

# CHEMISTRY REVISION QUESTIONS

1. Identify ten substances made by application of chemistry.
2. How chemistry is applied in your community?
3. Chemistry is an important subject due to its wide applications in life. The knowledge and skills of chemistry are also very important in our daily lives as they are widely applied in different areas. Explain the fact of the statement using six (6) points.
4. With examples of chemical substances, explain how chemistry is commonly applied at you home.
5. How would life be if there was no chemistry at all?
6. Why is it important to study chemistry? Explain with six (6) points
7. Mpundukwa believe that chemistry is not important subject, thus he always not like to enter the chemistry session at his school. How can you advise Mpundukwa to attend the chemistry session by using six (6) points?
8. Explain seven areas where chemistry is applied
9. Fill in the following table by giving three (3) products that are made by the applications of chemistry in each at the following fields

FIELDS/AREAS	PRODUCTS
Agriculture	
Medicine and pharmacy	
Home care products and cosmetics industries	
Food and beverage industries	
Construction materials	
Textile industries	
Transport	
Chemical industries	

10. Which chemical substances are used at your home?
11. Why laboratory rules should be obeyed by everyone? Use three (3) points
12. Why should chemicals in the laboratory be labeled and well closed after use?
13. Give reasons to support each of the following statements
  - i. A laboratory should be equipped with fire extinguisher
  - ii. Dangerous experiments must be demonstrated by the teacher only. They should be done outside in the open space or in the fume chamber
  - iii. A laboratory should have large windows
  - iv. Chemicals that are not labeled should not be used in the laboratory
  - v. Why should chemicals in the laboratory be labeled and well closed after use
  - vi. Laboratory should have large space
  - vii. Fume chamber is of great important in the laboratory
  - viii. Laboratory should have rough surface
  - ix. Most of laboratory apparatus are made by glass. Give four (4) reasons

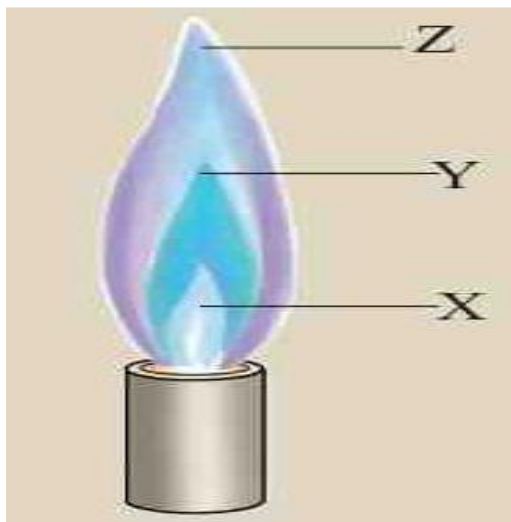
- x. Never enter in the laboratory without permission
  - xi. Safety signs/symbols are of great importance in the laboratory
  - xii. A chemistry laboratory must have safety measures
  - xiii. Chemistry laboratory exits like doors open outwards
  - xiv. It's important to familiarize with the laboratory apparatus
  - xv. Luminous flame produce soot
  - xvi. Non luminous flame do not produce soot
  - xvii. Luminous flame is used for lighting than non-luminous flame. Give two reasons
  - xviii. Non luminous flame is used in welding or during heating
  - xix. Materials should never be thrown or put in water sink
  - xx. Fume chamber should be built in the laboratory
  - xxi. In a storey building, the chemistry laboratory should be on the lowest floor
  - xxii. Laboratory floor should never be polished
14. How can you help a fellow student who has been burnt with chemicals in the laboratory?
15. State three advantages of having laboratory rules
16. The following are possible causes of accidents that occur in chemistry laboratory. State how can you avoid them
- a) Poisonous chemicals left in an unlocked cupboard
  - b) A students picking up a bottle with concentrated sulphuric acid by the neck
  - c) Concentrated acids are stored in the upper most shelf of cupboard
17. Some beakers, syringes, measuring cylinders and troughs are made of plastic. What are the advantages of plastic containers?
18. Most of laboratory apparatus are made up by glass. Give five (5) points
19. Give reasons for the following
- i. A candle may be used where the experiment does not need heating to a high temperature yet it's disadvantageous.
  - ii. The spirit burner flame may be soot free but the flame is not used in many experiments.
20. (a) Draw the warning symbol you would expect to see on
- i. A can of petrol
  - ii. A bottle of caustic soda
- (b) Why are hazard signs better than words?
21. Your teacher may advice you on things you should never do in the laboratory. For each of the rules below, write what might happen if you never followed instructions
- a) Never enter the laboratory in the absence of teacher
  - b) Never run around in the laboratory
  - c) Never use broken apparatus
  - d) Never eat or drink in the laboratory
  - e) Never quarrel or fight in the laboratory
  - f) Never use laboratory apparatus for drinking or storing food

- g) Never throw any solid into the sink or waterways
  - h) Wash your hands with soap before you leave a laboratory
  - i) Replace the cover (stopper) after using a chemical.
22. It is a good practice to keep a list of laboratory rules on the wall of a chemistry laboratory. You are required to compile a list of ten such rules. The rules should warn students or guide them on how to
- a) Take chemicals safely from containers.
  - b) Avoid mixing up of chemicals unnecessarily.
  - c) Prevent blocking of the sink and waterways.
  - d) Discourage doing unauthorized experiments.
  - e) Avoid exposure to dangerous gases
  - f) Control the movements of people in the laboratory
  - g) Handle hot objects over flame
  - h) Keep the floor and bench top clean, dry and tidy
  - i) Stop any attempt to eat, drink or keep any food in the laboratory
  - j) Boil liquids safely
23. (a) How would you treat
- i. A minor cut
  - ii. A minor burn
- (b) What would you do in case of a more serious injury?
24. How can you **handle or take precautions/safety measures** when using the chemicals with the following chemical symbol or name
- |              |            |              |
|--------------|------------|--------------|
| a) Flammable | d) Oxidant | g) Explosive |
| b) Corrosive | e) Toxic   |              |
| c) Irritant  | f) Harmful |              |
25. Differentiate the flame produced by candle and that of spirit burner
26. A Bunsen burner is the most commonly used source of heat in the laboratory than any other sources of heat. Explain with five (5) reasons
27. Why non-luminous flame is preferred most to be used as the source of heat than luminous flame
28. Why the following type of flame are given that name
- a) Luminous flame
  - b) Non luminous flame
29. What will you do if you come into contact with the following situations in the laboratory
- i. Some chemicals come into contact with your eyes
  - ii. Corrosive chemicals like concentrated acids come into contact with your skin
  - iii. Some chemicals enters into your mouth
  - iv. Your hands are wet and you want to put off the electricity since you have finished the task
  - v. Your friend's clothes catch fire

- vi. Unlabeled chemicals on benches
  - vii. Glass apparatus cut your skin
  - viii. Your friend is on electrical shock
  - ix. You want to perform experiment that involves harmful/poisonous gases but there is no fume chamber in your laboratory
  - x. A fire starts in your laboratory.
30. Explain the importance of giving First Aid to victims of accidents.
  31. If your family member has a burn, how can you help him/her?
  32. Explain how can you administer first aid to your classmate who has just had concentrated sulphuric acid spilled on his/her skin.
  33. Why is important for one to know and observe safety rules in the laboratory. Give three (3) importance
  34. What are advantages of Bunsen burner over other sources of heat? Give five (5) reasons
  35. Explain the importance of handling safely the laboratory apparatus.
  36. How will you light a Bunsen burner?
  37. What happen when a piece of white paper is placed into a non-luminous flame?
  38. How would you use a Bunsen burner to produce different types of flame?
  39. How can you adjust or use Bunsen burner to get the following types of flame
    - a) Luminous flame
    - b) Non-luminous flame
  40. Which sources of heat are commonly used in the laboratory?
  41. How can you differentiate a flame formed by closing air holes and one formed by opening the air holes of the Bunsen burner? Use seven (7) points
  42. What is burning back or sticking back? How is it caused? What dangerous effect may occur? How to correct it?
  43. Why chemistry laboratories are not built on top or upstairs or over other laboratories
  44. Why a laboratory user should wear laboratory protective gears like goggles, face mask and laboratory coat
  45. Why open shoes are not allowed in the laboratory
  46. Long hairs, loose or floppy clothing are not allowed in the laboratory. Explain
  47. Explain the different causes of accident in the laboratory. Use six (6) points
  48. Explain the preventive measures for common accident that are likely to occur in the laboratory. Use six (6) points
  49. Chemistry laboratory apparatus are special tools and equipment that are used in the laboratory. They are used for various purposes. By giving example explain the function of different apparatus depending on the following categories
    - a) Apparatus for measuring
    - b) Apparatus for testing
    - c) Apparatus for heating
    - d) Apparatus for filtering

