



S2 CHEMISTRY HOLIDAY PACKAGE

ITEM ONE

At Katosi landing site, residents use Lake Vitoria as their main source of water which provides water that is not clean enough for use. The leaders urged the government to set up a treatment plant in order to provide safe water. However, leaders were requested to employ a skilled resident who is acquainted with how water is made safe for use, stages involved in purification and the challenges the project may face in the town.

TASK:

As a chemist, provide the residents with the information they need to be employed.

ITEM 2

Cook Musa left knife outside the compound for a winter night, it was found that the knife turned dark brown on the surface the following day.

- What is the chemical name for the dark brown coating?
- What conditions led to the formation of the dark brown coating?
- State any two advantages of the above process to the economy

ITEM 3

- Use the particles theory of matter and explain the following observations
 - An inflated balloon expands and eventually bursts on leaving it exposed to sunshine
 - An inflated balloon eventually sinks when left on a cemented floor for 3 days
 - You can easily squeeze a plastic gas syringe that is completely filled with air, than squeezing the one which is filled with water
 - When tea bag is put in a cup of hot water, colorless water changes to dark brown
- Explain why the rain water is always slightly acidic.

ITEM 4

The human stomach contains hydrochloric acid with a pH of about 2. The acid helps to kill any germs in our stomach. However, when the stomach walls produce too much of the acid, we suffer from stomach pains and heartburn. One way to deal with this problem is to take an antacid. The main component of antacid is sodium hydrogen carbonate.

- a). Explain how the antacid helps to cure heart burn.

ITEM 5

A small river called Nyagak passes through the rural farming communities of Alur and Madi into river Nile, in north western Uganda. On analysis the water downstream was found to have unsuitably high levels of nitrates after passing the Alur and Madi communities.

- a) (i) What practice leads to high levels of nitrates in the area.
(ii) How do the nitrates from distant communities reach the water sources?
b) What alternative material can be used by the communities to lower the nitrate levels? Explain why.

ITEM 6

A student found a container of Hand sanitizer with a label shown below:

KLINN HANDSANITIZER

Effective on common germs

Active component: absolute ethanol

Other components: water and Glycerin

- a) State one use of hand sanitizer
b) Explain why the liquid is not regarded as a pure substance
c) Explain why the liquid is thick and less viscous
d) Describe a practical method that could be used to separate the components the hand sanitizer?
e) Describe a chemical test that can be carried out to show the presence of water in the hand sanitizer
f) Explain why it is not advisable to keep a hand sanitizer near a source of fire.

END