



#Notes

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DEDICATION

The Primary Five Science Lesson Evaluation Work Book.

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Pg1

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POULTRY AND APICULTURE

Poultry: Refers to all kinds of domestic birds.

Poultry keeping is the rearing of domestic birds or fowls.

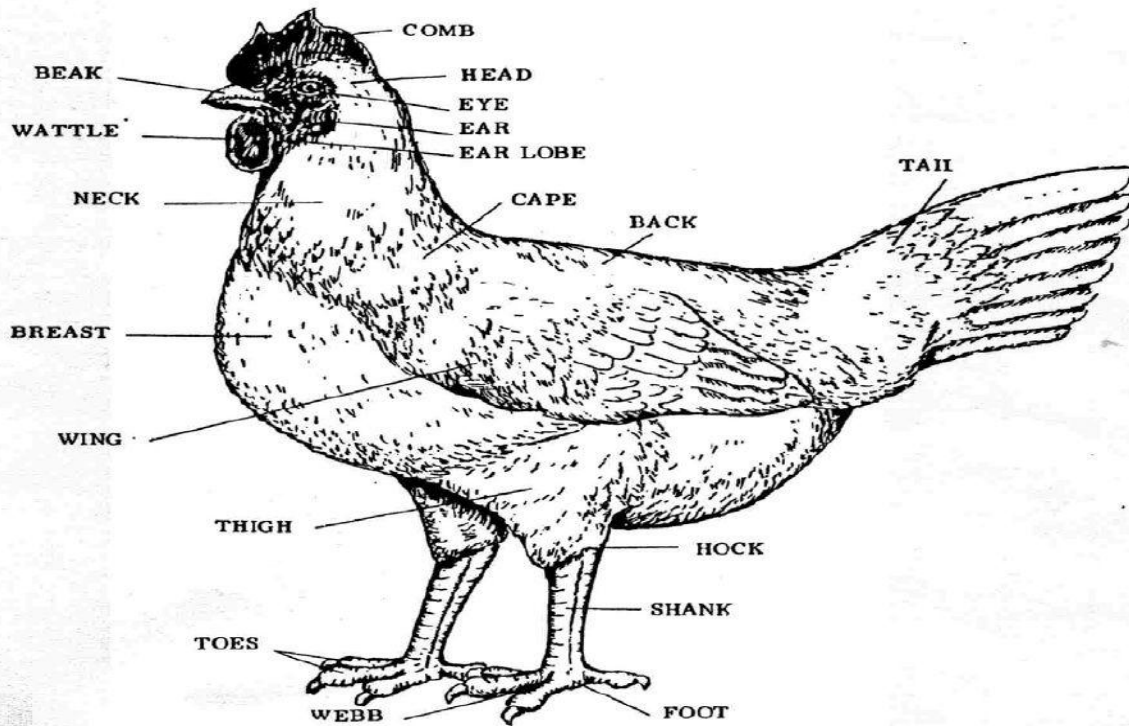
Terms used in poultry

- ❖ Capon: Is a castrated cock.
- ❖ Moulting: This is the shedding of feathers in birds in order to replace with new ones.
- ❖ De-beaking: Is the shortening of the birds upper beak.
- ❖ Incubation: This is the process by which an egg is given the necessary conditions in order to hatch into chick.
- ❖ Culling: Is the removal of un productive and un health birds from the flock.

Other terms used in poultry

- ❖ Chicks
- ❖ hen
- ❖ cock
- ❖ layer
- ❖ broilers
- ❖ incubator
- ❖ Incubation period.

External parts of a cock



Types of feathers

- Quill feathers.
- Body feathers.
- Filoplume
- Convert feathers.

Types of chicken

A type of chicken means a ***class of birds***.

There are basically three types of chicken each kept for a purpose i.e.

- Layers
- Broilers
- Dual purpose

Breeds of chicken

A breed is a group of birds with similar characteristics.

Examples include;

- ✓ Local breeds (indigenous breeds)
- ✓ Exotic breeds (foreign breeds/imported)
- ✓ Cross breed.

Local breeds

This is a type of chicken which has been kept in Uganda for a long period of time.

Characteristics of local breeds

- Resistant to diseases and parasites.
- They can withstand harsh climatic conditions.
- They produce few eggs and meat.
- Incubate their own eggs.
- Feed themselves etc.

NB,

Local breeds of chicken can be improved through cross breeding which improves the quality of meat and increased egg production.

Exotic breeds

These are breeds of chicken which have been imported into Uganda from different countries.

Examples of exotic breeds of chicken

- ❖ White leghorn.
- ❖ Ancona.
- ❖ Light Sussex.
- ❖ Rhode Island Red
- ❖ New Hampshire Red.

Characteristics of exotic breeds

- They mature quickly.
- Can easily be attacked by diseases.
- They do not incubate their eggs.
- They produce many eggs and good meat.
- They have one colour.

Reproduction in birds

Birds reproduce by laying eggs which are fertilized internally during mating.

A hen lays fertilized eggs which are incubated for 21 days to hatch into chicks.