- e) Apparatus for grinding
- f) Apparatus for holding
- g) Apparatus for storage
- h) Apparatus for scooping
- i) Apparatus for safety

50. Study the given Bunsen burner flame and answer the following questions



- a) Is the flame luminous or non-luminous explain?
  - b) How can you adjust the Bunsen burner to get this flame.
  - c) Which letter in the flame represents the
    - i. Region of unburnt gas?
    - ii. Hottest part of the flame
    - iii. Region where all gas is burnt with air mainly supplied from outside the chimney
51. The following are the steps to follow in lighting of the Bunsen burner. However the steps are not in correct order. Re write them in correct sequence
- i. To extinguish the flame turn off the gas tap to stop the gas flow
  - ii. Light the gas at the top of the barrel with a lighted match stick.
  - iii. Turn the color to close the air hole completely
  - iv. Keep your face away from the top of the barrel
  - v. Adjust the gas tap until the supply of gas is enough for a flame.
  - vi. Turn on the gas fully to ensure that plenty of the gas enters the burner
52. Which part of a flame has a lowest temperature?
53. How to light a Bunsen burner? Give six (6) procedures
54. In what ways is a luminous flame important?
55. Assume that you are doing an experiment in the laboratory at 07:30pm and suddenly the lights went off. Give two reasons to justify the fact that you would consider luminous flame rather than non luminous flame as an alternative source for lighting?

56. Why petrol and diesel not recommended to be used as fuels in the laboratory?
57. Why it is necessary to use wire gauze when boiling liquid in a beaker? Give three(3) points
58. The non-luminous flame is used in different areas. Give three (3) such areas and explain why the flame is preferred by the users in those areas.
59. (a). How is the scientific method applied in treatment of sick persons?  
(b). Explain any three problems or facts at home or at school whose answers can be found using scientific method.  
(c). Assume most students in your class fail to perform a certain chemistry experiment assigned by the teacher.
  - i. Identify a problem that you can investigate.
  - ii. Formulate the hypothesis
  - iii. List down a dependent variable, an independent variable and a control variable in your investigation.
  - iv. Design an experiment to test your variable
60. What are the advantages of using the scientific method in doing science experiments?
61. What are the application of scientific procedures/methods in daily life
62. Explain three factors that affect the problem being investigated
63. To design a suitable experiment, you must find out the factors that affect the problem you want to investigate.
  - i. Name the factors that affect the problem to be investigated
  - ii. Explain the three types of factors named in (i) above
64. What would you do if the results obtained do not support the hypothesis? Give three (3) points.
65. Describe the six (6) main steps of scientific methods with vivid examples.
66. What would happen if there were no experiments?
67. Explain the purpose of each step in the scientific procedure or method.
68. Effective use of four senses of observation is important before a chemist can make conclusion. With four points, show how the senses are used as tools of observation during experimentation by giving one example for each.
69. Why stone is said to be an example of matter?
70. State two (2) characteristics of matter.
71. Explain the differences between evaporation and boiling. Use five (5) points
72. Give reasons for the following statement
  - i. Why do cold foods not smell from a distance
  - ii. Smell of perfume can be felt at any corner of the classroom
  - iii. Smell of ether (chemical) can be detected at different points in the laboratory?
  - iv. Why do gases expand more than solids for the same increase in temperature?
  - v. Gases expand more than solids for the same increase in temperature
  - vi. When metal such as copper is heated, it expands. Explain what happens to the metal particles during expansion.

- vii. When a container of coffee is opened in a room, people in different parts of the room may notice its smell. Use the kinetic theory of matter to explain how this happens.
  - viii. Once you open a freezer, you may find an ice on its walls. How does the ice form?
  - ix. It is easy to pour liquid
  - x. A gas will completely fill any container
  - xi. A solid expands when heated.
  - xii. Cooking pots, pans, and utensils made by metals?
  - xiii. Iron materials make sound when they are hit. Explain
  - xiv. When you touch a metal during cold weather you feel that it is cold, but when you touch a metal during hot weather you feel it is hot. Explain
  - xv. Saturated solutions dissolve more solutes when heated.
  - xvi. Air pressurized water fire extinguisher (APW) not suitable for fire classes B, C and D.
  - xvii. Carbon dioxide fire extinguisher not suitable for class A fire.
  - xviii. Water is not used to put off fire caused by flammable liquids like petrol and diesel
  - xix. Is not allowed to open the bottle with petrol or diesel for period of time
  - xx. Is advised to close all flammable liquids soon after use
  - xxi. Not allowed to put flammable liquids near the open flame
  - xxii. Fires that involves flammable liquids should be put off/out using sand or fire blanket
  - xxiii. Iron sheets turn brown when exposed to wet air for a long time
  - xxiv. Commodities like hand bags and camera bags for sale are packed with silica gel
  - xxv. Water is not advised to extinguish fire classes A and B
73. Hurricane and tin lamps are not advised to be used in the laboratory. Use two (2) points
74. Why may a flame produced by a spirit lamp not be good for heating in the laboratory? give two reasons. Name the type of flame produced by a spirit lamp.
75. What are the conditions for substances to be called matter?
76. Why liquids and gases are categorized as fluids?
77. Describe gases, liquids, and solids in terms of the following
- |                  |                            |
|------------------|----------------------------|
| a) Shape         | e) Compressibility         |
| b) Volume        | f) Space between particles |
| c) How they flow | g) Movement of particles   |
| d) Density       |                            |
78. What are differences between physical change and chemical change? Use six (6) points
79. Categorize the following as either chemical or physical changes
- i. Ammonium carbonate is dissolved in water gradually with stirring. The solution becomes very cold.
  - ii. Exactly 5g of copper filings are heated strongly in air. At the end of the reaction, the mass is found to be 5.15g
  - iii. A small piece of sodium was dropped into water. It darted about on the water surface and finally it burst into flames.

- iv. Copper (II) sulphate is heated strongly; it changes from blue to white. On addition of water to white substance, it changes back to blue
- v. When ethanol is mixed with water, a homogeneous solution is formed. When the solution is distilled, the two liquids are obtained.
- vi. If water is kept in a deep freezer, it solidifies to ice. If the ice is kept in the sun, it liquefies to water.
- vii. Water is added drop wise to dry calcium oxide on a watch glass. Heat is developed, steam is formed, the oxide cracks and puffs up and finally crumbles to a powder about three times as bulky.
- viii. Burning of a candle
- ix. Decaying of meat and teeth
- x. Freezing of juice in a bottle
- xi. Rusting of iron
- xii. Burning of wood
- xiii. Drying of wet clothes
- xiv. Cooking food
- xv. Burning charcoal
- xvi. Rusting of iron sheets
- xvii. Souring of milk
- xviii. Dissolution of common salt in water
- xix. Sublimation of iodine from the mixture of iodine and sand

80. What are the importances of changing from one state of matter to another? Give six (6) reasons

81. Name the changes of matter from one state to another depending on the following

- i. Ice to water
- ii. Water to ice
- iii. Ice to water vapour
- iv. Water vapour to ice
- v. Water to water vapour
- vi. Water vapour to water

82. How can you differentiate the changes that occur when the juice in a bottle freezes and that if wood is burnt

83. Why some elements are assigned with one letter and other with two letters?

84. What is the importance of having the rules for assigning the chemical symbols? Use five (5) points

85. What are the uses of chemical symbols? Explain with five (5) points

86. Why some of the elements are assigned symbol with only one letter while other bears two letters?

87. What is significance of using chemical symbols? Explain with five (5) points

88. The use of chemical symbols has made it easier for chemists and other people. Explain with five (5) points

89. The following are substances that are made up of one, two or more components: **common salt, mud, juices, milk, water, sulphur, chlorine, iron, zinc and soft drinks.**

- i. Classify the above listed items as either compound, mixtures, metals and non-metals
- ii. Discuss each item and give reasons for classifying it as a compound or a mixture.



