42. Which of the following pairs of elements are components of bones?
   A Potassium and phosphorus
   B Calcium and potassium
   C Calcium and phosphorus
   D Phosphorus and magnesium

43. Petroleum is refined by distillation. Which of the following processes is MOST suitable?
   A Steam distillation
   B Fractional distillation
   C Vacuum distillation
   D Simple distillation

44. Which one of the following metals is purified by electrolysis?
   A Sodium
   B Copper
   C Iron
   D Aluminum

Questions 45-47 are based on the table below in which some properties of four substances labeled A to D are shown.

Substance	Electrical conductivity		Solubility in water	Melting point (°C)	Boiling point (°C)
	In solid state	When molten			
A	Good	Good	Insoluble	328	1751
B	Does not conduct	Does not conduct	Soluble	- 75	-10
C	Does not conduct	Does not conduct	Insoluble	133	Decomposes
D	Does not conduct	Conducts and decompeses	Soluble	Decomposes	Decomposes

45. Which of the substances could be a solid hydrocarbon

46. Which of the substances could be a metal?

47. Which of the substances could be a gas at room temperature and pressure?.

48. Calculate the volume of 0.5M NaOH that will completely neutralize $10cm^3$ of 1.0M H_2SO_4
   A $40cm^3$
   B $5cm^3$
   C $4cm^3$
   D $10cm^3$

49. How many moles are there in $36dm^3$ of CO_2 at room temperature and pressure?
   A 1.6
   B 1.0
   C 0.67
   D 1.5

50. The formation of dew is an example of a change of state from:
   A Gas to liquid
   B Solid to liquid
   C Liquid to dew
   D Solid to gas

STOP

NOW GO BACK AND CHECK YOUR WORK

CAMEROON GENERAL CERTIFICATE OF EDUCATION BOARD

General Certificate Of Education Examination

515 CHEMISTRY 1

JUNE 2014 **ORDINARY LEVEL**

Centre No. & Name	
Candidate No.	
Candidate Name	

515 CHEMISTRY 1: MULTIPLE CHOICE QUESTION PAPER

ONE AND A HALF (1 ½) 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 – 515 Chemistry 1"
4. Insert the information required in the spaces above.
5. Insert the information required in the spaces provided on the answer sheet using your HB pencil: **Candidate Name, Exam Session, Subject Code, Centre Number and Candidate 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. All questions carry equal marks.
7. Calculators are allowed.
8. 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] [C] [D]
9. 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.
10. 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.
11. Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
12. Mobile phones are **NOT** allowed in the examination room.
13. **You must not take this booklet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.**

USEFUL DATA

R.A.M.
Hydrogen (H) – 1.0
Carbon (C) – 12.0
Oxygen (O) – 16.0
Nitrogen (N) – 14.0
Phosphorus (P) – 31.0
Calcium (Ca) = 40.0

1 Faraday – 96000 Coulombs
Gram-molecular volume of gas at r.t.p = 24000cm^3

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1. The apparatus used to prepare a standard solution in the laboratory is
   - A Burette
   - B Beaker
   - C Volumetric flask
   - D Conical flask

2. Which of the following are immiscible liquids?
   - A Kerosene and water
   - B Water and ethanol
   - C Kerosene and oil
   - D Ethanol and Hexane

3. The sour taste of lemon juice is due to the presence of:
   - A Acetic acid
   - B Citric acid
   - C Carbonic acid
   - D Amino acids

4. What is the oxidation state of sulphur in $Na_2S_2O_3$?
   - A +3
   - B +2
   - C 0
   - D -2

5. Which of the following reactions is catalyzed by light?
   - A $C_2H_4 + Cl_2 \rightarrow C_2H_4Cl_2$
   - B $C_2H_4 + HCl \rightarrow C_2H_5Cl$
   - C $2CH_3CH_2OH + 2Na \rightarrow 2CH_3CH_2ONa + H_2$
   - D $CH_4 + Cl_2 \rightarrow CH_3Cl + HCl$

6. What mass of calcium oxide would be formed when 20g of calcium carbonate are decomposed on heating?
   - A 11.2g
   - B 1.12g
   - C 100g
   - D 56g

Questions 7-8

For each of the questions below, ONE or MORE of the response(s) given is (are) correct. Decide which of the response(s) is (are) correct. Then choose

- 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

INSTRUCTIONS SUMMARISED

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

7. Hard water is water that
   - 1 contains calcium hydrogen carbonate
   - 2 forms fur in kettles when boiled
   - 3 does not easily lather with soap
   - 4 flows from public taps

8. Carbondioxide is used in fire extinguishers because
   1 it cannot be oxidized
   2 it is non-poisonous
   3 it is denser than air
   4 it is a 'Green House' gas

