

NAME OF SCHOOL:

NAME OF CANDIDATE:

INDEX NO: SIGNATURE:

545/1
CHEMISTRY
PAPER 1
JULY/AUGUST
1 ½ HOURS



ELITE EXAMINATION BUREAU MOCK 2019
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 answers; **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 a pencil. Any question(s) answered in pencil will not be marked.*

For examiners' use only

1. Which one of the following mixtures can be separated by fractional crystallization?
 A. ammonium chloride and magnesium chloride
 B. potassium chloride and potassium nitrate
 C. Sulphur and sodium chloride
 D. Lead (II) chloride and iron fillings ☐

2. Which one of the following acids is monobasic?
 A. Ethanoic acid.
 B. sulphuric acid
 C. phosphoric acid
 D. carbonic acid ☐

3. When 4.0g of an oxide of an element T were reduced, 3.2g of T were obtained. The simplest formula of the oxide of T is (T = 64, O = 16)
 A. T_2O_3 B. TO_2 C. TO D. T_2O ☐

4. The term oxidation refers to;
 A. addition of hydrogen to a substance
 B. gain of electrons by a substance
 C. loss of oxygen from a substance
 D. loss of electrons from a substance ☐

5. Which one of the following allotropes of Sulphur is stable above $95^{\circ}C$?
 A. monoclinic Sulphur
 B. Rhombic Sulphur
 C. plastic Sulphur
 D. amorphous Sulphur ☐

6. Which one of the following substances is formed when sodium is burnt in limited amount of air?
 A. sodium oxide
 B. sodium peroxide
 C. sodium carbonate
 D. sodium nitride ☐

7. Which one of the following ions makes water hard?
 A. HCO_3^- B. Mg^{2+} C. Na^+ D. SO_4^{2-} ☐

8. An alkaline solution that would react with excess carbon dioxide to give a cloudy solution is;
 A. lime water
 B. magnesium chloride
 C. sodium hydroxide
 D. ammonia solution ☐

9. Which one of the following halides is best prepared by precipitation method?
 A. barium chloride
 B. sodium iodide
 C. copper (II) chloride
 D. Lead (II) bromide ☐

10. Element X forms X^{2+} . The atomic numbers of X is;
 A. 1 B. 12 C. 8 D. 6 ☐

11. Which one of the following solutions will neutralize 100cm³ of a 0.8M hydrochloric acid?

- A. 10cm² of 0.08M sodium hydroxide
B. 50cm³ of 0.04M sodium hydroxide
C. 50cm³ of 0.8M sodium hydroxide
D. 80cm³ of 1M sodium hydroxide

☐

12. When chlorine water is exposed to sunlight,
A. bubbles of a colourless gas are formed.
B. yellow solution is formed.
C. brown fumes of gas are formed.
D. the water dries up.

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13. Which one of the following substances will dissolve in water to give a solution that turns blue litmus red?

- A. (NH₄)₂SO₄ B. NaOH
C. NaCl D. K₂CO₃

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14. When sugar mixed with concentrated sulphuric acid was warmed, a black solid was formed because sugar undergoes,

- A. combustion B. fermentation
C. dehydration D. oxidation

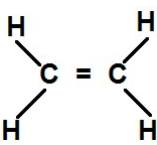
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15. Which one of the following gases is collected over water?

- A. hydrogen chloride B. chlorine
C. ammonia D. hydrogen

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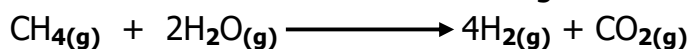
16. Which one of the following is the structural formula of ethane?

- A. **H—C≡C—H** B. 

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- C.  D. 

17. Steam reacts with methane according to the following equation.



Which volume of methane will remain when 30cm³ of methane reacted with 20cm³ of steam?