90. What is the difference between metals and non-metals? Use six (6) points
91. Why metals can be made into wires and iron sheets but not non-metals. Explain
92. Differentiate between compounds and elements.
93. Table salt is a mixture. Explain with five (5) points
94. Muddy water is a mixture. Explain with five (5) points
95. Air is the mixture. Explain with five points
96. Identify various solutions available at your home and school and classify them into solid, liquid and gaseous solutions.
97. Briefly how can you distinguish homogeneous mixture and heterogeneous mixture just by their appearance? Use three (3) points
98. Why only fractional distillation is used to separate ethanol from water?
99. Suggest one method for separation of each of the following mixtures
 

i. Iodine and sand	xiv. Dust and salt
ii. Green solution from leaves	xv. Ink colours
iii. Alcohol and water	xvi. Iodine and sand
iv. Iron pieces from sand	xvii. Crude oil
v. Iron fillings and powdered calcium carbonate	xviii. Sand and rice
vi. Sand and water	xix. Iron fillings and table salt
vii. Chalk and water	xx. Sodium chloride and water
viii. Water from copper (II) sulphate	xxi. Pieces of iron and copper
ix. Serum from a blood sample	xxii. Sand and salt
x. Water and ethanol	xxiii. Chlorophyll from leaves
xi. Sodium chloride and ammonium chloride	xxiv. Iron fillings and sulphur
xii. Kerosene (oils) and water	xxv. Common salt and water
xiii. Muddy water	xxvi. Kerosene, cooking oil and water
	xxvii. Oil from plant seeds
100. Why mixtures of the same boiling points cannot be separated by fractional distillation?
101. Briefly how can you distinguish solution and suspension just by their appearance? Use three (3) points
102. How can you differentiate the mixture of chalk with water and that of common salt with water? Use four points
103. How is evaporation applied at home?
104. In which areas can you apply the knowledge of chromatography?
105. Describe two examples where simple distillation is used in daily life.
106. How are solutions, suspensions and emulsions used in daily life?
107. Are the formations of homogeneous colourless solutions always physical changes? Explain
108. What changes do we encounter in our daily lives that are good examples of physical changes and chemical changes?

109. Why can saturated sugar solution dissolve more sugar after being heated?
110. Air is the mixture and not compound. Explain
111. List any five noble gases
112. Give an example for the following types of solution states:
  - a) Liquid
  - b) Solid
  - c) Gas
  - d) Transport
113. Explain how combustion can be applied in the following areas
  - a) Laboratories
  - b) Homes
  - c) Industries
  - d) Transport
114. According to the laboratory rules, what should you do in the following situations?
  - a) While boiling water, you realize that you need to get a book from the classroom.
  - b) There is unused acid left in the test tube after you finish your experiment
  - c) You need to use water and there is a bottle containing a clear liquid on the bench but you are not sure of its content
  - d) Your friend suggests that you carry apparatus out of the laboratory
  - e) You need to switch off electricity
  - f) You have finished biology experiments for the day
115. Explain effects of rusting in your community
116. What are the four main components of air?
117. What are differences between combustion and heating
118. What are similarities between combustion and rusting?
119. What are similarities between burning and rusting
120. What are differences between burning and rusting
121. What are differences between combustion and rusting?
122. State the chemical composition of the extinguishing agents of each of the following portable fire extinguishers: **carbon dioxide extinguisher, dry chemical extinguisher, wet chemical extinguisher, ABC extinguisher and foam extinguisher.**
123. Mpundukwa is the student at KAMBARE SECONDARY SCHOOL he performed an experiment basing on the following procedures.
  - a. He measured about 100cm<sup>3</sup> of water and pours it in a beaker.
  - b. He added a spatulaful of the common salt in the beaker and stir.
  - c. He continued adding more salt to the solution and stirring until no more salt can dissolve
  - d. He placed the solution on the tripod stand and heat gently with constant stirring while heating
  - e. He stopped stirring when the salt dissolves
  - f. He placed the beaker with the solution that is half-filled with cold water and allows cooling for 5 minutes. He recorded an observation

### **QUESTIONS**

- i. ***What was the aim of the experiment?***

- ii. **What type of solution is formed when a spatulaful of table salt was dissolved in 100cm<sup>3</sup>? Explain with reason**
- iii. **What type of solution is obtained at room temperature when no more salt can dissolve? Explain with reason**
- iv. **What name is given to the final solution? Explain with reason**

124. Why when solids are dipped into beaker with water displaces some water? Give two reasons

125. Three substances A, B and C are mixed together. Some of their properties are summarized in the table below

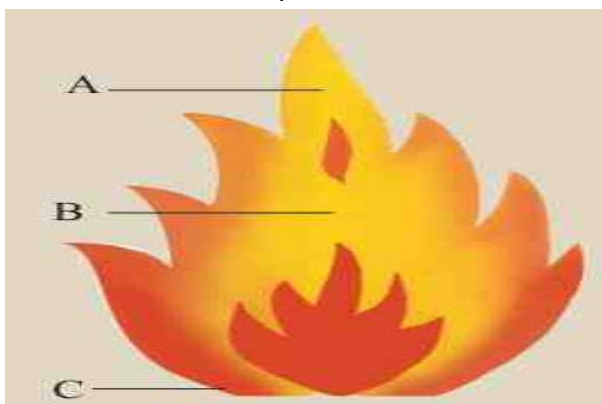
Substance	Soluble in water	Soluble in kerosene
A	No	Yes
B	No	No
C	Yes	No

- i. Which substance could be salt? Explain your choice
  - ii. Describe how pure samples of A, B and C could be obtained from this mixture.
126. During the separation of ethanol and water Liebig condenser is used.
- a) What role does the Liebig condenser play?
  - b) If you do not have a Liebig condenser, what will you use to carry out this simple distillation?
127. Fractional distillation separates the miscible liquids with different boiling points. Assume you are in the laboratory and you want to separate water and ethanol which have boiling points of 100 and 72 degree of centigrade respective.
- a) Which liquid distills first and why?
  - b) What role does fractionating column play?
128. Juma went to the laboratory; he accidentally mixed spirit with water. With the aid of diagram explain how you would help Juma to separate the mixture.
129. Yunice was provided with the following reagent sand, salt, distilled water and kerosene. She was asked to prepare the mixture A, B and C from the given reagent, substance A contain the mixture of sand and distilled water, substance B contain the mixture of salt and distilled water and substance C contain mixture of kerosene and water.
- a) Name the mixture found in substance A, B and C
  - b) What is the suitable method to separate the component found in substance **A**, **B** and **C**.
  - c) Contrast mixture **A** and mixture **B** by four points
130. Juma went to the laboratory; he accidentally mixed cooking oil with water. With the aid of diagram explain how you would help Juma to separate the mixture.
131. Your friend dropped some salt on the ground accidentally. The salt got mixed up with dust and sand. You are required to advise your friend on what to do at home so as to get his salt as clean as possible. Explain

132. As a chemistry taker how can you separate the following when mixed together with the aid of apparatus used to separate them, cooking oil, kerosene and water with density  $0.92\text{g/dm}^3$ ,  $0.64\text{g/dm}^3$  and  $1\text{g/dm}^3$  respectively.
133. Chunya village is place where most of people complain of drinking water containing too much salt. As an expert of chemistry explain the technique with the aid of diagram that could separate salt from water.
134. When water and kerosene are mixed in the same container which one forms the upper layer of the mixture give reason?
135. How can you separate a mixture of salt and common salt? use flow chart to explain
136. How can you apply the knowledge of separating mixtures in everyday life?
137. Answer the following questions
- Give any four (4) causes of fire
  - Briefly explain any seven (7) ways of preventing fire
  - Give three ways that will enable a fire to start or continue to burn and control a fire.
138. What are conditions necessary for the following to occur
- Fire
  - Rusting
139. What factors accelerate to the rusting process to occur? Give three (3) factors
140. Why rusting of iron is the chemical change? Give five (5) reasons
141. Asubuhi njema's child was sick. When she took her to the hospital, she was prescribed some medicine including a bottle of syrup. The bottle was written: **shake before use**. What does this statement signify?
142. A student accidentally broke a beaker containing copper (II) sulphate crystals. He decided to separate the blue crystals from the small pieces of glass by first dissolving the mixture and then filtering. What were his next steps?
143. List down five elements with their corresponding chemical symbols which start with 'C'
144. Why fire caused by electricity is not given their own full classes of fire?
145. Briefly explain methods used in preventing rusting of iron materials.
146. Why water is not suitable for extinguishing fires caused by flammable liquids?
147. state the burning materials in each of the following classes of fire
- class A
  - class B
  - class C
  - Class D
  - Class F
148. Portable fire extinguishers should be used in the right ways to quickly put out dangerous fire. What are main precautions should be taken when using portable fire extinguishers.
149. Why carbon dioxide is used to extinguish or put off the fire?
150. By using locally available materials in your school, state how the fire can be extinguished in the following situations
- Kerosene spilled on the floor catches fire.
  - Friend's clothes catch fire which gets out of her control.