Incubation in birds

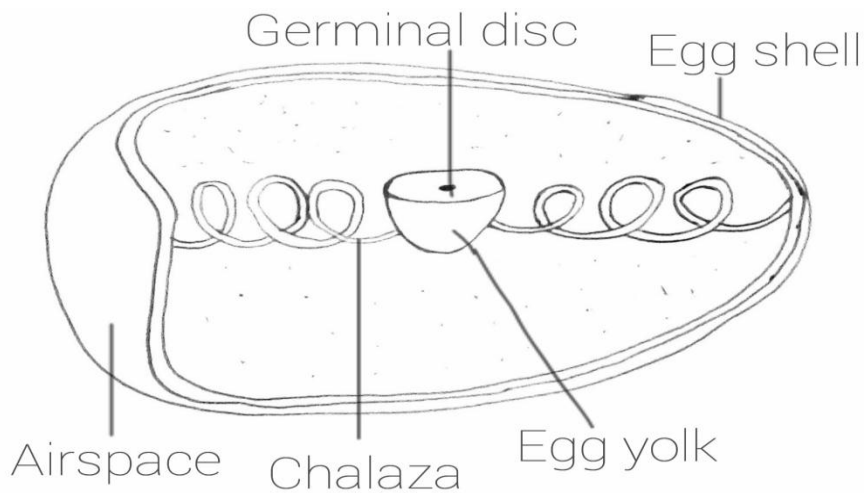
Incubation is the process by which an egg is given necessary condition to hatch into chicks.

An incubator is a machine used to hatch eggs.

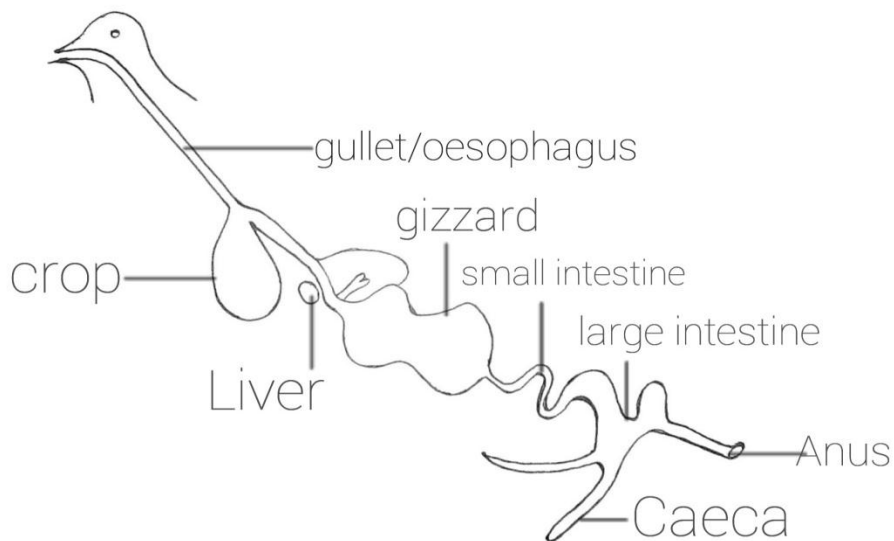
Incubation period of some domestic birds

| Birds | Incubation period |
|--------------|--------------------------|
| Hen | 21 days |
| Ducks | 28 days |
| Turkeys | 28 days |
| Pigeons | 16 days |

Diagram showing internal structure of an egg.



Digestive system of a bird.



Systems of poultry keeping

- Free range system
- Deep litter system
- Battery/cage system
- Fold system

Poultry vices

Vices are bad habits among birds that are kept together indoors.

Examples of poultry vices include;

- ✓ Egg eating – commonly found among layers
- ✓ Cannibalism – commonly found in layers
- ✓ Feather pecking
- ✓ Toe pecking

Poultry diseases, their prevention and treatment.

A parasite is a living organism which depends on other living organisms for survival.

There are two types of parasites i.e.

- Indo-parasite
- Ecto-parasite – These parasites attack fowls from outside their bodies.

Examples include

- ❖ Lice
- ❖ Red mites
- ❖ Depluming mites.

Indo parasites

These are parasites which attack the bird from inside its body. E.g.

- Hair worm
- Round worm
- Tape worm

Control and prevention

- Regularly clean the feeding troughs.
- Observe good hygiene around the house.
- Deworm infected birds.
- Burn the birds suspected to have died from Coccidiosis.

Diseases which attack poultry.

Pneumonia – Is caused by bacteria and viruses. It majorly attacks the lungs of the birds.

Signs and symptoms

- ✓ Cough
- ✓ Dullness
- ✓ Loss of appetite
- ✓ Difficulty in breathing
- ✓ Mucus around the nose.

How to prevent pneumonia

- Treating the birds.
- Observe good hygiene.
- Isolate diseased birds.

| Disease | Signs and symptoms | Control |
|----------------|---|--|
| Coccidiosis | Diarrhea Dullness Dull feathers Birds crowd together Dropping wings | Treat sick birds Clean poultry houses Separate sick birds from the healthy ones. |

Caused by viruses

- Pneumonia – Avian lemosis
- Fowl pox
- New castle
- Gumboro disease.

Caused by bacteria

- ❖ Pneumonia – pneumonia is spread by both bacteria and viruses.

Caused by Protozoa

- Coccidiosis
- Black head disease

Salmonella typhi

- Fowl typhoid.

Topical Questions

1. What is the **difference** between poultry and poultry keeping?

2. (a) Write down the different **types** of poultry kept in Uganda.

(i) _____

(ii) _____

(iii) _____

(iv) _____

(b) Define the following **terms** as used in poultry.

(i) Culling

(ii) Moulting

(iii) De-beaking

(iv) Capon

(v) Incubation

3. How do we call a **young one** of a hen?

4. (a) State any **three** characteristics of local breeds of chicken.

