

**S.3 CHEMISTRY HOLIDAY WORK (Read, Research and Remember)
Term 2, 2015**

1.
 - (a) Write the structural formula of ethene.
 - (b) Ethane can be prepared by reacting ethanol with sulphuric acid.
State the conditions for the reaction.
 - (c)
 - (i) State what would be observed when ethane is reacted with bromine
 - (ii) Write an equation for the reaction.

2. Soap can be prepared by boiling a vegetable oil with sodium hydroxide solution and adding a solution of sodium chloride to the reaction mixture.
 - (a) What name is given to the reaction leading to the formation of soap?
 - (b) Name one crop from which oil for making soap can be obtained.
 - (c) Why is sodium chloride added to the reaction mixture?
 - (c) State one advantage and one disadvantage of using detergents instead of soap.

3. Soap forms scum when mixed with certain types of water
 - (a) What is the chemical nature of scum?
 - (b) Outline a physical method used to obtain water free from hardness.
 - (c) Give two advantages of hard water.

4.
 - (a) Explain what is meant by polymerisation
 - b) Name one natural polymer and one synthetic polymer and state one use of each of the polymers named.

5.
 - (a)
 - (i) State the difference between fats and oils.
 - (ii) Give one example of each.
 - (b) Briefly describe how soap can be prepared.
 - (c) State what would be observed if soap solution was shaken with a solution containing magnesium hydrogen carbonate.

- (d) Explain your answers in (c).
 - (e) State what would be observed if a solution of soap less detergent was used instead of soap solution.
 - (f) Give one disadvantages of soap less detergents.
6. (a) (i) Define the term allotropes.
- (ii) Name one example of an element that shows allotropy other than carbon.
- (b) (i) Give the allotropes of carbon.
- (ii) State two properties of one of the allotropes of carbon you named in (i).
- (iii) Explain how the allotrope is used due to its properties named in (b) (ii) above.
7. (a) (i) What is water pollution?
- (ii) How can you tell that water is polluted? Give two ways.
- (b) (i) What is Sewage ?
- (ii) How does sewage pollute water?
- (iii) Describe how urban sewage is treated?
- (iv) How can sewage be useful to the society ?
8. (a) Name the raw materials used in your locality to make an alcoholic drink.
- (b) Briefly describe how ethanol can be obtained from the materials you have named in (a).
- (d) State how ethanol prepared in (b) can be concentrated and

suggest one way of determining whether the ethanol is pure or not.

- (e) Ethene can be formed from ethanol. Write equation and state the conditions for the reaction leading to the formation of ethene.
 - (f) Name two uses of ethanol apart from the preparation of ethene,
9. During the manufacture of soap, sodium hydroxide was boiled with substance X.
- (a) Identify substance X.
 - (b) What name is given to the- process leading to the formation of soap.
 - (c) Name a substance that can be used to precipitate the soap from the Solution
 - (d) State what would be observed if soap solution was reacted with aqueous calcium hydrogen carbonate.
10. (a) The molecular formula of ethene is C_2H_4
Write the structural formula of ethene.
- (b) Bromine water is one of the reagents that can be used to test for the presence of ethene.
 - (i) State what would be observed if ethene is treated with bromine water and write an equation for the reaction.
 - (ii) Name one other reagent that can be used to test for the presence of ethene.
 - (c) Name one compound from which ethene can be prepared.
11. (a) Define 'allotropy'
- (b) Give one example of an element other than carbon which shows allotropy and name its allotropes.

- (c) (i) Describe briefly the structure of graphite.
 - (c) (ii) State the properties of graphite.
 - (b) Describe how you would show by a chemical test that graphite is made up of carbon atoms.
12. (a) In sewage treatment, the sewage is brought into contact with appropriate bacteria under controlled conditions.
- (i) Explain what is meant by the term 'sewage'
 - (ii) Explain the role of bacteria in sewage treatment. State the conditions under which bacteria will be active during the treatment of sewage.
13. (a) Beer of crude ethanol is manufactured by the process known as fermentation.
- (i) Explain what is meant by the term fermentation.
 - (ii) Write equation for the reaction that takes place during fermentation.
 - (iii) Is the process of fermentation endothermic or exothermic?
- (b) Describe briefly how in the homes alcoholic drinks can be prepared from either ripe bananas or millet flour.
- (c) Draw a diagram of the apparatus that can be used to concentrate the alcohol produced in (b) above.
- (d) Write equation to show how ethanol can be converted to ethane and indicate the conditions for the reaction.

END