151. Explain the application of different methods/techniques used to separate mixtures in daily life.
152. Suppose a truck carrying kerosene gets an accident, and unfortunately fire breaks out, suggest
- The suitable fire extinguisher to use. Give reasons
  - The fire extinguisher not suitable for use. Give reasons
153. (a). List down other areas where combustion is applied.  
(b). In each case, mention the combustible materials.
116. A student was preparing food for the family using hot oils on frying pan. Accidentally, the pan tipped over and a huge fire spread on the kitchen floor.
- Which fire extinguishers would be suitable for putting out the fire? Explain
  - Which fire extinguishers would not be suitable for putting out fire? Explain
117. With the aid of diagram illustrate how portable fire extinguisher should be used.
118. State what is observed when the following simple experiments are performed
- Carbon dioxide gas is passed through lime water for 32 seconds
  - Water is added to white copper (II) sulphate
  - A glowing splint of wood is lowered into gas jar full of carbon dioxide.
119. State the method which will be used to protect each of the following from rusting
- |                  |                                     |
|------------------|-------------------------------------|
| a) Iron sheets   | e) fragile instruments like cameras |
| b) Bicycle       | f) Tin cans                         |
| c) Metal pipes   | g) Cars                             |
| d) Machine parts | h) Taps, kettles and car bumpers    |

120. A student wants to put out hazardous fire whose flame is shown in the given diagram below



- State which part of the flame the student should aim to extinguish the fire. Explain
- Why is it not advisable to aim at other two positions of the flame?

121. Answer the following questions

- i. Suppose your laboratory does not have any water, mention two (2) possible dangers or accident of using it
- ii. Explain what will happen if a mixture of sand and ammonium chloride is heated in a flask
- iii. Explain the process that you will use to separate compound N that boils at 343K and compound P which boils at 345K temperatures. Which compound will be the first to be separated than the other give reason.
- iv. Why are there laboratory rules? Give two reasons

122. The mixture of sand and potassium can be separated by heating. Give reason

123. Write the chemical symbols of the following elements

- |             |              |              |
|-------------|--------------|--------------|
| a) Vanadium | f) gold      | k) Silver    |
| b) Yttrium  | g) iron      | l) manganese |
| c) Cobalt   | h) lead      | m) Sodium    |
| d) Antimony | i) Mercury   | n) Tin       |
| e) Copper   | j) Potassium | o) Tungsten  |

124. In an experiment, two iron nails A and B were used where by painting was applied on nail A. The two nails were placed in a moist environment and after one month the weight of each nail was determined. Which of the two nails would be heavier? Give reasons

125. The following are possible causes of accidents which can occur in the chemistry laboratory. State how can you avoid them;

- a) Poisonous chemicals left in an unlocked cupboard
- b) A student picking up a bottle containing concentrated sulphuric acid by the neck
- c) Concentrated acids stored in the upper most shelf of cupboard

126. Why rusting occurs most in coastal regions than in mountain regions? Give five (5) reasons

127. Why is not iron usually recommended in the construction of steam pipes and boilers?

128. Why zinc is used as a coat for iron and not vice-versa?

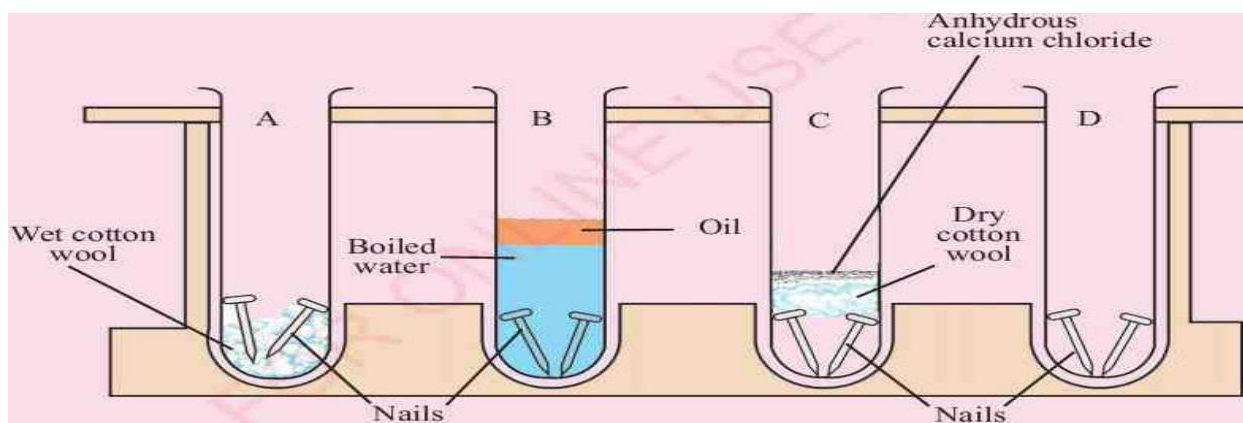
129. How does the following methods of preventing rusting work to prevent rust

- |                        |                      |
|------------------------|----------------------|
| i. Painting            | iv. Tin plating      |
| ii. Oiling             | v. Sacrificial anode |
| iii. Use of silica gel | vi. Galvanization    |

130. State and give reasons whether rust will occur or not to each of the following

- i. Iron bar is dipped in unboiled water
- ii. Painted iron is dipped in unboiled water
- iii. Iron bar is dipped in boiling water
- iv. Oiled iron is left outside the room over two nights
- v. A dry iron is wrapped with cotton wool
- vi. Silica gel is removed from camera bag

- vii. Aluminium wire is dipped in un-boiled water
  - viii. Iron is put into test tube with cotton wool and anhydrous calcium chloride
131. There are different conditions that are necessary for rusting to take place. A form one student at MOJA SECONDARY SCHOOL carried an experiment basing on the following set up to demonstrate the rusting of iron nails



### Questions

- i. **What was observed in each test tube after three days?**
  - ii. **Why was the water in the test tube B boiled, and then covered with oil?**
  - iii. **What was the function of anhydrous calcium chloride in test tube C?**
  - iv. **From the results of the experiment, state the conditions necessary for rusting to occur.**
  - v. **What is the function of the layer of oil in test tube B?**
132. How can you prepare oxygen gas in the laboratory? Explain with the aid of diagram using two (2) ways of preparing it.
133. Why oxygen is collected over water? Give two (2) reasons
134. How can you collect oxygen gas?
135. Outline six common apparatus used in preparation of oxygen gas using hydrogen peroxide and potassium chlorate
136. Name the method or process used to collect oxygen gas
137. Why during preparation of gases the first few bubbles of the gas are allowed to escape?
138. Give reasons for the following statement
- i. Oxygen gas is collected by downward displacement of water?
  - ii. Hydrogen peroxide is preferred over potassium chlorate in the laboratory preparation of oxygen?
  - iii. Mercury oxide can be used in preparation of oxygen by heating yet it's not used.
  - iv. Potassium permanganate can be used to prepare oxygen gas in the laboratory however is not commonly used.
  - v. Catalyst is used in preparation of oxygen gas

