

# STAVEB SCIENCES

## HOLIDAY PACKAGE

TERM 2 2023

*STAVEB SCIENCES ARE SET AT A STANDARD OF LOWER SECONDARY CURRENT CURRICULUM IN MAJORLY THE SCIENCE SUBJECTS*

**BIOLOGY**

**CHEMISTRY**

**PHYSICS**

*OTHER VOCATIONALS LIKE ICT, AGRICULTURE AND OTHERS*

FOR MORE INFORMATION, CONTACT THE FOLLOWING TEACHERS



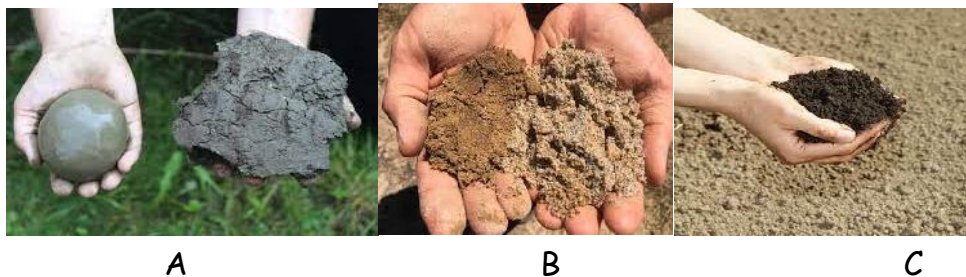
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SOLUTIONS FOR THE HOLIDAY PACKAGE TO BE AVAILED WITH ORDER

## BIOLOGY SECTION

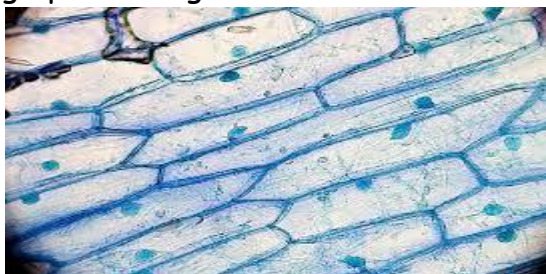
### BIOLOGY SECTION

1. A student collected three soil samples from different gardens. He observed and examined them and their images were taken using a camera. He wanted to find out the types of soils they were. However, he confronted one of the s.3 students to give him aid. If you were the one confronted, how would you help him to identify the soil types using features they have as below



Soil A, B and C.

- (b) With reason which soil can you advise him to use for pottery
2. An extension worker visited Kitooda community, he found many gardens mulched, contour ploughed gardens, and strip cropped shambas and a lot of gullies and rills. He came to realize that the village receives heavy rainfall per season.
- (a) Which environmental process could be taking place in this village?
  - (b) How can such a situation be solved and handles in that village
3. In order to find out the meaning of cells, students of senior one obtained a thin transparent tissue from an onion organism and viewed under the microscope under high power magnification.



- (a) In the space provided below draw only one single cell of what they viewed under microscope, label the parts.
4. During a survey in a school botanical garden, learners collected the following organisms and took them in their classroom for further analysis of their features.

Maize plant, bean plant, dead house fly and ferns. They were instructed by their teacher to observe using hand lens and examine these organisms and use them to construct a dichotomous key. If you had been part of them which dichotomous key, could you have come up with for identifying those organisms.

5. Seeds and fruits almost have same structural resemblance with only a few differences. In an argument, Maria told Joseph that maize is a fruit while Joseph disagreed with implying that it is a seed.



- (a). With a reason whom do you support.
6. A farmer transferred two-wheel barrows full of soil each from different corners of his garden to be used for a certain purpose. He took some observations during a day's work though he failed to account for the observations  
Soil from corner A was dark and very heavy while being transferred  
Soil from corner B was brick red in color from an area where bricks had been burnt.  
(a) Give reasons why in the soils from these two corners were different in weight  
With reasons which garden corner is good for planting in crops?
7. In a certain class there was a chart pinned on the wall bearing the images of the following  
Nose, mouth, muscle, pig, ear alimentary canal, kidney, excretory system and a human being as well as a sperm and an ovum.  
Using your knowledge of cytology, group them into cells, tissues, organs, systems and organisms
8. In a certain village, a farmer planted beans in a certain season but his yields were not good and not profitable as expected. He suspected witchcraft from the neighboring fellow farmers. He carried out research and was told

by an extension officer that his soil could have become alkaline so he was encouraged to acidify his soil next time before planting the beans in his garden.



The farmer has appointed you to help him determine the soil PH from different corners of his garden to prove the hypothesis put up by the extension officer. Help the farmer to determine his soil PH from different garden portions.