(i) _____

(ii) _____

(iii) _____

(b) What is the **purpose** of rearing broilers to man?

5. (a) Give any **three** types of feathers.

(i) _____

(ii) _____

(iii) _____

(b) How **useful** are feathers to;

(i) birds

(ii) A man

6. (a) Give any **four** uses of poultry to a man.

(i) _____

(ii) _____

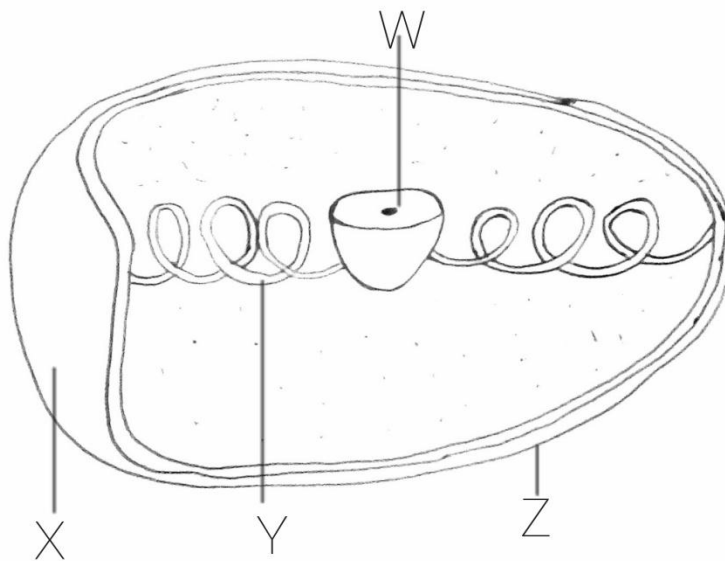
(iii) _____

(iv) _____

(b) What is **incubation period**?

(c) What is the **incubation period** of a hen?

(d) Below is a drawing of internal structures of an egg, use it to answer questions that follow.



Name the **parts** labeled

X _____ W _____

Z _____

What is the **function** of part marked.

X

Y

Name the **part** of an egg that grows into a chick.

7. (a) Name any **four** diseases which attack poultry.

(i) _____

(ii) _____

(iii) _____

(iv) _____

(b) Explain how **diseases** in a poultry farm can be controlled.

8 (a) What are **poultry vices**?

(b) List any **three** examples of poultry vices.

(i) _____

(ii) _____

(iii) _____

(c) How can poultry vices be **controlled** in farms?

9 (a) What are **parasites**?

(b) Give any **two** types of parasites.

(i) _____

(ii) _____

(c) State any **three** examples of indo-parasites.

(i) _____

(ii) _____

(iii) _____

10. (a) List any **three** systems of poultry keeping.

(i) _____

(ii) _____

(iii) _____

(b) Give any **three** advantages of free range system.

(i) _____

(ii) _____

(iii) _____

(c) **Why** is free range system commonly used in Uganda?

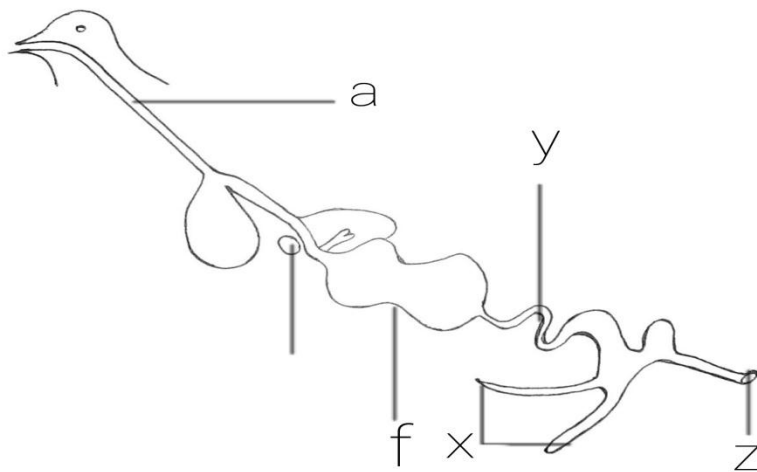
(d) List the any **3** disadvantages of free range system.

(i) _____

(ii) _____

(iii) _____

Use the diagram below and **answer** the questions that follow



Name the parts labeled below

x _____

y _____

z _____

a _____

What is the **function** of part marked f.

Define the following terms as used in poultry.

(i) Chicks

(ii) Hen

(iii) Cock

(iv) Layers

(v) Broilers

(vi) Incubation

(vii) Incubation period

BEE KEEPING

Apiculture; Is the rearing of bees for honey and wax.

Groups of insects

Insects are grouped into two group's i.e.

Social insects-These are bees which live, move and work together.

Examples of social insects

- black ants
- red ants
- white ants
- bees

Solitary insects – These are bees which do not work together.

Examples of solitary insects

- ✓ Houseflies
- ✓ Mosquitoes
- ✓ Butterflies
- ✓

Types of bees

- ❖ Queen bee
- ❖ Drone bee
- ❖ Worker bee.