9. Chlorine dissolves in water to form:
   A Hydrochloric and chloric acids
   B Hypochlorous and hypochloric acids
   C Hydrochloric and hypochlorous acids
   D Hypochloric and chloric acids

10. An increase in volume of concentrated sulphuric acid left exposed in a beaker after some time is because the acid
   A absorbed carbondioxide from the atmosphere
   B absorbed air from the laboratory
   C absorbed water from the atmosphere
   D absorbed particles from the laboratory

11. The decomposition of hydrogen peroxide catalysed by manganese(IV)oxide can be represented by the equation:
$2H_2O_{2(l)} \rightarrow 2H_2O_{(l)} + O_{2(g)}$

The rate of this reaction can BEST be determined by:
   A Measuring the volume of oxygen produced
   B Determining the mass of catalyst used
   C Measuring the volume of hydrogen peroxide used
   D Measuring the volume of water produced

12. A solid X, gives a brick-red flame colour and decomposes when heated to give a gas that turns lime water milky. X could be
   A $SrCO_3$
   B Li_2CO_3
   C $Ca(NO_3)_2$
   D $CaCO_3$

13. Consider the equation:
$2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_{3(g)}$; ΔH is negative

What will be the effect on the position of the equilibrium if the sulphur trioxide is removed as soon as it is formed
   A It will shift to the left
   B It will shift to the right
   C More sulphur trioxide will be formed
   D No effect

14. What will change when an atom forms an ion?
   A The number of electrons
   B The number of nucleons
   C The number of protons
   D The number of neutrons

15. Which of the following mixtures can be separated by adding water, stirring and filtering?
A Barium chloride and sodium chloride
B Potassium sulphate and barium nitrate
C Calcium carbonate and sodium chloride
D Copper(II) chloride and magnesium chloride

16. What is the percentage of nitrogen in ammonium phosphate $(NH_4)_3PO_4$?
A 38.2%
B 56.4%
C 22.8%
D 28.2%

17. Which of the following reactions represent an oxidation-reduction reaction?
A $AgNO_{3(aq)} + NaCl_{(aq)} \longrightarrow AgCl_{(s)} \quad NaNO_{3(aq)}$
B $2Mg_{(s)} + CO_{2(g)} \longrightarrow 2MgO_{(s)} + C_{(s)}$
C $_2NaOH(aq) + H_2SO_4(aq) \longrightarrow Na_2SO_4(aq) + _2H_2O(\ell)$
D $CaCO_{3(s)} \longrightarrow CaO_{(s)} + CO_{2(g)}$

18. Calculate the volume of hydrogen evolved at r.t.p when 4.8g of sodium dissolve in water according to the following equation:
$2Na_{(s)} + 2H_2O_{(l)} \longrightarrow 2NaOH_{(aq)} + H_{2(g)}$
A 1252 cm^3
B 5008 cm^3
C 2504 cm^3
D 10016 cm^3

19. The minimum amount of energy needed to start a chemical reaction is called
A energy of reaction
B enthalpy of reaction
C activation energy
D ionization energy

20. An element M is represented as $^{133}_{55}M$. The element M, therefore contains:
A 78 protons and 55 electrons
B 55 protons and 78 neutrons
C 55 protons and 78 electrons
D 78 protons and 55 neutrons

Question 21 and 22 concern the following elements of the Periodic Table
A Chlorine
B Iron
C Mercury
D Sodium
Select from A-D,

21. Which one of these elements can form compounds by pure covalent bonding?

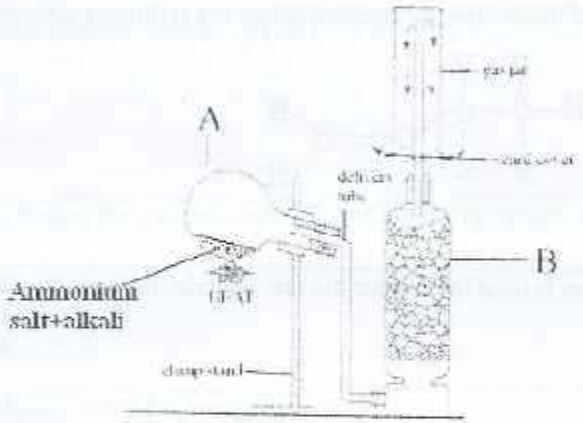
22. Which one of these elements is an alkali metal?

23. Which of the following is used as a catalyst during esterification?
A conc. H_2SO_4
B conc.HCl
C dil. H_2SO_4
D dil.HCl

24. The nitrate of an element Y decomposes when heated to give the metallic nitrite and O_2 (Y is not the usual symbol of the element), Y is a member of
   A Group IV elements
   B Group II elements
   C Group III elements
   D Group I elements

25. A current of 0.45A was passed through a solution of copper(II) sulphate for 25 minutes. Calculate the quantity of electricity used.
   A 67.5C
   B 112.5C
   C 675C
   D 11.25C

Question 26 and 27 are based on the diagram below representing the apparatus for the preparation of ammonia from an ammonium salt.



