

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD
General Certificate of Education Examination

0515 CHEMISTRY 1

JUNE 2018

ORDINARY LEVEL

Centre Number	
Centre Name	
Candidate Identification Number	
Candidate Name	

Mobile phones are NOT allowed in the examination room
MULTIPLE CHOICE QUESTION PAPER

One and a half ($1\frac{1}{2}$) hours

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

1. USE A SOFT HB PENCIL THROUGHOUT THE 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 Chemistry 1"
4. Fill in the information required in the spaces above.
5. Fill in the information required in the spaces provided on the answer sheet using your HB pencil:
Candidate Name, Exam Session, Subject Code and Candidate Identification Number.

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.

How to answer the questions in this examination

6. Answer ALL the 50 questions in this Examination.
7. Each question has FOUR suggested answers: A, B, C and D. Decide on 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] [] [D]

8. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
9. Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
10. Do all rough work in this booklet using the blank spaces in the question booklet.
11. At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.

USEFUL DATA

Relative Atomic Masses	
Hydrogen (H)	= 1.0
Carbon (C)	= 12.0
Oxygen (O)	= 16.0
Sodium (Na)	= 23.0
Nitrogen (N)	= 14.0
Calcium (Ca)	= 40.0
Sulphur(s)	= 32.0

1 Farady	= 96000 coulombs.
Molar Volume of any gas at r.t.p	= 24000cm ³ ,
Specific heat capacity of water	= 4.2J/g°C
Avogadro Number	= 6.02 x 10 ²³
0°C	= 273 K

1. The particles that make up the nucleus of an atom are
- A Electrons and protons
 - ~~B~~ Protons and neutrons
 - C Nucleons and protons
 - D Electrons and neutrons

2. What change does camphor undergo when heated?
- A Dissolving
 - B Vaporization
 - ~~C~~ Sublimation
 - D Melting

3. The loss of water of crystallization to the atmosphere by some hydrated salts is called;
- A Effervescence
 - B Efflorescence
 - ~~C~~ Deliquescence
 - D Hygroscopy

4. The following salts are soluble in water except;
- A Silver chloride
 - B Potassium nitrate
 - C Sodium sulphate
 - D Zinc chloride

5. Which of these substances is an electrolyte?
- A Molten copper
 - ~~B~~ Sodium chloride solution
 - C Ethanol
 - D Carbon tetrachloride

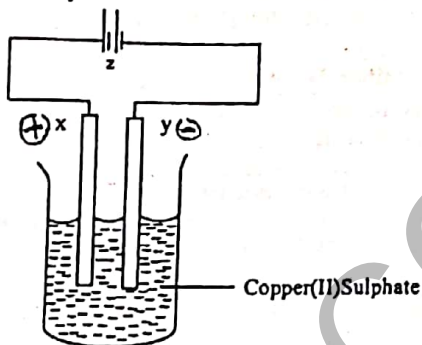
6. Nitrogen is obtained industrially by
- A Removing the other components of air
 - B Fractional distillation of liquid air
 - C Thermal decomposition of ammonium nitrite
 - D Thermal decomposition of ammonium nitrate

7. Identify the first member of the homologous series of alkenes
- ~~A~~ C₂H₄
 - B C₂H₆
 - C C₃H₆
 - D CH₄

8. Write the electronic configuration of the oxide ion (O²⁻).
- A 2.8.6
 - B 2.8.8
 - C 2.8
 - ~~D~~ 2.6
- 2.6

9. How can permanent hardness in water be removed?
- A By boiling
 - ~~B~~ By using washing soda
 - C By using chlorine
 - D By using soapless detergents

10. Identify the parts X, Y and Z on the following electrolytic cell.



- | | X | Y | Z |
|--------------|---------|---------|---------|
| A | Anode | cathode | bulb |
| B | Cathode | anode | bulb |
| C | Anode | cathode | battery |
| D | Cathode | anode | switch |

11. What is the compound formed when sulphur is burnt in air and the product formed bubbled through water?

- ~~A~~ H₂SO₄
- B H₂SO₃
- ~~C~~ SO₂
- D SO₃

12. Which of these substances causes acid rain?

- A Water vapour
- B Carbon monoxide
- C Nitrogen monoxide
- ~~D~~ Sulphur dioxide

13. The bond types found in ammonium ion (NH₄⁺) are?

- A Ionic and covalent
- ~~B~~ Normal covalent and dative covalent
- C Dative covalent and ionic
- D Covalent and metallic

14. Determine the percentage composition by mass of sulphur in ammonium sulphate, (NH₄)₂SO₄ of R.M.M 132.

- ~~A~~ 24.2%
- B 39.0%
- C 28.0%
- D 56.1%

$$\frac{32}{132} \times 100 = 24.25$$

33

15. Which of the following processes involves both a chemical and a physical change?
- A Rusting of iron
 - B Burning of candle
 - C Dissolving common salt in water
 - D Melting of ice