- A. 80cm³ B. 20cm³
C. 50cm³ D. 70cm³

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18. Nitric acid is prepared by the reaction of potassium nitrate and concentrated sulphuric acid because;
- A. sulphuric acid is a dehydrating agent
B. nitric acid is volatile
C. sulphuric acid neutralizes nitrate ion
D. nitric acid is a powerful oxidizing agent
19. The process which increases the concentration of oxygen in the atmosphere is,
- A. fermentation
B. rusting
C. photosynthesis
D. combustion
20. During extraction of sodium, calcium chloride is added to the ore in order to
- A. purify the ore
B. concentrate the ore
C. lower the melting point of the ore
D. improve the rate of production of sodium
21. Fused calcium chloride is not a suitable drying agent for this gas;
- A. ammonia
B. hydrogen chloride
C. carbon dioxide
D. Sulphur dioxide
22. Which one of the following ions when in solution would form a yellow precipitate with Lead (II) ions?
- A. $\text{Cl}^{-}(\text{aq})$
B. $\text{I}^{-}(\text{aq})$
C. $\text{CO}_3^{2-}(\text{aq})$
D. $\text{SO}_4^{2-}(\text{aq})$
23. A concentrated solution of copper (II) chloride was electrolyzed using carbon electrodes. Which one of the following substances was produced at the cathode?
- A. copper
B. oxygen
C. hydrogen
D. chlorine
24. The following are industrial uses of oxygen except;
- A. production of nitric acid
B. in hospitals
C. As a fuel in rockets
D. production of steel
25. Which one of the following carbonates will react with dilute sulphuric acid to give a blue solution and a gas that turns lime water milky?
- A. Zinc carbonate
B. iron (II) carbonate
C. magnesium carbonate
D. copper (II) carbonate

26. When a solution containing 2g of sodium hydroxide was completely reacted with hydrochloric acid, 2730J of heat was evolved. Which one of the following is the heat of neutralization of sodium hydroxide by hydrochloric acid? (NaOH = 40)
- A. $-\left(\frac{2730 \times 2}{100 \times 40}\right) \text{KJmol}^{-1}$ B. $-\left(\frac{1000 \times 40}{2 \times 2730}\right) \text{KJmol}^{-1}$ ☐
- C. $-\left(\frac{2730 \times 1000 \times 2}{40}\right) \text{KJmol}^{-1}$ D. $-\left(\frac{2730 \times 40}{1000 \times 2}\right) \text{KJmol}^{-1}$
27. Which one of the following metals is used in the laboratory preparation of hydrogen?
- A. iron B. magnesium C. zinc D. Potassium ☐
28. The atomic numbers of elements W, X, Y and Z are 3, 12, 16 and 20 respectively. Which one of the element forms an oxide that dissolves in water to give a solution with a PH less than 7?
- A. W B. X C. Y D. Z ☐
29. The process by which the purple colour of potassium manganate (VII) spreads throughout water in a vessel is known as:
- A. diffusion B. dissolution C. dispersion D. osmosis ☐
30. The role of manganese (IV) oxide in the preparation of chlorine using concentrated hydrochloric acid is to
- A. catalyze the reaction B. oxidize the acid
C. neutralize the acid D. dry the gas ☐
31. Brine is added to the reaction mixture during laboratory preparation of soap in order to;
- A. crystallize the soap B. increase the solubility of soap
C. purify the soap D. precipitate the soap ☐
32. Which one of the following substances contains the same number of moles at 10cm^3 of 0.5M nitric acid?
(1 mole of a gas occupies 22.4dm^3 at s.t.p; H = 1, C = 12, N = 14)
- A. 5.6dm^3 of carbon dioxide at s.t.p.
B. 17g of ammonia
C. 112cm^3 of oxygen at s.t.p
D. 12g of carbon ☐