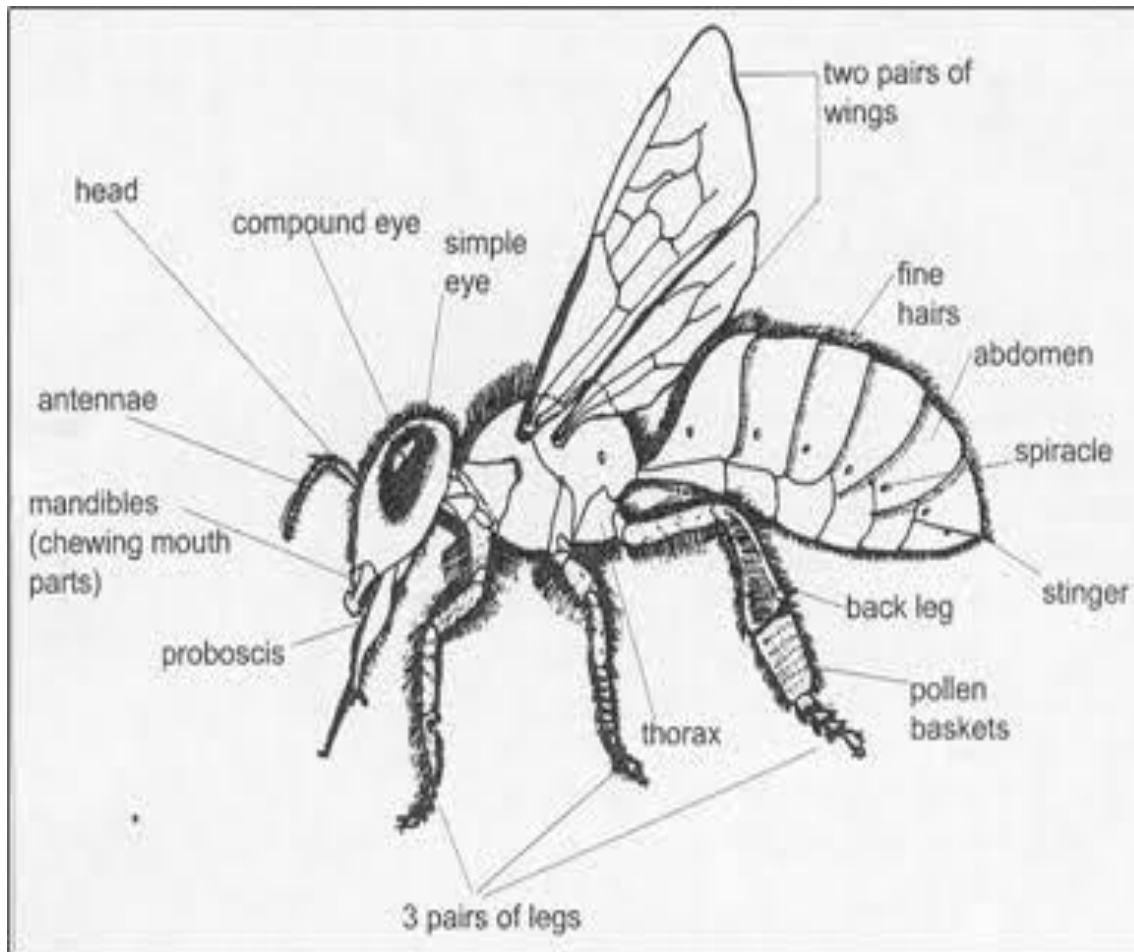
The queen is the female bee which lays eggs in the hive. It is the largest in the colony and there is usually only one queen in the hive.

Worker bees are female sterile bees in the hive because they cannot lay eggs and do not have the ovipositor.

Duties of worker bees

- Build combs in the hive.
- Clean the hive.
- They protect the hive.
- Look for new bee hives.

External features of a bee (Parts of a honey bee)



Life history of a honey bee.

Queen → eggs → larva → pupa

Swarming

A swarm is a group of bees.

Swarming is the massive movement of bees from one place to another looking for different reasons.

Bees swarm for different reasons i.e.

- To look for a new bee hive.
- Over crowdedness in a hive.
- When the queen bee is ready for mating.
- Bad smell around the bee hive.
- Direct sunlight into the hive.
- When the queen bee dies.
- When the new queen bee is hatched.
- External attacks e.g. from red and black ants.
- Leakage of the hive

Bee hives

A bee hive is natural habitat (home) for bees.

There are two types of bee hives namely:

- ✓ Modern bee hive
- ✓ Traditional bee hive

Examples of modern bee hives

- Box bee hive.
- Top bar hive

Examples of traditional bee hives

- ❖ Kigezi bee hive.
- ❖ Dugout log bee hive.
- ❖ Tin bee hive.

Illustrations of beehives

Traditional beehives

| | |
|--|--|
| | |
|--|--|

Modern beehives

| | |
|--|--|
| | |
|--|--|

Uses of honey to man

- Source of carbohydrates to our bodies.
- Source of income when sold.
- Used to sweeten bread and tea.

Products from bee wax

- Lip balm.
- Candle(s) wax.
- Cosmetics.
- Match sticks.
- Shoe polish.

Topical questions

1. Apart from the drone bee, identify any other **two** types of bees found in a hive.

(i) _____

(ii) _____

2. What does the **larva** of a bee develop into?

(b) Which **type** of metamorphosis does a bee under go?

(c) How many **stages** of growth do a bee under go?

3. (a) **How** are bees important to;

(i) plants

(ii) people

(b) Give **three** products got from bee wax.

(i) _____

(ii) _____

(iii) _____

4. (a) What is **swarming**?

(b) What **causes** swarming of bees? (Give four reasons)

(i) _____

(ii) _____

(iii) _____

(iv) _____

(c) Define a **swarm**.

