**MINISTRY OF EDUCATION**

**SECONDARY ENGAGEMENT PROGRAMME**

**INTEGRATED SCIENCE**

**GRADE 9**

**WEEK 2** **LESSON 2**

Topic: Digestive System

Sub-topic: Digestion in Man

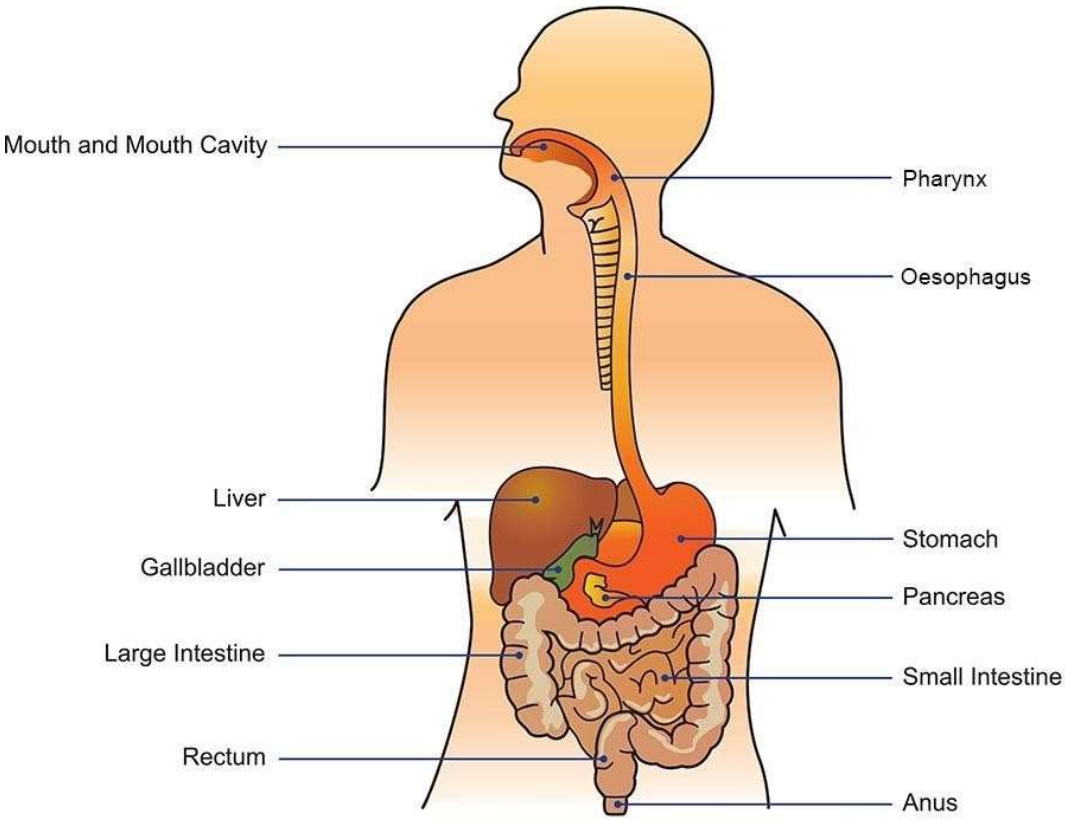
Objectives: After reading and looking at the related diagrams students will:

1. define the term digestion.
2. differentiate between physical and chemical digestion with 100% accuracy.
3. state correctly what is the alimentary canal.
4. identify the parts of the alimentary canal in humans with 75% accuracy.
5. describe correctly the functions of the main parts of the alimentary canal.
6. define the term enzymes.
7. List the enzymes present in the digestive juices with 100% accuracy.

Content:

- Digestion is the breakdown of large insoluble food molecules into small water-soluble food molecules so that they can be absorbed into the watery blood plasma.
- Physical digestion is the physical process of breaking down food into smaller pieces that can easily be accessed by digestive enzymes, without making any chemical changes, whereas chemical digestion refers to the process through which the body further breaks down food substances into small, soluble chemicals that can be absorbed into the blood.
- The alimentary canal is a **continuous passage starting from the mouth and ending at the anus**, which carries food through different parts of the digestive system and allows waste to exit the body.

# The Components of the Digestive System




- Mouth – cavity where digestion begins. Teeth break down the food into smaller pieces and it is mixed with saliva. Formed into a bolus. The enzyme ptyalin is present and begins the digestion of starch.
- Pharynx – present at the back of the mouth where food is swallowed and passed into the oesophagus.
- Oesophagus – a straight tube with muscles that contract and relax to force food downwards into the stomach. Movement is called peristalsis.
- Stomach
  - Muscles contract and relax when food is present thereby churning its contents into chyme (soup-like mixture).
  - Gastric juice is present and mixes with the food.

- Gastric juice contains hydrochloric acid which kills bacteria in food and creates an acidic medium for the enzymes to act.
- Enzymes present are pepsin and renin and they act on proteins.
- Food normally remains for about 4 hours.
- Alcohol in the stomach diffuses directly into the bloodstream through the stomach walls.

• Small intestines
  - Divided into two main sections: duodenum and ileum.
  - Most of the chemical digestion takes place in the duodenum.
  - Pancreatic juice from the pancreas is secreted into the duodenum. This juice contains the enzymes trypsin, amylase and lipase.
  - Bile from the liver is secreted into the duodenum and this emulsifies fats.

  Ileum
  - Digestion is completed here.
  - Intestinal juice secreted contains the enzymes peptidase, lipase, maltase, and sucrase.

• Enzymes – biological catalysts that speed up the breakdown of food.

• Properties of enzymes
  - They are proteins
  - They are affected by temperature
  - They are specific
  - They can be reused
  - They are sensitive to pH
  - They are required in small quantities

**Home Work**

Explain why it is not advisable to drink water while you are eating.

**References**

Chung, Tania Integrated Science for CSEC Examinations 3rd Edition Chapter2

https://en.wikipedia.org/wiki/Candidiasis

https://www.bing.com/search?q=hpv+virus&cvid=79d35c8a942748a081934f3a0f4b6aac&FORM=ANNTA1&PC=U531