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*545/1  
Chemistry  
Paper 1  
1 ½ hours*

**MOCK EXAMINATIONS 2019  
UGANDA CERTIFICATE OF EDUCATION  
CHEMISTRY  
PAPER 1  
TIME: 1 HOUR 30 MINUTES**

**Instructions**

*This paper consists of **fifty (50)** objective questions.*

*All questions are **compulsory***

*Answer the questions by writing the correct alternative in the box on the right hand side of the question*

<b>For Examiner's use only</b>	



- A: hydrogen peroxide                      B: manganese (IV) oxide  
C: potassium manganate (VII)            D: bleaching powder

9. Why is calcium oxide a suitable drying agent for some gases?

- A: the reaction between the oxide and water is exothermic  
B: the oxide can be obtained in powder or granular form  
C: the oxide absorbs water to form a solid hydroxide  
D: the oxide does not react with most acidic cases.

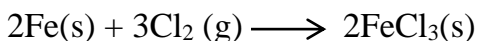
10. 20cm<sup>3</sup> of a 0.2M sodium hydroxide neutralized 12.5cm<sup>3</sup> of a dibasic acid. The molarity of the acid is

- A:  $\left(\frac{2 \times 12.5}{0.2 \times 20}\right)$                       B:  $\left(\frac{0.2 \times 20}{2 \times 12.5}\right)$                       C:  $\left(\frac{12.5 \times 0.2}{20 \times 2}\right)$                       D:  $\left(\frac{2 \times 0.2 \times 20}{12.5}\right)$

11. Which one of the following aqueous solutions will not form a white precipitate on the addition of aqueous ammonia?

- A: calcium chloride                      B: zinc nitrate  
C: magnesium sulphate                      D: aluminium sulphate

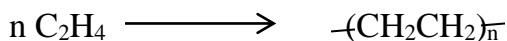
12. Iron reacts with chlorine, when heated according to the equation ;



The volume of chlorine, in litres, at s.t.p that will react completely with 1.4g of iron is (1 mole of gas at s.t.p occupies 22.4dm<sup>3</sup>; Fe = 56)

- A:  $\left(\frac{1.4 \times 3}{56 \times 2 \times 22.4}\right)$  litres                      B:  $\left(\frac{2 \times 56}{22.4 \times 1.4 \times 3}\right)$  litres  
C:  $\left(\frac{2 \times 1.4 \times 22.4}{3 \times 56}\right)$  litres                      D:  $\left(\frac{3 \times 1.4 \times 22.4}{2 \times 56}\right)$  litres

13. In the reaction



The product is best described as

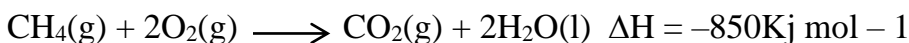
A: an addition compound

B: a polymer

C: a thermoplastic

D: a synthetic compound

14. Methane burns in air according to the following equation



The heat liberated when 9.6g of methane is burnt completely in air is

A: 106.25KJ

B: 1,020KJ

C: 255KJ

D: 510KJ

15. An ion of T contains 18 electrons, 16 protons and 16 neutrons. The formula of the ion of T is

A:  $\text{T}^{2+}$

B:  $\text{T}^{2-}$

C:  $\text{T}^+$

D:  $\text{T}^-$

16. When calcium oxide is reacted with water, the reaction is

A: an endothermic reaction

B: an exothermic reaction

C: a reaction involving oxidation

D: a reaction involving reduction

17. Element Q reacts with steam when red-hot and element W reacts slowly with cold water whereas element T reacts violently with cold water and R reacts vigorously with cold water. The correct order of the reactivity of the elements starting with the most reactive is

A: T,R,W,Q

B: Q,W,T,R

C: W,T,R,Q

D: R,Q,T,W

18. Which one of the salts is soluble in hot water?

A: AgCl

B:  $\text{ZnCO}_3$

C:  $\text{BaSO}_4$

D:  $\text{PbCl}_2$

19. The atomic numbers of elements W,X,Y and Z are 3,12,16 and 20 respectively. Which one of the elements forms an oxide that dissolves in water to give a solution with a pH less than 7?