(d) State any **three** importance of bee keeping in a community.

(i) _____

(ii) _____

(iii) _____

(e) Explain any **one** method used in honey extraction.

(f) **Explain** why honey combs cannot be easily removed from traditional bee hive.

(g) Identify the **materials** from which traditional hives can be made.

5. (a) **Define** the following terms.

(i) social insects

(ii) solitary insects

(b) Why are worker bees called **sterile bees** in the hive?

(c) Why does a person harvesting honey need to **wear** protective gear?

(d) Draw a honey harvester in your science exercise book.

MATTER AND ENERGY

Measurement

This is the process of finding out how long, short, big, small, heavy or light an object is.

Quantities that we measure

| Quantity | Standard unit | Other units |
|-----------------|-----------------------|----------------------------------|
| Length | Metres (M) | cm, dm, hm, mm, Dm |
| Area | Square metre M^2 | mm^2 , cm^2 , dm^2 |
| Volume | Cubic metre M^3 | cm^3 , mm^3 , dm^3 , ml |
| Mass | Kilogram (kg) | grams, mg |
| Gravity | Newtons (N) | |
| Density | Kg/m^3 | g/cm^3 , g/dm^3 |

- (a) **Mass**; Is the amount of matter in an object.
- (b) **Volume**; Is the amount of space occupied by an object.
- (c) **Capacity**; Is volume of a substance between two points.
- (d) **Length**; Is the distance between two points.
- (e) **Density**; Is how heavy or light an object is.

Density is also the mass of an object compared to its volume.

Note:

$$\text{Density} = \frac{\text{Mass}}{\text{volume}} \quad D = \frac{M}{V}$$

Gravity; Is force that pulls an object towards the earth.

Weight; Is the amount of gravity exerted on an object by earth.

Items used in measurement

| Mass/weight | Volume | Length |
|--|--|---|
| Beam balance Set of scale Weighing balance Spring balance(for weight) | Eureka can Measuring cylinder Beaker | Metre ruler Tape measure Coot ruler Sticks Strings Strides |

Conversion of units

$$\begin{array}{ll}
 1\text{kg} & = 1000\text{g} \\
 1\text{M} & = 100 \text{ cm} \\
 1\text{CM} & = 10\text{mm}
 \end{array}
 \qquad
 \begin{array}{ll}
 1\text{km} & = 1000\text{M} \\
 1\text{M} & = 1000\text{mm}
 \end{array}$$

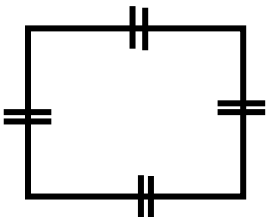
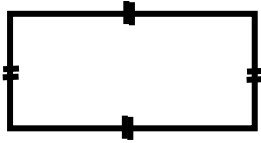
King Henry Daughter Mary Drunk cold milk

| | | | | | | |
|-----|----|----|---|----|----|----|
| 1Kg | Hm | Dm | M | Dm | Cm | MM |
| 1 | 0 | 0 | 1 | 0 | 0 | |

E.g. $1\text{m} = 100\text{cm}$

$1\text{km} = 1000\text{M}$

Formulae

| Figure | Name | Area | Volume |
|---|-----------|--------------|-----------------------------|
|  | Square | $S \times S$ | $S \times S \times S (S^3)$ |
|  | Rectangle | $L \times W$ | $L \times W \times H$ |

Regular objects

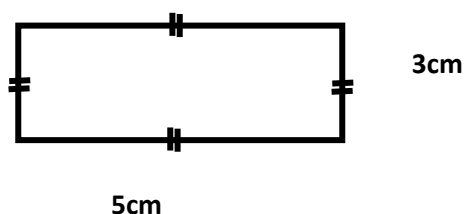
These are objects with specific or well defined shapes.

Irregular Objects

These are objects that do not have specific or well defined shapes.

| Regular objects | Irregular objects | Volume of objects |
|--|--|--|
| Cuboids Bricks Blocks Tins Cubes | Stones Fruits Charcoal Water Animal body Irish potato | Displacement method for irregular objects <hr/> Use of formulae for regular objects |

