REPUBLIQUE DU CAMEROUN
*Paix-Travail-Patrie*

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REPUBLIC OF CAMEROON
*Peace-Work-Fatherland*

MINISTRY OF SECONDARY EDUCATION

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MARCH 2024

| The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy, in collaboration with NWCTA | SUBJECT CODE NUMBER **0515** | PAPER NUMBER **1** |
|---|---|---|
| **GENERAL CERTIFICATE OF EDUCATION REGIONAL MOCK EXAMINATION** | SUBJECT TITLE **CHEMISTRY** | |
| CANDIDATE NAME: .....<br>CANDIDATE NUMBER: .....<br>CENTRE NUMBER: ..... | | |
| **ORDINARY LEVEL** | | |

## Time Allowed: ONE and a half hours

## INSTRUCTIONS TO CANDIDATES:

Mobile phones are **NOT ALLOWED** in the examination room.

1. USE A SOFT HB PENCIL THROUGHOUT THIS EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

**Before the Examination begins:**

3. Check that this question booklet is headed "Ordinary level –**0515** code and subject title—**CHEMISTRY** -Paper **1**".
4. Insert the information required in the spaces above.
5. Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.
6. Insert the information required in the spaces provided on the answer sheet using your HB pencil:

**Candidate Name, Centre Number, Candidate Number, Subject Code Number, and Paper number**

**How to answer questions in this examination:**

7. Answer ALL the 50 questions in this examination. All questions carry equal marks.
8. Non-programmable calculators are allowed.
9. For each question there are four suggested answers, A, B, C and D. Decide which answer is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen. For example, if C is your correct answer, mark C as shown below:

**[A] [B] [C] [D]**

10. .Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
11. Avoid spending much time on any question. If you find a question difficult, move to the next : You can come back to the question later.
12. Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
13. **You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.**

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**Useful Data**
R.A.Ms of C = 12, H = 1, 0 =16, N = 14, P = 31, S = 32, Na = 23, Cl = 35.5, Ca = 40
1 Faraday = 96,000C
Molar Volume of Gas at STP = 22, 400cm$^3$
Avogado constant [LA] = 6.02 x $10^{23}$ Particles
Specific heat capacity of water = 4.2Jg$^{-1}$ $^0$c

1. Identify the sub atomic particle responsible for the existence of isotopes.
   A) Protons
   B) Neutrons
   C) Electrons
   D) Nucleon

2. The gas which constitutes the active part of air is:
   A) Oxygen
   B) Nitrogen
   C) Water
   D) Argon

3. An element with atomic number 20 belongs to:
   A) Period 1 of the periodic table
   B) Period 2 of the periodic table
   C) Period 3 of the periodic table
   D) Period 4 of the periodic table

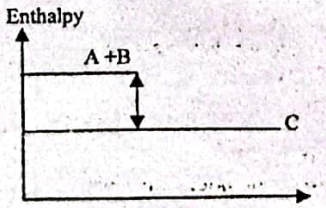
4. Why is sodium stored under paraffin oil?
   A) It tarnishes easily in air.
   B) It is insoluble in oil.
   C) It is soluble in water.
   D) It is a metal.

5. Which of the following expressions represent Boyle's law?
   A) $P_1V_2 = P_2V_1$
   B) $V_1T_2 = V_2T_1$
   C) $\frac{P_1}{V_2} = \frac{P_2}{V_1}$
   D) $\frac{P_1}{P_2} = \frac{V_2}{V_1}$

6. A container with NaOH pellets is left open. The following day it had turned into a solution. NaOH is:
   A) Hygroscopic
   B) Efflorescent
   C) A drying agent
   D) Deliquescent

7. Identify the bond type in $NH_4Cl$
   A) Ionic and simple covalent
   B) Ionic and dative covalent covalent
   C) Ionic, simple covalent, dative covalent
   D) Ionic and hydrogen bonding

8. The energy level diagram below involves the reaction of:
   $A + B \rightarrow C$




   The diagram illustrates that:
   A) The heat content of reactants is more than heat content of products
   B) During the reaction, heat is absorbed from the surrounding
   C) Heat content of products is more than that of the reactants
   D) Heat content of products and reactants are the same.

9. An element B has isotopes $^{10}_{5}B$ and $^{11}_{5}B$. Assuming their relative abundances are equal, calculate its R.A. M
   A) 10
   B) 10.5
   C) 11
   D) 21

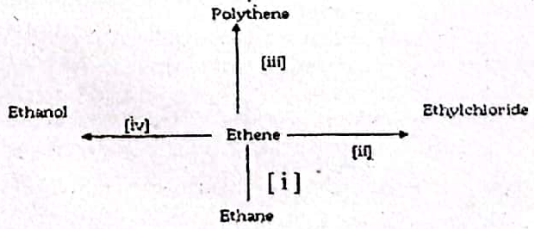
10. A hydrocarbon contains 85.7%C and 14.3% H. its R.M.M is 56. Determine its empirical formula.
    A) $CH_2$
    B) $C_2H_4$
    C) $C_4H_8$
    D) $CH_3$