16. When silver nitrate solution is added to a solution containing a halide ion, a white precipitate is formed. Identify the precipitate
- A Silver bromide
 - B Silver chloride
 - C Silver iodide
 - D Silver fluoride

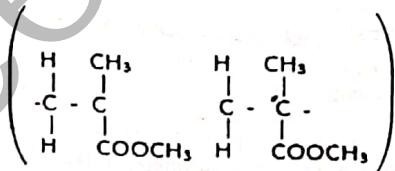
17. Which of the following is a saturated hydrocarbon?
- A C_2H_4
 - B C_4H_6
 - C C_4H_8
 - D C_2H_6

18. The pH value of a solution is 4.6. The solution is?
- A Amphoteric
 - B Basic
 - C Acidic
 - D Alkaline

19. According to Boyle's law which of the following statement is CORRECT?
- A The temperature is constant
 - B The volume is constant
 - C The pressure is constant
 - D The volume varies with temperature

20. Identify the method that can be used to separate a solid mixture of ammonium chloride and sodium chloride
- A Evaporation
 - B Hand-picking
 - C Sublimation
 - D Dissolving and filtering

21. Name the polymer whose structure is represented by



- A Polythene
- B Perspex
- C PVC
- D Polystyrene

22. A liquid that would turn white anhydrous copper (II) sulphate blue is
- A Water
 - B Ethanol
 - C Hexane
 - D Benzene

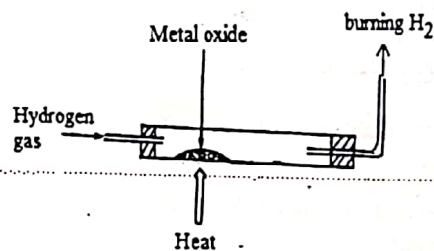
23. Explain why an increase in temperature increases the rate of a chemical reaction.
- A The reaction needs heat to go fast
 - B Bond breaks faster at high temperature
 - C The reaction is faster at high temperature
 - D Collision frequency increases with high temperature

24. 8g of calcium carbonate ($CaCO_3$) are completely decomposed on heating. According to the equation, $CaCO_3 \rightarrow CaO(s) + CO_2(g)$, Calculate the mass of CaO deposited.

- A 8.0g *100g $CaCO_3 \rightarrow 56g$ of CaO*
- B 3.52g *6g \rightarrow 2g*
- C 14.28g
- D 4.48g *20g =*

25. Which of the following DOES NOT exist as a molecular crystal?
- A Sodium chloride
 - B Diamond
 - C Graphite
 - D Ice

26. The experimental set up below is used to reduce a metal oxide



The metal oxide, could be

- A Sodium oxide
- B Calcium oxide
- C Copper (II) oxide
- D Aluminium oxide

Questions 27-28 concern the following salts P, Q and R. Some tests were carried out on the salts and the results are summarized below

TEST	EFFECT OF HEAT	FLAME TEST	Effect of adding $AgNO_3$
P	Decomposes, brown gas that relights a glowing splint	Brick red flame	No visible change
Q	Decomposes evolving a colourless gas	Lilac flame	No visible change
R	Decomposes pungent gas produced. The gas turns moist red litmus paper blue	No flame colour	White precipitate

27. Identify salt P
- Calcium nitrite
 - Sodium nitrate
 - Barium nitrite
 - Calcium nitrate

28. Give one industrial use of the gas produced by heating salt R
- For making soap
 - For making ammonia
 - For making fertilizers
 - For bleaching paper pulp

29. Which of these acids is dibasic?
- Ethanoic acid
 - Hydrochloric acid
 - Phosphoric acid
 - Sulphuric acid

Questions 30-32

INSTRUCTIONS: ONE or MORE of the four responses numbered 1-4 may be correct. Examine each of the responses and decide whether it is correct or not. Then choose

- If 1,2 and 3 are correct
- If 1 and 3 are correct
- If 2 and 4 are correct
- If 4 is correct

Instructions summarized

A	B	C	D
1,2,3 only	1,3 only	2,4 only	4 only

30. Which of the following pair(s) of aqueous solutions will form a precipitate when mixed?
- Silver nitrate and barium chloride
 - Sodium chloride and silver nitrate
 - Barium chloride and sodium sulphate
 - Sodium chloride and barium nitrate

31. Which of the following is TRUE of the reaction between iron and chlorine?
- Iron is oxidized to form Iron (III) (Fe^{3+} ion)
 - Iron(II) chloride ($FeCl_2$) is formed
 - Chlorine is reduced to Cl^- ion
 - Chlorine is the reducing agent

32. Two elements X and Y form an ionic compound. Which of the following are the possible electronic configurations of X and Y?