Area

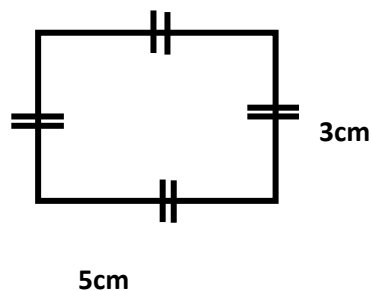


$$\text{Area} = \text{Length} \times \text{Width}$$

$$= L \times W$$

$$= 5\text{cm} \times 3\text{cm}$$

$$= 15\text{cm}^2$$

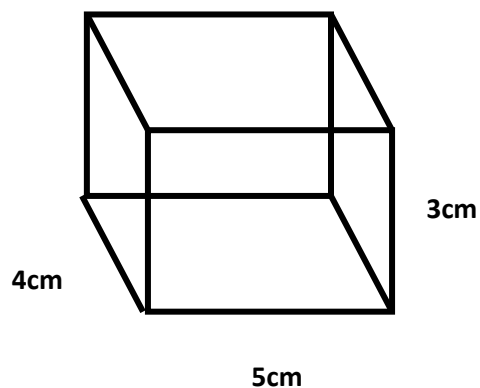


$$\text{Area} = S^2$$

$$= 5\text{cm} \times 5\text{cm}$$

$$= 25\text{cm}^2$$

Volume



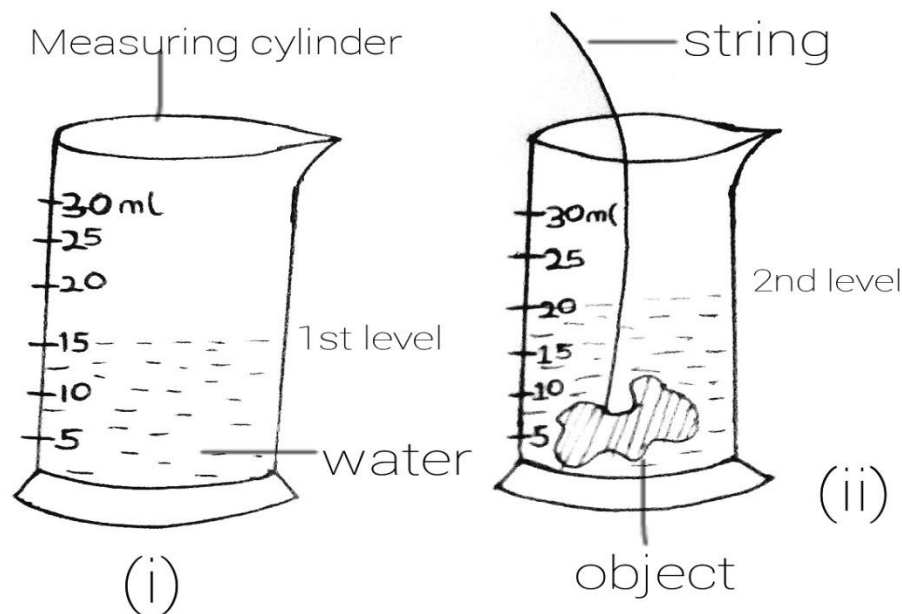
$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$$

$$V = 5\text{cm} \times 4\text{cm} \times 3\text{cm}$$

$$V = 60\text{cm}^3$$

Displacement method.

(a) Using a measuring cylinder.



Volume of the object = 2nd level – 1st level.

$$= 20\text{ml} - 15\text{ml}$$

$$= 5\text{ml}$$

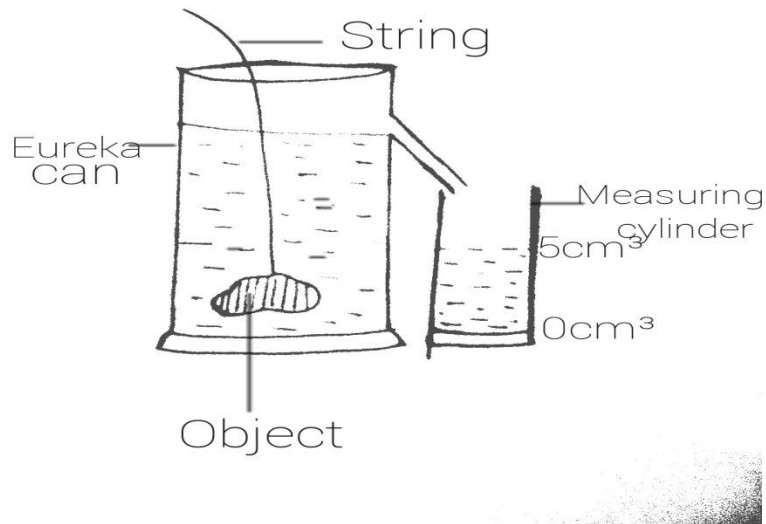
Density: If the object has a mass of 50g,

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} = \frac{50\text{g}}{5\text{mls}}$$

$$= 10\text{g/ml.}$$

NB: A measuring cylinder is used for measuring volume of liquids.

Displacement method using a eureka can and a measuring cylinder.



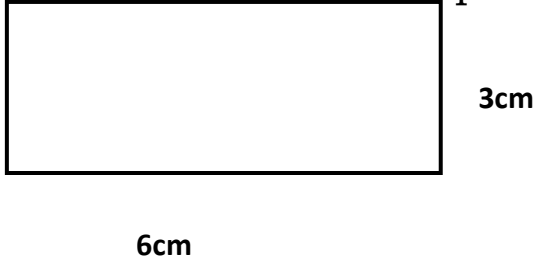
The volume is read on the measuring cylinder directly. i.e., 5cm³.

NB: The volume of water displaced is equal to the volume of irregular object.

Topical Questions

1. Give any **one** instrument used for measuring length.

2. Find the **area** of the shape below.



3. In which **unit** is weight measured?

4. Give the **difference** between capacity and Volume

5. State the **standard unit** for length.

6. Change **5000g** to **kg**.

7. Why is a piece of irish potato said to be an irregular object?

8. How can a p5 child **find** the volume of an irish potato?

9. What is the **use** of a measuring cylinder in a Science laboratory?

10. (a) Give one example of a

(i) sinking object:

(ii) floating object:

(b) **How** will you know that the above objects will sink or float in water?

(c) Give any **one** characteristic of floating objects.