33. Which one of the following equations **does not** represent a redox reaction?
- A. $\text{Pb}^{2+}(\text{aq}) + 2\text{Cl}^{-}(\text{aq}) \longrightarrow \text{PbCl}_2(\text{s})$
- B. $2\text{Fe}^{2+}(\text{aq}) + \text{Cl}_2(\text{g}) \longrightarrow 2\text{Fe}^{3+}(\text{aq}) + 2\text{Cl}^{-}(\text{aq})$
- C. $\text{CuO}(\text{s}) + \text{H}_2(\text{g}) \longrightarrow \text{Cu}(\text{s}) + \text{H}_2\text{O}(\text{s})$
- D. $\text{Mg}(\text{s}) + 2\text{H}^{+}(\text{aq}) \longrightarrow \text{Mg}^{2+}(\text{aq}) + \text{H}_2(\text{g})$
34. Which one of the following gases turns acidified potassium dichromate from orange to green?
- A. chlorine
- B. Sulphur dioxide
- C. hydrogen peroxide
- D. carbon dioxide
35. Excess ammonia solution was added to a solution containing a mixture of zinc and iron (II) sulphate; then the resultant mixture filtered. What was the colour of the filtrate?
- A. deep blue
- B. pale green
- C. yellow
- D. colourless
36. During fractional distillation of liquid air, nitrogen distills out before oxygen because,
- A. the concentration of nitrogen in air is more than that of oxygen.
- B. the boiling point of nitrogen is lower than that of oxygen.
- C. oxygen is more reactive than nitrogen
- D. nitrogen diffuses faster than oxygen.
37. This method of removing hardness in water may as well cause hardness of water.
- A. ion exchange
- B. boiling water
- C. use of calcium hydroxide
- D. addition of ammonia
38. Which one of the following elements can reduce aluminium oxide when heated together strongly?
- A. copper
- B. calcium
- C. lead
- D. iron
39. Which one of the following nitrates can be decomposed to form a nitrite?
- A. $\text{Ca}(\text{NO}_3)_2$
- B. AgNO_3
- C. $\text{Zn}(\text{NO}_3)_2$
- D. NaNO_3
40. The ease with which calcium, iron, magnesium, zinc react with dilute hydrochloric acid is in the order.
- A. $\text{Ca} > \text{Mg} > \text{Zn} > \text{Fe}$
- B. $\text{Mg} > \text{Ca} > \text{Fe} > \text{Zn}$
- C. $\text{Fe} > \text{Zn} > \text{Mg} > \text{Ca}$
- D. $\text{Ca} > \text{Zn} > \text{Fe} > \text{Mg}$

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 the 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.	Ethene decolorizes bromine water	because	Ethene is a hydrocarbon.	<input type="checkbox"/>
42.	When chlorine is bubbled through iron (II) chloride solution, the colour of the solution turns from green to yellow	because	Chlorine is an oxidizing agent.	<input type="checkbox"/>
43.	Calcium carbonate is prepared by precipitation	because	Calcium carbonate is a soluble salt.	<input type="checkbox"/>
44.	Detergents are less effective cleansing agents than soap	because	Detergents can be non – biodegradable.	<input type="checkbox"/>
45.	Barium chloride solution is used to test for the presence of sulphate ions in solution	because	Barium sulphate is soluble in water.	<input type="checkbox"/>

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.

46. The rate of reaction between zinc granules and dilute sulphuric acid can be increased by;

- 1. Grinding the zinc granules
- 2. Adding zinc powder to the mixture
- 3. Warming the reaction mixture
- 4. Exposing the reaction mixture to light

☐

47. Which of the following substances cause(s) water pollution?

- 1. Hydrogen sulphide
- 2. Carbon monoxide
- 3. Oil
- 4. Nitrogen

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48. Which of the following oxides will dissolve in dilute nitric acid as well as dilute potassium hydroxide solution?

- 1. Al_2O_3
- 2. CuO
- 3. PbO
- 4. Fe_2O_3

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49. Modern industries use vanadium (V) oxide instead of platinum as a catalyst during the manufacture of sulphuric acid by contact process because platinum

.....

- 1. cannot be obtained in finely divided form.
- 2. is more expensive than vanadium (V) oxide.
- 3. readily melts away unlike vanadium (V) oxide.
- 4. is less resistant to catalytic poisoning than vanadium (V) oxide.

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50. In which of the following substances is electricity conducted by electrons?

- | | |
|------------------|-----------------------------|
| 1. Graphite rod | 2. Copper strip |
| 3. Platinum wire | 4. Molten lead (II) bromide |

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END