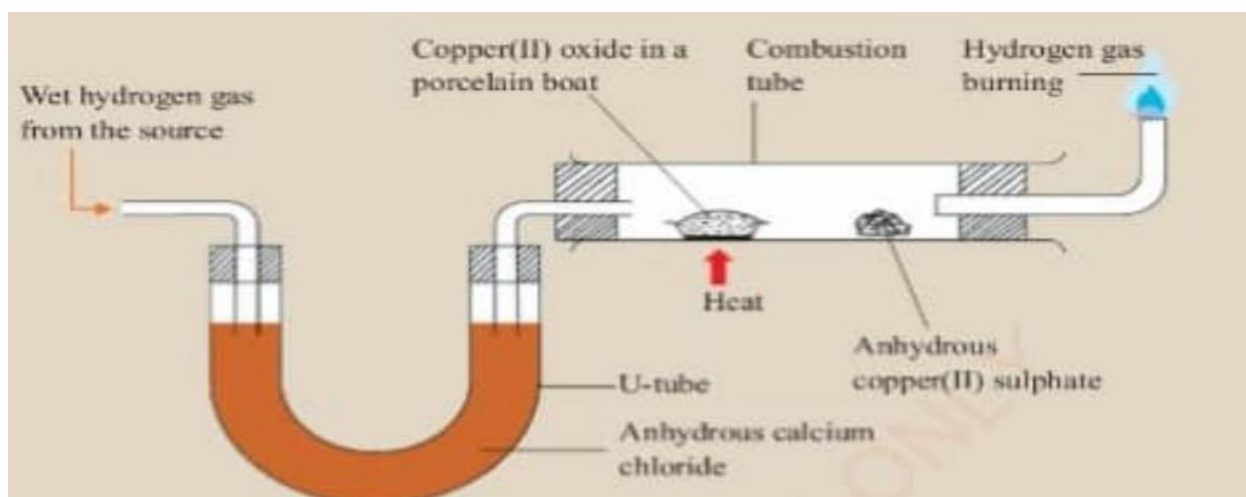
- vi. During preparation of oxygen by decomposition potassium chlorate temperature should be regulated.
139. Oxygen gas may be prepared in the laboratory by heating a mixture of potassium chlorate with manganese (IV) oxide. Which of these two compounds produces the required oxygen? Give reasons
140. During the laboratory preparation of oxygen, manganese (IV) oxide is used as catalyst in the decomposition reactions.
- a) What is decomposition?
  - b) What is catalyst?
  - c) What is the role of catalyst?
  - d) What would happen if the preparation of oxygen were performed without the use catalyst?
141. Answer the following questions
- i. What is the colour and smell of oxygen gas?
  - ii. What happened when the glowing splint was put in a jar of oxygen?
  - iii. What do you observe when the candle is lowered into gas jar full of oxygen gas?
  - iv. What happens when the glowing splint is put into gas jar with carbon dioxide gas?
  - v. Do oxygen burn? Give reasons
  - vi. What is the role of deflagrating spoon?
142. How oxygen is used in the following
- |                                       |                           |
|---------------------------------------|---------------------------|
| i. In living things                   | v. In rockets             |
| ii. Welding                           | vi. Water treatment       |
| iii. Burning                          | vii. Chemical application |
| iv. Mining and purification of metals |                           |
143. How can you distinguish ordinary air from oxygen? Give five points
144. Most of the uses of oxygen are related to its properties. Relate the uses of oxygen to its properties.
145. Distinguish the meaning of basic oxide from acidic oxide.
146. Oxygen is obtained by heating a metal chlorate in the presence of a catalyst
- a) Write the name of metal chlorate used
  - b) Write the name of product formed other than oxygen
  - c) Write the formula and the IUPAC name of the catalyst used
  - d) Write the word equation for this reaction
  - e) Draw a labelled diagram for this laboratory preparation of oxygen.
147. What happens when the following occurs
- a) Metal reacts with oxygen
  - b) Non metal reacts with oxygen



148. How can you differentiate basic oxides and acidic oxides using both blue and red litmus paper?
149. Explain the industrial preparation of oxygen gas using two methods.
150. Draw a clearly diagram showing the laboratory preparation of oxygen without the application of heat?
151. Most of oxygen uses are dictated by its properties. Explain
152. A student placed a silvery white solid on a deflagrating spoon, ignited it and then lowered the spoon into a gas jar of oxygen. The solid burned with a brick red flame.
- Identify the silvery white substance
  - Explain the nature of the product in terms of acidic or basic properties.
  - Write the product formed after burning the silvery solid
153. Oxygen is collected through a downward displacement of water
- Write a word equation for the preparation of oxygen by the decomposition of hydrogen peroxide using manganese dioxide as catalyst
  - Is it possible to collect pure oxygen during its preparation? Explain
  - Can all oxygen formed from hydrogen peroxide be collected into gas jar? Give reasons
154. What is the chemical test of oxygen gas?
155. Oxygen gas can also be prepared by thermal decomposition of potassium chlorate using manganese dioxide as a catalyst.
- Explain the activities which will be done when preparing the gas using this method.
  - Draw a well labelled diagram to show how oxygen is prepared using this method.
  - Write the word equation for this reaction.
156. What would you observe if;
- A solution of hydrogen peroxide was added to manganese (IV) oxide?
  - An excess hydrogen peroxide solution was added to a solution of potassium manganate (VII) acidified with dilute sulfuric acid?
  - A lit candle is lowered into a gas jar containing oxygen
157. Given a supply of hydrogen peroxide solution, how would you use it to generate a supply of oxygen and how would you collect the gas?
158. What is catalyst?
159. How is oxygen prepared using the following chemicals
- Hydrogen peroxide
  - Potassium chlorate
160. What would happen if there were no oxygen in the atmosphere
161. Hydrogen is collected through a downward displacement of water
- Write a word equation for the preparation of hydrogen by reacting dilute acids with metals
  - Is it possible to collect pure oxygen during its preparation? Explain

- c) Can all oxygen formed from hydrogen peroxide be collected into gas jar? Give
162. Mention four ways of preparing hydrogen in the laboratory.
163. Give reasons for the following
- a) Hydrogen gas is collected by downward displacement of water
  - b) A gas jar of hydrogen be tightly closed with a lid
  - c) Hydrogen rise high in the atmosphere
164. Hydrogen is not often found free on its own on the earth's surface, instead it is found in combination with many other elements. Explain
165. Outline six common apparatus used in preparation of oxygen gas using hydrogen peroxide and potassium chlorate
166. Among the substances formed by the combination of hydrogen with other elements are organic compounds. Give at least ten examples of such compounds.
167. When metals and non-metals were heated in oxygen, which one burns;
- a) Vigorously? give reasons
  - b) Slowly? give reasons
  - c) Identify the products formed as a result of burning the metals and non-metals in oxygen.
168. What is observed when moist blue and red litmus papers are placed in the test tube containing hydrogen gas? Give reason
169. What will be observed when a burning splint is placed at the mouth of the test tube containing hydrogen gas?
170. What is the chemical test of hydrogen gas?
171. Name the method or process used to collect hydrogen gas on its preparation
172. How is hydrogen being collected?
173. Why hydrogen gas is used in filling weather balloons?
174. Name the drying agent for hydrogen gas
175. On laboratory preparation of hydrogen gas, dilute sulphuric acid and hydrochloric acid react with some metals to liberate hydrogen gas. Zinc is the most suitable metal for the laboratory preparation of hydrogen gas. Copper (II) sulphate can also be used in this reaction.
- a) Why is it possible to collect the gas
    - i. By downward displacement of air?
    - ii. Over water
  - b) What is the use of Copper (II) sulphate in the reaction
  - c) Write the word equation for reaction generating hydrogen gas.
  - d) Why nitric acid is not used in preparation of hydrogen gas?
  - e) Why metals such as potassium, sodium, lithium and calcium are not usually used in preparation of hydrogen gas?
  - f) Why zinc metal is preferably used in hydrogen preparation compared to other metals?
  - g) Why its difficult to prepare hydrogen gas using aluminium and magnesium?