11. Give any **four** ways floating and sinking is useful in our daily life.

(i) _____

(ii) _____

(iii) _____

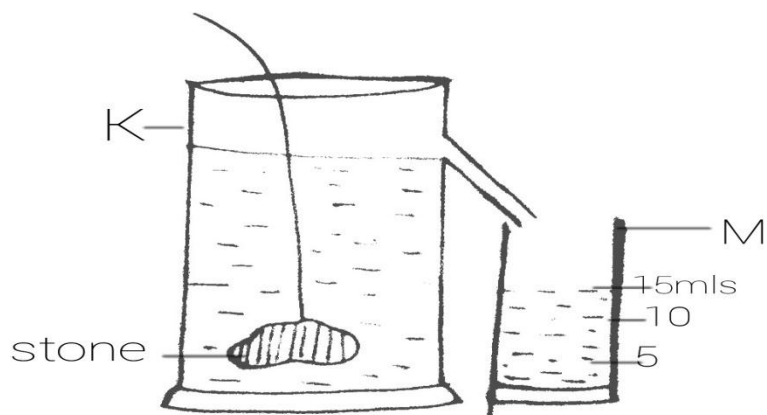
(iv) _____

12. Give any **one** instrument used for measuring:

(i) mass

(ii) density

13. **Use the experiment below to answer the questions that follow:**

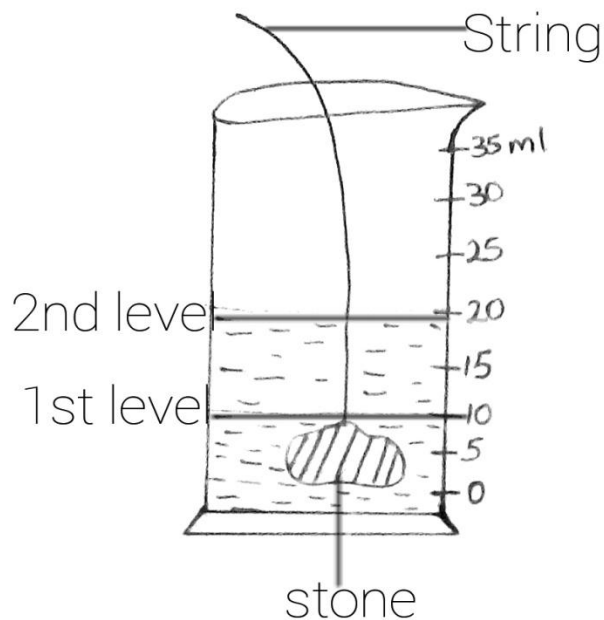


(a) What is the **volume** of the stone?

(b) What method is used for finding the volume of the stone above?

(c) Give the **name** of container K.

14. The diagram below is of a **measuring cylinder** in use.



(a) What is the **use** of the string?

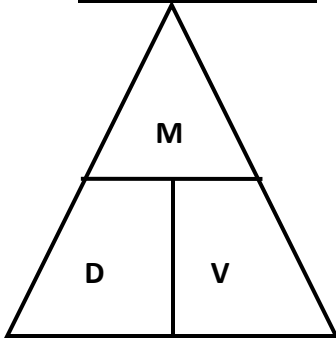
(b) What is the **volume** of water in the measuring cylinder?

(c) What is the volume of water displaced?

(d) If the mass of the stone is 25g, what is its density?

15. An object of volume 20CC has density of 2g/cc, calculate its mass.

Remember



$$M = D \times V$$

$$D = \frac{M}{V}$$

$$V = \frac{M}{D}$$

16. Write in full:

(i) mm _____

(ii) cc _____

(iii) ml _____

(iv) g/cm³ _____

IMMUNISATION

Immunity and immunization.

Immunity is the body's ability to fight/resist diseases.

NB: There are basically two types of immunity. i.e.

- ❖ Natural immunity
- ❖ Artificial acquired immunity.

The body acquires immunity in two ways :

- Directly from the mother to her unborn baby.
- After recovery from illness.
- Through breast feeding.

A person gets **artificial immunity** when **vaccines are introduced into one's body during immunization.**

Immunisation is the introduction of vaccines to the body to make it resistant against diseases.

Antibodies are chemicals produced by white blood cells to defend the body against diseases.

Importance of immunization to our bodies.

- Reduces infant mortality rate.
- Makes the body resistant against diseases.
- Protects children from childhood immunisable diseases.
- It boosts the body's immune system.

Childhood immunisable diseases/killer diseases. (The killer diseases)

| Disease | Cause | Signs | Symptoms |
|----------------|--------------|---|---|
| Tuberculosis | Bacteria | Loss of weight Chronic cough Excessive sweating | Mild fever Pain in the chest Loss of weight. |
| Measles | Virus | Running nose Cough Red eyes Sores in the mouth | High temperature Itching rash Loss of appetite Weakness. |
| Whooping cough | Bacteria | Vomiting Running nose Severe cough | Fever |
| Diphtheria | Bacteria | Sore throat Swollen neck | Difficulty in breathings. Fever. |
| Tetanus | Bacteria | Stiff muscles Baby stops suckling. | Fever |
| Polio | Virus | Lameness of the bones | Paralysed limbs. |

Vaccines: These are special drugs introduced to the body to make it

| Vaccine | Age at which vaccine is given | Disease protected against | How the vaccines are administered |
|--------------------|---|---|--|
| BCG | At birth | Tuberculosis | Right upper arm |
| Polio vaccine | At birth 6 weeks 10 weeks 14 weeks | Polio | Drop in the mouth |
| DPT Hep vaccine | 6 weeks 10 weeks | Tetanus Hepatitis B Influenza type b. | Injection on the left thigh |
| Measles vaccine | At 9 weeks | Measles | Injection |

produce antibodies against specific disease

Types of vaccines

- ✓ Toxoids (poisonous substance)
- ✓ Attenuated (weak diseases causing germs)
- ✓ Killed vaccines dead disease germs.