A: W

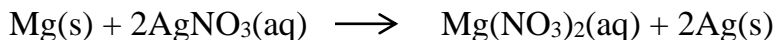
B: X

C: Y

D: Z

20. Magnesium reacts with silver nitrate solution according to the following equation:

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The mass of silver which can be displaced from solution of silver nitrate by 0.1 moles of magnesium is

(Mg = 24.0) Ag = 108.0)

A: 5.4g                      B: 10.8g                      C: 21.6g                      D: 43.2g

21. The bleaching action of chlorine is best explained by  
A: The high reactivity  
B: The fact that hypochlorous acid easily gives up its oxygen  
C: The fact that it is an oxidizing agent  
D: The fact that chlorine combines so readily with hydrogen
22. An element is most likely to form covalent compounds if its electronic configuration is  
A: 2:8:1                      B: 2:8:4                      C: 2:8:7                      D: 2:8:8
23. If two ions of similar charge migrate to the same electrode, during electrolysis, the one which is discharged first has  
A: the lowest discharge potential                      B: the lowest charge  
C: the highest mobility rate                      D: the highest valency
24. When 12.30g of a hydrated salt, J, was heated to a constant mass, 6.0g of the anhydrous salt remained. What is the number of moles of water of crystallization in J?  
(H = 1, O = 16, formula mass of anhydrous J = 120)  
A: 2                      B: 3                      C: 6                      D: 7
25. Which of the following substances are normally formed when a metal is reacted with dilute mineral acid?  
A: A salt of the metal and hydrogen  
B: The hydroxide of metal and hydrogen  
C: oxide of the metal and hydrogen  
D: A salt of the metal and water
26. Which one of the following salts is best prepared by the action of dilute sulphuric acid on the metal?  
A: CaSO<sub>4</sub>                      B: CuSO<sub>4</sub>                      C: MgSO<sub>4</sub>                      D: PbSO<sub>4</sub>



27. A colourless gas that turns purple potassium manganate (VII) to colourless and has no effect on moist litmus is:

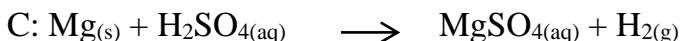
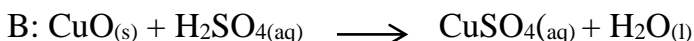
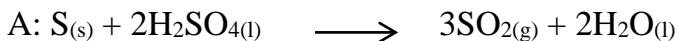
A: Sulphur dioxide

B: hydrogen sulphide

C: Ethane

D: Ethene

28. In which one of the following reactions is concentrated sulphuric acid acting as an oxidizing agent?



29. A saturated solution of sodium chloride 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

30. Concentrated sulphuric acid reacts with ethanol to give ethene. This is an example of

A: an addition reaction

B: a polymerization reaction

C: a dehydration reaction

D: a reduction reaction

31. An element burns readily in oxygen to form a solid. The solid dissolves in water producing alkaline solution and a gas that relights a glowing splint. The element is

A: sulphur

B: sodium

C: magnesium

D: phosphorus

32. Permanent hardness of water can be removed by

A: By boiling water

B: by distilling the water

C: by adding ammonia solution

D: by adding slaked lime.