### **CHEMISTRY SECTION**

1. The picture below is one of the equipments availed in the laboratory



- (a) Name the device above
  - (b) State the importance of the above apparatus in the laboratory
  - (c) Mention any two important places where the above apparatus can be found
2. Research shows that scientists arranged elements in rows and columns basing on their atomic numbers. This was termed a periodic table. Therefore, different elements like helium, chlorine, hydrogen, calcium and Magnesium can be arranged in both ascending and descending order basing on their atomic numbers.
    - (a) Show the ascending order of those elements.
    - (b) Fill in the table below.

Element	Electronic configuration
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3. Air is known as a mixture of gases. So, to investigate this S.1 students of Iganga HS got a soda bottle and placed in a school refrigerator. After 5 hours, they removed it and exposed it on a table in their dining hall. They finally observed tiny droplets of a liquid on the bottle surface.
  - (a) Identify which liquid was on its surface.
  - (b) Which laboratory reagent do you possibly suggest them to use to confirm the liquid you have mentioned above?
  - (c) State the observation that is likely to occur if the test above is performed.
  - (d) Which process led to the formation of that liquid
  - (e) Identify one natural source of the liquid identified in 3(a)
4. Joseph accidentally mixed cooking oil and water. The oil and water did not mix freely. Two layers were formed in the vessel he was using.
  - (a) Which type of liquid mixture was formed?
  - (b) Which method can Joseph use to separate this mixture?
  - (c) Identify any other two liquids that when mixed behaves like the liquids that Joseph mixed.
5. In a class discussion, students were given an activity that an element A is written as below
 

$$\begin{array}{c} 16 \\ 8 \end{array} \text{A}$$

  - (a) Identify the;
    - (i) Atomic number:.....
    - (ii) Mass number:.....
  - (b) Draw an electronic structure of the given atom
6. Elements are of two types metals and nonmetals. These metals have different properties. These properties determine their uses.
  - (a) Give 5 uses of each of types basing on their properties.
  - (b) List any 5 substances containing a specified element.
7. **Rusting** is one of the chemical changes that take place commonly.
  - (a) Why the process is called a chemical change.
  - (b) What is meaning the process underlined.
  - (c) What is the chemical name of the substance formed by that process?
  - (d) Identify the conditions required for the process to occur.

- (e) How can Ugandans prevent the process from taking place
- (f) What are the disadvantages of that process?

## PHYSICS SECTION

**Assume where necessary:**

- Acceleration due to gravity =  $10\text{ms}^{-2}$
- Density of water =  $1000\text{kgm}^{-3}$

1. In our daily lives, we perform different kinds of **work** using our **energy** at the different rates depending on individual capacities.

- (a) As a student of physics, what is the meaning of the above underlined and bolded words in the context?
- (b) Energy is difficult to visualize and is in different forms. Explain any three forms of energy that is useful in our daily lives.
- (c) Juliana and her son went to the supermarket and bought goods on two trolleys, each weighing 150N. They pushed their trolleys through a horizontal distance of 10m each. Juliana reached the cashier in 10 minutes while her son reached the cashier in 15 minutes.
  - (i) How much work did each of them do.
  - (ii) Who did more work faster?. Explain how you arrived at your answer.

2 During the construction of a certain tall building in Bugiri municipality, the engineer wanted to raise bricks to the second floor.

- (a) Identify the simple machine that you would recommend the engineer to use.
- (b) Apart from the above machine identified, list down four other examples of simple machines that are used in our communities to simplify work.
- (c) A man lifts a load of 300N on a wheel barrow through a load distance of 100m with force 100N through effort distance of 400m. determine :
  - (i) Work input into the wheel barrow
  - (ii) Work output
  - (iii) Mechanical advantage
  - (iv) Velocity ratio
  - (v) Efficiency of the machine.



(d) The efficiency of most of the machines is always less than 100%. What could be the cause and how can the efficiency of such machines be increased?

3 During orientation of senior one students of St ann vocational school, students found out that the foundations of the buildings were eroded (the bricks had reduced in size). The students also noticed that the buildings have weakened.

(a) What force could have caused the corrosion?

(b) Does the force have any application in our daily lives, if yes what are some of the applications of that force.

(c) Mr. Gerald instructed s.2 students to carry out research on the mechanisms on which heat can be transferred from one point to another. Joseph from s.2 comes to you for his research as a s.3 student. Explain the three methods you tell this learner.

(d) Mary was cooking milk on her arrival at home from school. She started dozing and her surprise was to wake up when the milk was almost pouring down yet the saucepan was just initially half. Explain why the level of milk rose.

(e) At old Kampala S.S, the physics teacher took learners for physics practical to show them different tools that can be used in measurements. List some of the tools you think he shown them stating which function each perform in measurement.

(f) In hospitals, there are many tools that operate under the knowledge of physics. Identify some of them stating their importance.

*Happy Holiday Dear Students*