11. Identify the method used industrially to separate the components of air
    A) Gas Chromatography
    B) Centrifugation
    C) Fractional distillation
    D) By winnowing

12. Name the equipment used to transfer a fixed volume of standard solution.
    A) Burette
    B) Measuring Cylinder
    C) Pipette
    D) Breaker

13. Which of these equilibrium reactions will NOT be affected by a change in pressure?
    A) $N_{2[g]} + 3H_{2[g]} \rightleftharpoons 2NH_{3[g]}$
    B) $2SO_{2[g]} + O_{2[g]} \rightleftharpoons 2SO_{3[g]}$
    C) $H_{2[g]} + I_{2[g]} \rightleftharpoons 2HI_{[g]}$
    D) $N_2O_{4[g]} \rightleftharpoons 2NO_{2[g]}$

**Question 14-15 concern the conversion of ethene to different compounds as shown below. Study the scheme and answer the questions that follow.**




14. Identify the name of the reaction path represented by [i]
    A) Dehydration
    B) Hydrogenation
    C) Oxidation
    D) Hydration

15. Identify the reagent used in the reaction path represented by [ii]
    A) Chlorine
    B) Hydrogen
    C) Concentrated sulphuric acid
    D) Hydrogen Chloride

16. A compound formed between 2 elements X and Y with charges +2 and -1 respectively
    A) $XY_2$
    B) $X_2Y$
    C) XY
    D) $X^2Y^-$

17. A current of 0.5A was passed through molten NaCl for 20minutes. Calculate the quantity of electricity in coulombs
A) 10C
B) 600C
C) 100C
D) 300C

18. A weak acid is one that:
A) Ionizes partially.
B) Has a basicity of 1.
C) Does not taste too sour.
D) Has a bitter taste.

19. Why is graphite used as a lubircant?
A) It has low melting point.
B) It is a good conductor of electricity.
C) It is oily.
D) It is soft and slippery.

20. What are the major effects of Chlorofluorocarbons [CFCs] emission into the atmosphere?
A) Ozone layer depletion
B) Dark clouds
C) Acid rain
D) Global warming

**Question 21-24 is based on the instructions below. For each of the questions below, one or more of the response(s) numbered 1-4 is [are] correct. Decide which of the response(s) is [are] correct, then choose.**
A) If 1, 2, and 3 are correct
B) If 1 and 3 are correct
C) if 2 and 4 are correct
D) If 4 only is correct

**Instruction summarized**

| A | B | C | D |
|---|---|---|---|
| 1,2,3 correct | 1,3, correct | 2,4 correct | 4 correct |

21. Which of the following statements is/are true about mixture?
1) It can be separated by physical means.
2) It does not have a fixed melting point.
3) Its components are not combined in a fixed ratio.
4) Components are chemically combined.

22. Consider the reaction below.
$CaCO_{3[s]} + 2HCl_{(aq)} \rightarrow CaCl_{2\,[aq]} + H_2O_{[l]} + CO_{2\,[g]}$
The rate of the above reaction will be greatly increased if:
1) The $CaC0_3$ is in powdered form.
2) A greater volume of acid is used.
3) Using hydrochloric acid of higher concentration.
4) Removing the carbon dioxide as soon as it is formed

23. Which of the following contain the same number of particles as one mole of a substance?
1) 22g of carbondioxide
2) 16g of Oxygen atoms
3) 14g of Nitrogen molecules
4) 32g of Oxygen molecules

24. Reduction is defined as
1) Gain in electrons
2) Removal of oxygen
3) Addition of hydrogen
4) Increase in oxidation state

25. Calculate the % composition by mass of nitrogen in $[NH_4]_3\,P0_4$
A) 9.3%
B) 29.1%
C) 9.7%
D) 28.18%

26. A certain salt decomposes on heating to give a black solid and a brown gas. It also forms a blue precipitate with NaOH solution. The salt is likely to be.
A) $Cu[N0_3]_2$
B) $CuS0_4$
C) $Ca[N0_3]_2$
D) $CuCO_3$

27. Identify a reagent that can be used to distinguish between propane and propene.
A) Concentrated sulphuric acid
B) Bromine water
C) Hydrogen
D) Sodium carbonate

28. Why should the conical flask be washed and rinsed only with distilled water during titration?
A) To clean all impurities since water is a universal solvent
B) To moisten the walls of the flask. So that the acid or base doesn't corrode the walls.
C) So that no acid or base should be introduced into it causing pre-neutralization leading to experimental errors
D) Distilled water is very pure and makes the conical flask very clean.