26. Why is the round bottom flask, "A" tilted?
   A For easy heating of the flask
   B To provide a large surface area for the reaction
   C To facilitate the flow of the gas produced out of the flask
   D To prevent the hot flask from cracking by water formed

27. Which one of the following is the best equation for the reaction in flask A?
   A $KOH + NH_4Cl \rightarrow KCl + H_2O + NH_3$
   B $Ca(OH)_2 + 2NH_4Cl \rightarrow CaCl_2 + 2H_2O + 2NH_3$
   C $NaOH + NH_4Cl \rightarrow NaCl + H_2O + NH_3$
   D $Fe(OH)_2 + 2NH_4Cl \rightarrow FeCl_2 + 2H_2O + 2NH_3$

28. Rhombic and Monochnic sulphur change from one form to another at 96°C. This temperature is known as
   A the transition temperature
   B the decomposition temperature
   C the boiling temperature
   D the melting temperature

29. Which one of the following reactions DOES NOT take place in the industrial manufacture of sulphuric acid?
   A $SO_{3(g)} + H_2O_{(l)} \rightarrow H_2SO_{4(aq)}$
   B $S_{(s)} + O_{2(g)} \rightarrow SO_{2(g)}$
   C $2SO_{2(g)} + O_2(g) \rightarrow 2SO_{3(g)}$
   D $H_2SO_{4(aq)} + SO_{3(g)} \rightarrow H_2S_2O_{7(l)}$

30. Determine the Relative Atomic mass of bromine given that it is made up of equal amounts of $^{79}_{35}Br$ and $^{81}_{35}Br$

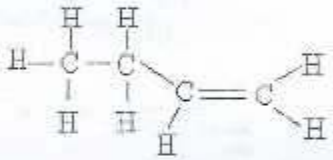
A 81
B 160
C 80
D 79

31. Which of the following polymers could be formed from the monomers:

HO—□—OH and HOOC—▨—COOH

A Nylon
B Terylene
C Polythene
D Perspex

32. To which homologous series does the compound represented by the following structural formula belong?



A Alkenes
B Alkynes
C Alkanes
D Paraffins

33. Which of the following processes is used to produce the raw material for making washing soda?

A Frasch process
B Solvay process
C Haber process
D Contact process

34. Boyle's Law states that "at constant temperature, the volume of a fixed mass of gas is inversely proportional to its pressure" This implies that:

A Pressure is doubled if volume is doubled
B Pressure is doubled if temperature is constant
C Pressure is halved if volume is doubled
D Pressure is constant if volume is halved

35. Which of the following methods could be used to prepare silver chloride in the laboratory?

A Double decomposition
B Direction combination
C Neutralization
D Thermal decomposition

Question 36-37

Instructions:

Each of the following questions consists 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 TRUE OR FALSE. Then on your answer sheet mark

A if both statements are true and the second statement is a correct explanation of the first statement.
B if both statements are true but the second statement is not a correct explanation of the first statement.
C if the first statement is true but the second statement is false.
D if the first statement is false but the statement is true.

Instructions Summarised		
	First Statement	Second Statement
A	TRUE	TRUE and the second statement is a correct explanation of the first
B	TRUE	TRUE and the second statement is NOT a correct explanation of the first
C	TRUE	FALSE
D	FALSE	TRUE

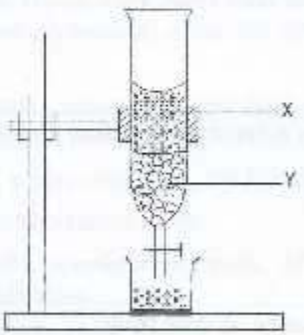
	First Statement	Second Statement
36.	Ethanol reacts with PCl_5 in the cold to produce ethyl chloride and hydrogen gas is give off	PCl_5 is used to test for the presence of the OH group in organic compounds.
37.	Hydrogen is evolved when copper is added to dilute hydrochloric acid	Hydrogen is above copper in the electro-chemical series

38. How many chlorine molecules are there is 7.1g of chlorine gas?
   A 0.602×10^{23}
   B 0.1
   C 6.02×10^{23}
   D 0.602×10^{23}

39. When sodium nitrate is heated the gas produced relights a glowing splint. The gas is likely to be
   A oxygen
   B nitrogen
   C hydrogen
   D nitrogen dioxide

40. Which one of the following is **NOT** a component of air?
   A Water vapour
   B Hydrogen
   C Nitrogen
   D Carbondioxide

41. The diagram below represents a technique used to separate two substances X and Y



X and Y could respectively be
   A water and kerosene
   B water and ethanol
   C palm oil and water
   D sodium chloride solution and water