- h) Can copper metal be used instead of zinc metal in preparing hydrogen gas by reacting with dilute hydrochloric acid?
  - i) What does it indicate when hydrogen gas burns quietly with blue flame and not pop sound?
  - j) What does it mean by saying hydrogen gas is neutral?
  - k) What is the name of a colourless liquid formed when hydrogen burns in air that turns white anhydrous copper (II) sulphate blue is formed? Write the reaction for formation of that liquid?
176. You have three bottles without labels, one of which contains a dilute acid. Describe how you could find out which bottle contained the dilute acid?
177. When a sample of dry hydrogen in a test tube is ignited with a flame some droplets of colourless liquid remain.
178. When hydrogen is passed over heated lead (II) oxide, lead is formed
- a) Write a word equation for this reaction
  - b) Use this reaction to explain the terms oxidation and reduction
179. Describe how a sample of hydrogen gas could be prepared and collected from zinc granules?
180. Hydrogen was once widely used for weather balloons and airships. Today weather balloons and airships are filled with helium. Explain
181. Students at KIBO SECONDARY SCHOOL did an experiment to investigate the effect of hydrogen on copper (II) oxide basing on the following figure of illustrations

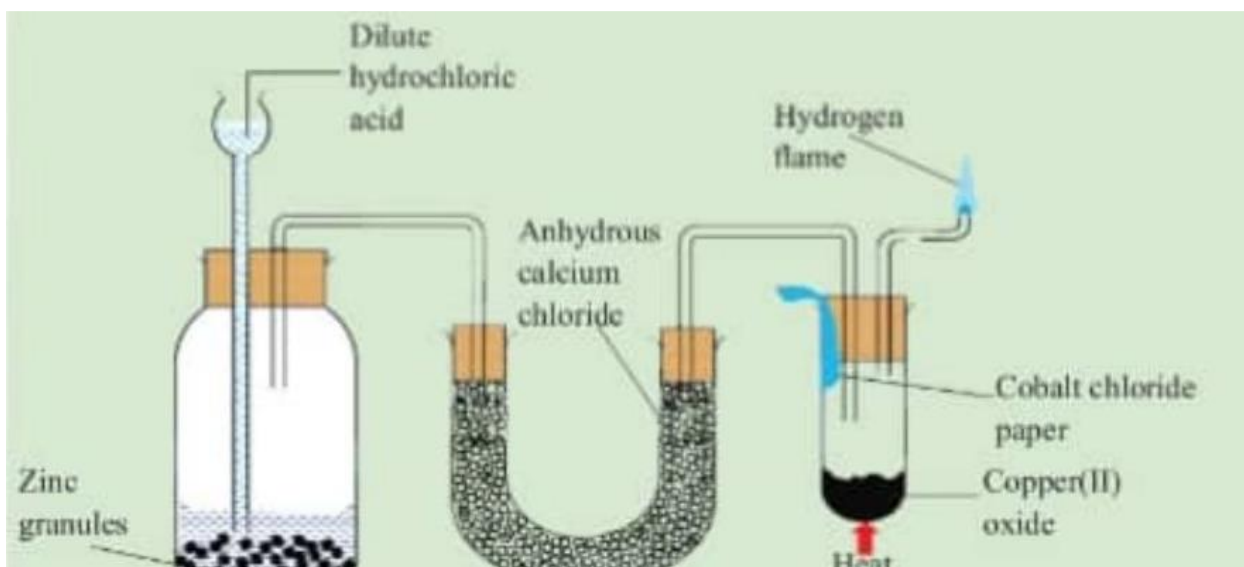


### Questions

- i. Why is it important to drive out all the air from the combustion tube before lighting the jet?
- ii. State and explain the observation made in the combustion tube.
- iii. Why the supply of hydrogen gas continued while the apparatus cools?
- iv. Write a word equation for the reaction between hydrogen and copper (II) oxide.

- v. Why is excess hydrogen burned and not allowed to escape into the air?
- vi. What is the role of anhydrous calcium chloride?
- vii. What is the use of copper (II) sulphate in this experiment?
- viii. What would happen if anhydrous calcium chloride was not used in this experiment?
- ix. What is the colour change when copper (II) oxide is heated?
- x. What was the colour of the flame of the lit hydrogen?
- xi. What other substance can be used instead of anhydrous calcium chloride?

182. After collecting hydrogen gas in the gas jar, it's necessary to cover it with a lid. Explain
183. Comment on the fact that most of the uses of hydrogen are related to its properties. Use six (6) points.
184. Suppose there were no hydrogen in the universe. What would happen
185. Study the diagram below and answer the questions that follow:



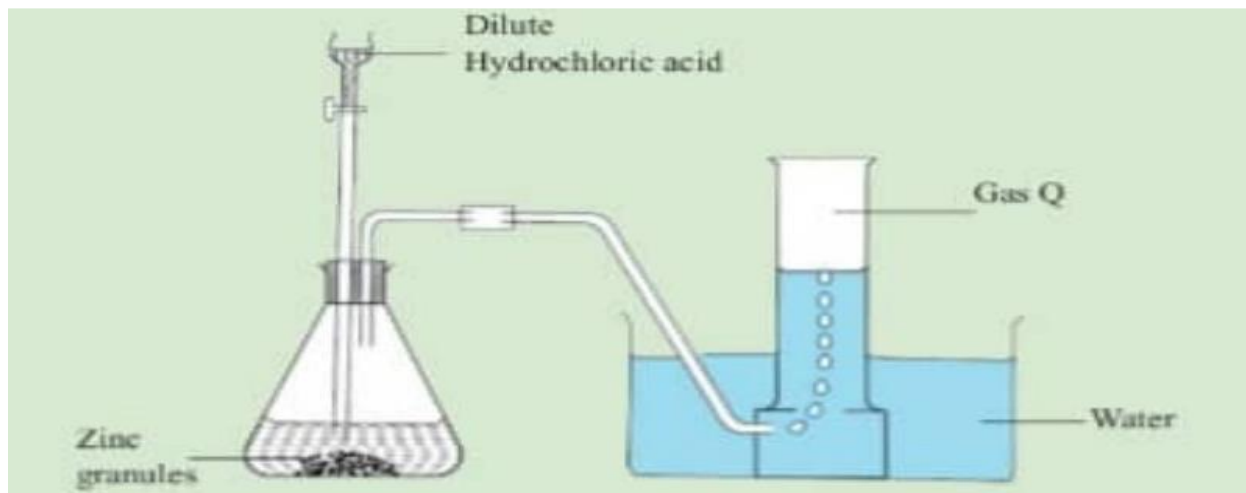
- a) What is the colour of the solid product?
  - b) Name the products formed.
  - c) What is the role of the following chemicals?
    - i. Hydrochloric acid and zinc granules
    - ii. Anhydrous calcium chloride
    - iii. Cobalt chloride paper
186. Briefly describe two methods of large-scale production of hydrogen gas?
187. Hydrogen gas is a very promising energy source, yet its uses as a major source of energy are very limited. Explain this in terms of its storage, safety and production.
188. State what is observed when the following simple experiments are performed

- a) Carbon dioxide gas is passed through lime water for 30 seconds
- b) Water is added to blue cobalt chloride paper
- c) Water is added to white anhydrous sulphate
- d) A glowing splint of wood is lowered into a jar full of carbon dioxide
- e) Iron bar was left outside for two nights its colour changed into red-brown

189. Name the two reagents used to prepare hydrogen gas and write its reaction.

190. Name the two reagents used to prepare oxygen gas and write its reaction.

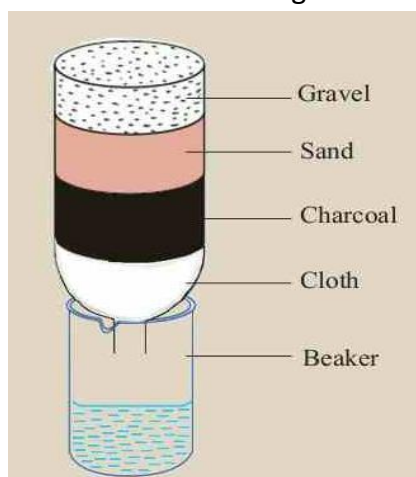
191. The following figure shows a set – up for the preparation of gas Q in the laboratory



- a) Identify gas Q
  - b) What properties of Q make it possible to be collected as shown on the figure?
  - c) Describe the properties of gas Q which relate with its uses.
192. Gas L has the following properties: it is highly flammable, readily combines with other elements, readily reacts with other chemical substances and is strong reducing agent.
- a) Name the gas L
  - b) What method used to collect gas L in the laboratory? Give reason
  - c) Give four uses of gas L.
193. Suppose that two gas jars: one with gas A and another with gas B. Gas a is used in hardening of margarine where as gas B is used by mountain climbers.
- a) What test will you conduct to identify each of the two gases?
  - b) Give two physical properties and three chemical properties that can be used to distinguish gas A from gas B
194. Gas X can be prepared in the laboratory by the decomposition of hydrogen peroxide.
- a) Name gas X
  - b) State three physical properties of gas X
  - c) State three chemical properties of gas X
  - d) State three uses of gas X
195. When dilute hydrochloric acid is reacted with zinc metal, gas Z is formed
- a) Name gas Z
  - b) Mention four physical properties of gas Z
  - c) State two uses of gas Z