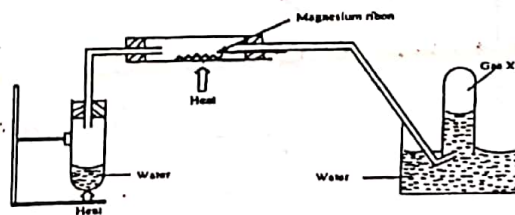
	X	Y
1	2.8.6	2.8.7
2	2.8.2	2.8.6
3	2.7	2.6
4	2.8.1	2.7

33. An organic compound contains C,H and O. After analysis, the percentage compositions of C and H were 40% and 6.7% respectively. Determine the empirical formula of the compound.

- CH_2
- $C_2H_4O_2$
- CH_2O
- C_2H_4

34. Determine the average relative atomic mass of an element X, having 20% of $^{10}_5X$ and 80% of $^{11}_5X$
- 10.8
 - 1.08
 - 10.5
 - 108

Questions 35-36 concern the following diagram

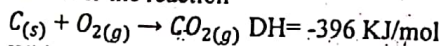


35. Identify gas X
- Oxygen
 - Hydrogen
 - Water vapour
 - Magnesium vapour

36. Why is gas X collected over water?

- A It is lighter than water
- B It is heavier than water
- C It is insoluble in water
- D It is lighter than air

37. Consider the reaction



Which of the following statements is TRUE?

A	The reaction is endothermic
B	The reaction
C	396 KJ of energy are absorbed
D	The product has a higher enthalpy than the reactants

38. Which of these metals is most suitable for making roofing sheets?

- A Zinc
- B Iron
- ~~C~~ Aluminum
- D Copper

Questions 39 and 40 concern the elements A and B with Atomic numbers 6 and 8 respectively.

39. Write the formula of the compound formed between A and B

- A A₂B
- ~~B~~ AB₂
- C A₂B₃
- D A₂B₂

40. Write an equation for the reaction between A and Hydrogen

- ~~A~~ A + 2H₂ → AH₄
- B A + 4H → AH₄
- C 4A + 2H → A₄H₂
- D A + H₂ → AH₂

41. The number of isomers in the compound C₄H₁₀

- A 4
- B 1
- C 2
- D 3

Questions 42-44

INSTRUCTIONS. Each of the following questions consists of two statements (1) and (2). Study each statement carefully and decide whether it is TRUE or FALSE, then on your answer sheet mark

- A If both statements are TRUE and (2) is a correct explanation of (1)
- B If both statements are TRUE but (2) is NOT a correct explanation of (1)
- C If statement (1) is TRUE and (2) is FALSE
- D If statement (1) is FALSE and (2) is TRUE

INSTRUCTION SUMMARISED

	Statement (1)	Statement (2)
A	True	True if (2) explains (1)
B	True	True if (2) does not explain (1)
C	True	False
D	False	True

42.

Statement 1	Statement 2
Alkenes and alkynes decolorize bromine water	Alkenes and alkynes are unsaturated

43.

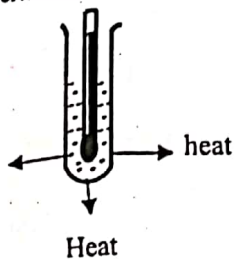
Statement 1	Statement 2
NaOH is neutralized by ethanoic acid	Ethanoic acid ionizes completely in water

44.

Statement 1	Statement 2
In the formation of a metallic bond valence electrons are delocalized	Metals form ionic compounds with chlorine

Questions 45-46:

A student used the following set up to carry out an experiment.



45. Identify the type of reaction —

- A Endothermic
- B Exothermic reaction
- C Neutralization reaction
- D Thermal decomposition

46. What will happen to the reading of the thermometer as soon as the reactants are mixed?

- A The reading will remain constant
- B The reading will decrease
- C The reading will increase
- D The reading will decrease then remain constant

47. Which of the following catalysts is best in the manufacture of sulphuric acid?

- A Finely divided iron
- B Platinum
- C Rhodium/platinum alloy
- D Vanadium (V) oxide

48. Which of the following metals will NOT evolve hydrogen from dilute acids?

- A Cu
- B Na
- C K
- D Ca

49. Identify one useful by-product in the manufacture of sodium hydroxide which is a raw material for making ammonia

- A NaOH
- B H₂
- C Cl₂
- D N₂

50. Which of the following salts can most appropriately be prepared by action of dilute acids on metals?

- A Sodium chloride
- B Silver chloride
- C Barium sulphate
- D Magnesium chloride

STOP

GO BACK AND CHECK YOUR WORK