33. 9.75g of an element X combined with oxygen to give 12.15g of oxide. The simplest formula of the oxide is

(O = 16, X = 65)

A:  $X_2O$

B:  $XO$

C:  $XO_2$

D:  $X_2O_3$

34. The fountain experiment can be demonstrated with hydrogen chloride because hydrogen chloride

A: reacts readily with water

B: is a very soluble gas in water

C: is denser than air

D: forms a strong acid in water

35. Which one of the following substances in aqueous solution forms a precipitate when heated?

A: calcium hydrogen carbonate

B: potassium hydrogen carbonate

C: sodium hydrogen carbonate

D: ammonium carbonate

36. Which one of the following sets consists of natural fibres only?

A: Nylon, wool, cotton

B: Cotton, nylon, silk

C: Silk, nylon, wool

D: cotton, wool, silk

37. During the extraction of sodium, the reaction that takes place at the anode is

A:  $\text{Na}^+ + e \longrightarrow \text{Na}$

B:  $\text{Cl}^-_{(l)} - e \longrightarrow \text{Cl}$

C:  $\text{Na}_{(l)} \longrightarrow \text{Na}^+_{(aq)} + e$

D:  $\text{NaCl}_{(s)} \longrightarrow \text{Na}^+_{(aq)} + \text{Cl}^-_{(aq)}$

38. Which one of the following does not produce a white precipitate with lead (II) nitrate?

A: Dilute sulphuric acid

B: Dilute hydrochloric acid

C: Excess sodium hydroxide solution

D: Excess ammonia solution

39. The element which is mixed with natural rubber during vulcanization is

A: Phosphorus

B: Sulphur

C: Iodine

D: Silicon

40. Why is a salt containing the radical  $\text{HSO}_4^-$  known as an acid salt?

A: the radical liberates hydrogen ions in aqueous solution

B: the radical contains hydrogen

C: the sulphate radical is present

D: the radical has a negative charge

***In each of the questions 41 to 45 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 1,2,3 only are correct*

*B: If 1,3, only are correct*

*C: If 2,4 only are correct*

*D: If 4 only is correct*

41. Which of the following salts dissolves in water to give an alkaline solution?
1. Sodium carbonate
  2. Ammonium nitrate
  3. Sodium ethanoate
  4. Ammonium chloride
42. Why is hydrogen chloride evolved when concentrated sulphuric acid is added to sodium chloride crystals?
1. The reaction is exothermic
  2. Hydrogen chloride is the most volatile component
  3. Sulphuric acid is a dehydrating agent
  4. Sulphuric acid is a stronger acid than hydrochloric acid
43. Which of the following is/are observed when ammonia is passed over heated lead (II) oxide?
1. A colourless liquid
  2. Yellow solid turns grey
  3. Orange solid turns grey
  4. Yellow solid turns reddish-brown.
44. Which of the following substances causes water pollution
1. Hydrogen sulphide
  2. Oil
  3. Fertilizers
  4. Nitrogen
45. In which of the following reactions is a gas, that reacts with nitrogen (II) oxide to form brown fumes, produced?
1. Electrolysis of dilute sulphuric acid
  2. Heating silver nitrate



3. Heating potassium manganate (VII)
4. Electrolysis of brine.

*Each of the questions 46 to 50 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 the 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 summarized**

<i>Assertion</i>	<i>Reason</i>
<i>A: True</i>	<i>True (reason is a correct explanation)</i>
<i>B: True</i>	<i>True (reason is not a correct explanation)</i>
<i>C: True</i>	<i>Incorrect</i>
<i>D: Incorrect</i>	<i>Correct</i>

- |  |         |  |                          |
|--|---------|--|--------------------------|
| 46. Amphoteric oxides have the same chemicals properties as basic oxides | because | Amphoteric oxides will neutralize mineral acids.       | <input type="checkbox"/> |
| 47. Ethanol is obtained by fermentation of glucose                       | because | enzymes convert glucose to ethanol and carbon dioxide. | <input type="checkbox"/> |
| 48. Iodine is a solid at room temperature                                | because | Iodine may be purified by sublimation                  | <input type="checkbox"/> |
| 49. Calcium will <b>not</b> react with cold water                        | because | Calcium is in group (II) of the periodic table.        | <input type="checkbox"/> |
| 50. Polyethene is destroyed  |         | the oxidation products of                              | <input type="checkbox"/> |

by atmospheric oxidation

because

compounds containing  
carbon and hydrogen only  
are carbon dioxide and water.

END