29. Select the correct pair of properties that affect the solubility of salts.
A) Temperature and amount of solute
B) Amount of solute and concentration
C) Temperature and amount of solvent
D) Concentration and temperature

30. In an experiment to determine the heat of neutralization, $100cm^3$ in total of NaOH and HCL reacted to give a maximum temperature rise of $10^0C$. The quantity of heat evolved is.
A) 4300J
B) 420J
C) 4200J
D) 420KJ

31. Identify the process used in extracting sulphur.
A) Contact process
B) Kroll process
C) Haber process
D) Frasch process

32. The existence of a compound in different structural forms in the same physical state is referred to as.
A) Polymorphism
B) Allotropy
C) Isotopy
D) Isomerism

**Questions 33-34. A sample of salt on analysis produced a brick red flame test. Treating the salt with $Bacl_2$ produces a white precipitate soluble in dilute Hcl. Producing a gas whicl turns orange acidified Potassium dichromate solution to green.**

33. Identify the Cation and anion in the salt

| | Cation | Anion |
|---|---|---|
| A | $Li^+$ | $SO_4^{2-}$ |
| B | $Ca^{2+}$ | $SO_3^{2-}$ |
| C | $Sr^+$ | $SO_3^{2-}$ |
| D | $Ca^{2+}$ | $SO_4^{2-}$ |

34. Identify the gas produced
A) Sulphurdioxide gas
B) Nitrogen dioxide gas
C) Carbondioxide gas
D) Chlorine gas

35. The main elements found in a fertilizer are:
A) Nitrogen, Sulphur, Phosphorus
B) Oxygen, Nitrogen, Chlorine
C) Nitrogen, Phosphorus, Potassium
D) Nitrogen, Potassium, Sulphur

36. When direct current is passed through solutions A and B, It is observed that A conducts electricity while B does not. Identify the particles that could be found in A and B respectively.
A) Solution A contains molecules while B contains free mobile ions.
B) A contains free mobile ions while B contains molecules.
C) A contains delocalized electrons and B contains molecules.
D) A contains molecules while B contains delocalized electrons.

37. Consider the reaction below represented by the equation $NaOH + HCl \rightarrow NaCl + H_2O$. If 20g of NaOH reacts with HCl to produce 25g of NaCl, calculate the % yield.
A) 25%
B) 29.25%
C) 85.47%
D) 45%

38. Which of the properties below is a characteristics property of transition metals?
A) They are ductile.
B) They are shiny.
C) They are good conductors of electricity.
D) They form coloured compounds.

39. An organic compound with molecular formula $C_4H_{10}$ has:
A) One isomer
B) Two isomers
C) Three isomers
D) Four isomers

40. Identify a salt that can be prepared by precipitation
A) AgCl
B) NaCl
C) $AlCl_3$
D) $MgCl_2$

41. What is the use of chlorine in the purification of water?
A) To remove tastes and odours.
B) To remove solid particles.
C) To disinfect the water.
D) To remove acidity in the water.

**Question 42-45: Instructions: Each of the following questions consist of a statement in the left hand column followed by a second statement in the right hand column decide whether each of the statements is/are correct then choose**
A) If both statements are true and the second statement is a correct explanation of the first.
B) If both statements are true but the second statement is NOT a correct explanation of the first.
C) If the first statement is true but the second is false.
D) If the first statement is false but the second is true.

**Instructions summarized**

| | First statement | Second statement |
|---|---|---|
| A | True | True and the second statement is a correct explanation of the first |
| B | True | True and second statement is NOT a correct explanation of the first |
| C | True | False |
| D | False | True |

| First Statement | Second Statement |
|---|---|
| 42. Ethene burns with a more smoky flame than ethane | Ethene has a high % of carbon by mass than ethane |
| 43. Chlorine displaces bromine from a solution of its salts | Bromine is a liquid at room temperature and pressure |
| 44. In the electrolysis of concentrated NaCl using carbon electrodes sodium ions are discharged at the cathode | Sodium ions are concentrated in solution |
| 45. Temporal hardness in water can be removed by boiling | Temporal hardness in water is due to the presence of dissolved sulphates of magnesium and calcium |

46. In the laboratory preparation of nitrogen, why is air passed over caustic soda [NaOH]
A) To remove oxygen.
B) To remove carbon dioxide.
C) The dry the gas.
D) To neutralize the acidity in air.

47. Which of the following equations represent the reaction at the anode, when copper is purified during electrolysis
A) $Cu_{[s]} \rightarrow Cu^{2+}_{[aq]} + 2e$
B) $Cu^{2+}_{[aq]} + 2e \rightarrow Cu_{[s]}$
C) $Cu^{2+}_{[aq]} \rightarrow Cu_{[s]} + 2e$
D) $Cu_{[s]} + 2e \rightarrow Cu^{2+}_{[aq]}$

48. Calculate the volume occupied by 3.2g of Oxygen molecule $[O_2]$ at stp.
A) $2240cm^3$
B) $22{,}400cm^3$
C) $24dm^3$
D) $2400cm^3$

49. An element Y can form 2 possible ions $Y^+$ and $Y^{2+}$. Identify an element below that could represent Y.
A) Magnesium
B) Calcium
C) Copper
D) Iron

50. What process is involved when iodine crystals are heated to iodine vapour?
A) Deposition
B) Melting
C) Sublimation
D) Evaporation

**END**



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