbon electrodes. Which one of the following substances was produced at the anode?

- A. Copper
B. Oxygen
C. Hydrogen
D. Chlorine

36. The number of moles of Hydrogen atoms present in one mole of ammonium sulphate $(\text{NH}_4)_2\text{SO}_4$ is

- A. 1 B. 2 C. 3 D. 8

37. Which one of the following cations when in solution reacts with aqueous potassium hydroxide to form a brown precipitate?

- A. Fe^{3+}
B. Al^{3+}
C. Fe^{2+}
D. Pb^{2+}

38. What is the percentage of sulphur in iron(III) sulphate $\text{Fe}_2(\text{SO}_4)_3$?
(O=16, S=32, Fe=56)
- A. $\frac{32 \times 100}{400}$
- B. $\frac{96 \times 100}{400}$
- C. $\frac{112 \times 100}{400}$
- D. $\frac{128 \times 100}{400}$
39. When silver nitrate was added to a solution followed by dilute nitric acid, a white precipitate was formed. The solution contained
- A. Sulphate ions
- B. Carbonate ions
- C. Chloride ions
- D. Sulphite ions.
40. Which one of the following crystalline substances will turn into white powder when exposed to air?
- A. Copper(II) sulphate.
- B. Magnesium sulphate.
- C. Sodium carbonate.
- D. Calcium chloride.

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

Select

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

41. Chlorine is used in the purification of water **BECAUSE** Chlorine is a bleaching agent.
42. In contact process, Sulphur trioxide is dissolved in concentrated sulphuric acid
and not in water **BECAUSE** Sulphur trioxide is insoluble in water
43. Pure sulphuric acid does not conduct **BECAUSE** It has great affinity for water
electricity
44. Zinc hydroxide is soluble in **BECAUSE** Zinc hydroxide is divalent metal (amphoteric)
excess aqueous ammonia
45. Ethene readily decolourises **BECAUSE** Ethene is saturated bromine water.

In each of the questions 46 to 50, one or more of the answers given may be correct. Read each question carefully and then indicate the correct answer 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	1,3	2,4	4
Only correct	Only correct	Only correct	Only correct

46. Which one of the following gases will decolourise acidified potassium manganate (VII)?
1. C_2H_4
 2. CO_2
 3. SO_2
 4. H_2S
-
47. Which one of the following is formed when chlorine is bubbled in sodium hydroxide solution?
1. NaCl
 2. HCl
 3. NaOCl
 4. HClO
-
48. Which of the following salts when heated forms a gas that turns potassium dichromate green?
1. Sodium carbonate.
 2. Iron (III) sulphate
 3. Ammonium nitrate
 4. Zinc sulphate.
-
49. Which of the following will be dehydrated by concentrated sulphuric acid?
1. Lime
 2. Ethanol
 3. Soda ash
 4. Sugar
-
50. Solid G conducts electricity and has a very high melting point. G is likely to have
1. Metallic structure
 2. Giant molecular structure
 3. Giant atomic structure
 4. Giant ionic structure
-

END