196. By giving one reason, explain the following facts
- Little manganese dioxide is added to hydrogen peroxide during laboratory preparation of oxygen gas.
  - Fish can obtain oxygen for respiration although they spend their lives in water.
  - Oxygen gas is used in welding
  - Hydrogen is used in production of oxy-hydrogen flame
  - Hydrogen is used in manufacture of margarine
  - Hydrogen is manufacturing of hydrochloric acid
  - Hydrogen is used in manufacturing of water gas
  - Hydrogen is used in manufacturing of ammonia
197. What is water? Describe its occurrence and its nature.
198. State three chemical tests for water.
199. Name the products formed when water reacts with metals.
200. Name four physical properties of water
201. List four chemical properties of water.
202. Why do we treat water?
203. Explain three ways on how water can be treated and purified at home.
204. Explain the ways with the aid of illustration on how urban water can be treated and purified?
205. Why is water important in our daily lives?
206. Write short notes on water cycle
207. Explain the importance of the water cycle.
208. How can you test the purity of the water? Give two reasons
209. Draw a well-labeled diagram of a sand filter
210. Briefly explain why water is referred to as a universal solvent?
211. What colour change is observed when water comes into contact with the following
- Red litmus paper
  - Blue litmus paper
  - White anhydrous copper sulphate
  - Cobalt (II) chloride
212. Explain the importance of the following in water cycle
- Evaporation
  - Condensation
213. Mount Kilimanjaro is covered by a mass of ice that makes it important in different aspects. What could happen if the temperature at the mountain increased beyond its common environmental temperature?
214. Relate the different uses of water to its properties.
215. A form two student wanted to test the presence of water in an unknown compound using hydrated copper (II) sulphate. A small amount of hydrated copper (II) sulphate was placed on a watch glass followed by addition of few drops of unknown compound. There was no colour change observed.

- i. Why there was no change in colour of hydrated copper (II) sulphate?
  - ii. Name two substances that could be used in place of hydrated copper(II) sulphate to observe the required colour change.
216. With the aid of diagram, explain the processes that take place in the water cycle.
217. Use the following components to construct a diagram of water cycle: clouds, animal, water in the soil, rain, plants, water spring, rivers, lakes and water vapour in the atmosphere.
218. What could happen to living things if there were no water?
219. Why water is not used in preparation of oxygen gas in the laboratory although its composed of hydrogen and oxygen atoms and its available in larger amount than potassium chlorate and hydrogen peroxide?
220. Differentiate water purification and water treatment
221. Explain five importances of water purification and treatment.
222. Explain the importance of water as solvent.
223. Name four types of natural water.
224. Juma a villager man who is facing a problem of fetching water at his village since all water are not different from muddy water. His friend Mr. quizzer advised him to assemble a small water filter basing on the following illustration



#### Questions

- a) Is the filtered water different from unfiltered water?
  - b) What roles do the cloth, sand, gravel, charcoal and beaker play?
225. Why should drinking water be treated and purified? Give reasons
226. Why does not water have effect on litmus paper?
227. What would happen to well stoppered bottle full of water left in a deep freezer over night? Why does this happen?
228. Explain categories of fuels according to their occurrence with examples
229. Explain categories of fuels according to their physical state with examples
230. Solid fuels like wood and coal are not recommended or good for use. Explain with three reasons.
231. What are advantages over liquid fuels over solid fuels? Give three reasons

232. What are advantages of fuels with high ignition point? Give three reasons

233. Fuels can be categorized according to their effectiveness (usefulness) or productivity and convenience for use. What are characteristics that are considered when choosing a good fuel?

234. Why a good fuel should have moderate (average) ignition point and not low ignition point?

235. Fill the following table showing categories of fuels according to their physical states

Physical state	Primary/natural	Secondary/artificial
Solid		
Liquid		
gaseous		

236. What are environmental effects of using charcoal and firewood? Explain with five points

237. What are effects of fossil fuels detrimental to the environment? Give five reasons?

238. What factors that is important when choosing a fuel? Any seven

239. What are three classes of fuel based on their states and efficiency?

240. Scientists know that when we use energy, it does not disappear; it changes from one form to another. Briefly explain

a) What law governs this statement?

b) What are these forms of energy that are a result of energy transformation?

241. Give reasons for your answers in each of the following:

a) Which two fuels are most appropriate for vehicle engines? Which other fuels could be used?

b) Which fuel is most appropriate for space rockets?

c) Why a coal a suitable fuel for power station?

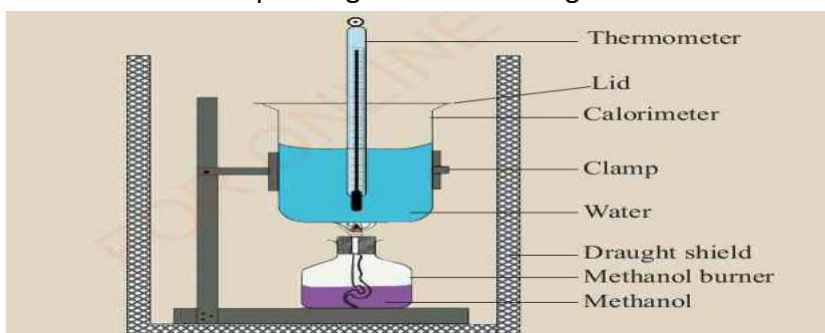
242. Explain the following with examples

a) Renewable sources of energy

b) Non – renewable sources of energy

243. What do you understand by the term ***“energy value of the fuel”***

244. Students at YOBWE SECONDARY SCHOOL did an experiment to determine the energy value of methanol depending on the following illustrations





### Questions

- a) What is the use of the calorimeter?
- b) The methanol burner should have a tight lid. Why?
- c) Why should the thermometer not touch the bottom of the calorimeter while stirring?

245. Calculate the following questions

1. A mass of 20.0 g of petrol was burnt in air. The heat produced was used to heat 2.5 litres of water. Given that, the heat value of petrol is  $43640 \text{ kJ kg}^{-1}$ , what was the temperature change of water?
2. Kerosene has a heat value of  $43400 \text{ kJ kg}^{-1}$ . Calculate the volume of kerosene required to raise the temperature of 20 litres of water from  $24^\circ\text{C}$  to  $100^\circ\text{C}$ .  
(Specific heat capacity of water =  $4.18 \text{ kJ kg}^{-1} \text{ K}^{-1}$ ; density of water =  $1000 \text{ kg m}^{-3}$ ; density of kerosene =  $810 \text{ kg m}^{-3}$ ).

246. (a). Explain why petroleum and coal are non-renewable sources of energy

(b). Give five alternative sources of renewable energy.

247. Explain the working mechanism of a biogas plant?

248. Describe the energy transformations that take place in each of the following cases:

- a) Energy from the sun is used to generate electricity for lighting a house
- b) Mechanical energy from waterfalls is used to generate electricity.
- c) A bicycle wheel is used to burn a dynamo. The electric energy from the dynamo is used to power a bulb to produce light.

249. Explain the following in relation to characteristics of good fuel

- |  |                                  |
|--|----------------------------------|
| i. Energy value of fuel                  | v. Pyrometric burning effect     |
| ii. Ignition point                       | vi. Affordability                |
| iii. Non combustible materials           | vii. Availability                |
| iv. Non hazardous products of combustion | viii. Transportation and storage |
|  | ix. Effects in the environment   |

250. What are advantages and disadvantages of gaseous fuel over liquid and solid fuels? Give two points in each.

251. Why most of villagers at NAMANGONI village prefer to use firewood and charcoal as the source of fuels?

252. Despite the policy in Tanzania main land on the use of natural fuel or gas fuel for domestic activities yet most of people use firewood and charcoal as fuels in their homes?

253. Explain the following

- i. Destructive distillation of fuels
- ii. Destructive distillation of coal (name the product)
- iii. Destructive distillation of firewood/wood (name the product)

254. Describe the properties of different kind of gaseous fuel and their uses.

255. What is matter?

256. In 1803 Dalton developed the theory about the atom. Write down the five main points (assumptions/postulates/ideas).

257. Summarize down the findings of Dalton on the atomic structure.

258. Write down the ideas of modern concepts of Dalton's Atomic theory (modifications of Dalton's Atomic theory).

259. Draw the model/structure of an atom depending on the following scientists

- i. Dalton's model of an atom
- ii. Thomson's plum pudding model of an atom
- iii. Rutherford's planetary model of the atom

260. Give all the sub-atomic particles that make up an atom and their properties.

261. Give four differences between the sub-atomic particles of an atom.

262. Fill the following table depending on the properties of subatomic particle

Sub atomic particle	symbol	location	Charge	Relative mass

263. Explain the meaning of the following terms

- |   |   |
|---|---|
| i. Orbits/shells or energy levels         | vii. Protons                                      |
| ii. Orbitals                              | viii. Electrons                                   |
| iii. Isotopy                              | ix. Atomic number                                 |
| iv. Isotopes                              | x. Nucleons                                       |
| v. Mass number/atomic mass/nucleon number | xi. Electronic configuration/electron arrangement |
| vi. Neutrons                              |   |

264. Potassium atom has 19 electrons and the mass number of 39. Work out on the following

- i. Atomic number
- ii. Number of neutrons
- iii. Nucleon number
- iv. Protons number
- v. Give its nuclide notation
- vi. Representation of the nucleus of the potassium
- vii. Draw its electronic configuration

265. Chlorine has two isotopes which are  $^{35}_{17}\text{Cl}$ (75%) and  $^{37}_{17}\text{Cl}$ (25%), calculate its relative atomic mass of chlorine.

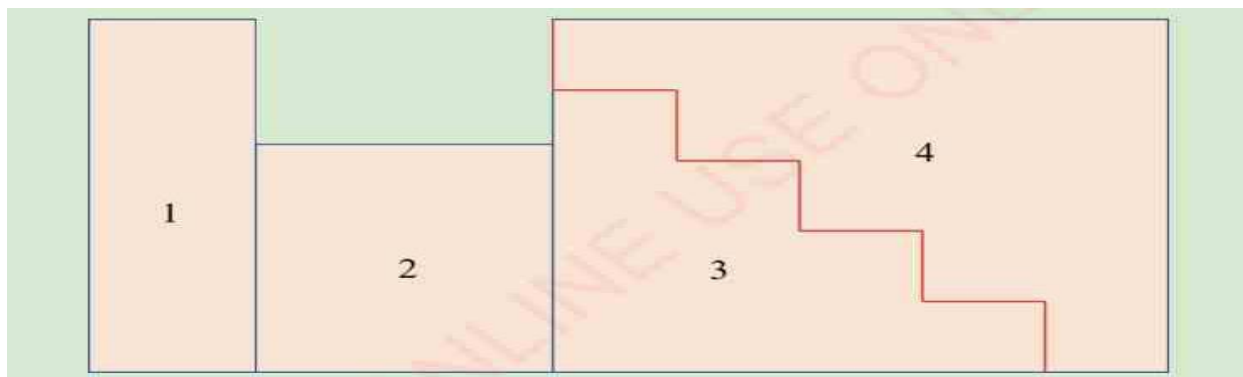
266. Chlorine has two isotopes which are  $^{35}_{17}\text{Cl}$ (X%) and  $^{37}_{17}\text{Cl}$ (Y%), calculate its relative atomic mass of chlorine.

267.  $^{201}_J$ ,  $^{206}_K$ ,  $^{207}_L$  and  $A_M$  are isotopes of element H whose abundance are 2%, 24%, 22% and X% respectively. Calculate the abundance of X% and mass number A of isotope M given that the relative atomic mass of element H is 207.
268. Why relative atomic masses of some elements it is not a whole number?
269. Why an atom is said to be an electrically neutral?
270. Why carbon was chosen as the standard reference for measuring the atomic masses of other element?
271. Each shell can contain only a certain number of electrons, with the maximum being  $2n^2$ , what does "n" represent. Calculate the number of electrons to be accommodated in K, L, M and N shells.
272. Define the term periodic table and modern periodic table
273. State the three laws governing the periodic table development.
274. Give the weakness or shortcomings of the following who tried to contribute to the development of periodic table.
- John newlands
  - Dimitri Mendeleev
275. Define the following terms
- Period
  - Groups
  - Periodicity
276. Fill the following table according to general trends across the period and down the group.

Properties	Trends across the period	Trends down the group
Melting point		
Electronegativity		
Electropositivity		
Ionization energy		
Electron affinity		
Atomic size		
Reactivity		
Non metallic character		
Metallic character		
Density		

277. What is the general name for element found in group
- I
  - II
  - VII
  - VIII or 0
  - Between group II and III
278. Answer the following questions with reference to the first 20 elements in the periodic table
- Give the chemical symbol of element having
    - The smallest atomic size
    - The larges atomic size

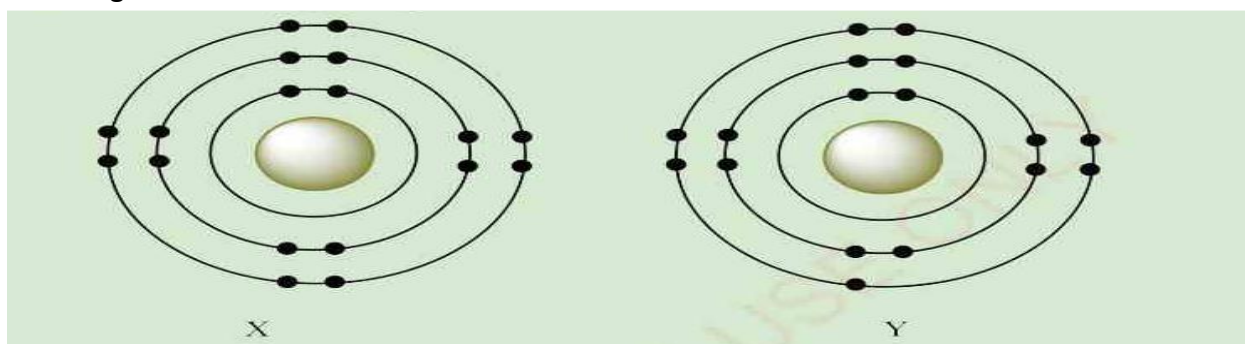
- b) Identify the elements which are
  - i. Metals having 3 shells of electrons each
  - ii. Metals having 1 electron in the valence shell.
279. Give reasons on the following
  - i. Group one elements in periodic table are called alkali metal
  - ii. Group two elements in periodic table are called alkali earth metal
  - iii. Group seven elements in periodic table are called halogens
  - iv. Group eight elements in periodic table are called noble gases or inert gases.
280. Consider elements  ${}_{11}^{23}\text{T}$  and  ${}_{17}^{35}\text{Q}$ . Which of the two elements is more electronegative?
281. What happens when alkali earth metals burn in oxygen?
282. Write down the physical properties of alkali earth metals.
283. Why do thermal conductivities and electrical conductivities of elements decrease across the periods in periodic table?
284. Give reasons for the following
  - I. Atomic size/radii increase down the group and decrease across the periods in periodic table.
  - II. Electronegativity and ionization energy decrease down the group and increase across the periods in periodic table
  - III. Melting point decreases down the group and increases across the periods in periodic table.
  - IV. Electropositivity increases down the group and decreases across the periods in periodic table.
285. A particular metal reacts slowly with water to give a strong alkaline solution. In which group of the periodic table would you place it?
286. (a) What are noble gases?  
 (b) In which group of periodic table do the noble gases belong?  
 (c) What is common about the noble gases regarding the following properties?
  - i. Electronic arrangements
  - ii. Chemical reactions
287. (a) Given the elements calcium, sulphur, chlorine, helium and neon, write down their
  - i. Period numbers
  - ii. Group numbers
  - iii. Atomic numbers
  - iv. Number of electrons in one atom
  - v. Electronic configuration
 (b). Which of the above elements would you expect to have similar properties. Give reasons.
288. Give five examples of metalloids
289. The following diagram represents the periodic table with four areas denoted by 1, 2, 3, and 4



### Questions

- Which area is most likely to contain non-metals?
- Which area is most likely to contain elements whose oxides dissolve in water?
- Which area contains transition elements?
- Which area is most likely to contain elements with both metallic and non-metallic characteristics?

290. The diagram below show the structures of atoms of elements X and Y:



- Which one is stable?
- Which of the two elements conduct electricity?
- Which of the two elements is chemically more reactive? Explain
- Identify elements X and Y.

**Don't wait until you are read, be ready on every time**