Other immunisable diseases.

Immunisable diseases are diseases which can be treated.

Examples of other immunisable diseases.

Cholera

- It is caused by a bacterium called ***cholerae***.

How cholera is spread;

- Spread through eating food contaminated by bacteria.
- Drinking contaminated water.
- Cholera can also be spread by houseflies from a patient to a healthy person

Prevention and control

- ❖ Observing proper hygiene.
- ❖ Proper disposal of faeces.
- ❖ Covering left over foods to prevent contamination.
- ❖ Covering pit latrines.
- ❖ Drink clean boiled water.
- ❖ Immunisation.

Signs and symptoms of cholera.

- Vomiting.
- Prolonged diarrhea.
- Loss of weight.
- Loss of appetite.
- Body weakness.

NB: Cholera breaks out from an area as an epidemic disease.

Epidemic disease is a disease which breaks out from areas with so many signs and symptoms.

Cholera leads to ***dehydration***.

Dehydration

This is the condition of the body when it does not have enough water and fluids.

Causes of dehydration

- Prolonged vomiting.
- Prolonged diarrhea.

Diarrhea and vomiting can lead into loss of water in the body.

Signs of dehydration

- ✓ Dry mouth and swollen tongue.
- ✓ Brown urine. (pale)
- ✓ Decreased amount of urine.
- ✓ Sunken eyes.
- ✓ Person feels sleepy.

Meningitis

Caused by bacteria.

Signs and symptoms.

- Stiff neck.
- Vomiting.
- Loss of weight.

Yellow fever:

Yellow fever is caused by viruses, spread by aedes or tiger mosquito.

Signs and symptoms

- ❖ General body weakness.
- ❖ Loss of appetite.
- ❖ Fever.
- ❖ Yellow eyes.
- ❖ Yellowish urine.

Other diseases

- ❖ Typhoid.
- ❖ Rabies.
- ❖ Small pox.
- ❖ Hepatitis B.
- ❖ Haemophilus
- ❖ Influenza B.
- ❖ Rubella.

Roles played by individual families and communities in immunization.

Individuals

- Helps to inform family members and neighbours on immunization.
- Learning how they immunize so that can help health workers.
- Encourage others to take their children for immunization.
- Assisting health workers in organizing the venues.

Family

- Sharing the information that they know about immunization
- Parents should make sure that all children and pregnant women are immunized.
- Elder children should take younger ones for immunization.

Community

- ✓ Organise seminars, workshops, plays and concerts to educate others about immunization.
- ✓ Schools should perform concerts and plays.

Common immunization centres.

- Hospitals.
- Clinics.
- Health centre.
- Dispensaries.

Importance of immunization/child health card.

- ❖ Helps the child to monitor the child's growth.
- ❖ Helps the parents to remember the next date of visit for immunization.
- ❖ Helps both the doctor and parent to know which vaccine was already given.

Topical Questions

1. What is **immunity**?

2. Name the **two** types of immunity.

(i) _____

(ii) _____

3. State any **two** ways through which babies acquire natural immunity.

(i) _____

(ii) _____

4. Name the **vaccines** given against these diseases.

(i) Tuberculosis _____

(ii) Polio _____

(iii) Measles _____

5. Which **disease** in babies is immunized against at nine months?

6. **Name** childhood immunisable diseases caused by:

(i) bacteria

(ii) viruses

7. Name any **one** other immunisable disease besides the childhood immunisable diseases.

8. (a) What is **immunization**?

(b) What do you understand by the term **Antibodies**?

(c) Give any **three** importance of immunization to our bodies.

(i) _____

(ii) _____

(iii) _____

9. (a) Define the term **vaccine**.

(b) Give any **two** types of vaccines.

(i) _____

(ii) _____

(c) Name any **three** examples of immunisable diseases.

(i) _____

(ii) _____

(iii) _____

10. (a) What do you understand by the term **dehydration**?

(b) State any **two** causes of dehydration.

(i) _____

(ii) _____

(c) Give any **three** ways through which cholera is spread.

(i) _____

(ii) _____

(iii) _____

(e) State any **four** ways of preventing and controlling cholera.

(i) _____

(ii) _____

(iii) _____

(iv) _____

11. (a) Apart from the childhood killer diseases, name any **three** immunisable diseases.

(i) _____

(ii) _____

(iii) _____

(b) State any **two** signs of tuberculosis.

(i) _____

(ii) _____

(c) Write the following abbreviations in **full**.

(i) Hepatitis B

(ii) BCG

12. Which **vaccine** is administered at birth?

(b) How is **BCG** vaccine administered?

(c) Which **vaccine** is protected by measles vaccine?

(d) What causes **tuberculosis**?

(e) State any **three** signs and symptoms of tuberculosis.

| <u>Signs</u> | <u>Symptoms</u> |
|--------------|-----------------|
| | |
| | |
| | |

THE HUMAN BODY

The digestive system

Terms used

Digestion; Is the process by which food is broken down into simpler soluble substances.

Alimentary canal; Is the passage through which food moves from the mouth to the anus.

Peristalsis; Is the wave like movement of food through the gullet.

Bolus; Is the food that has been rolled by the tongue.

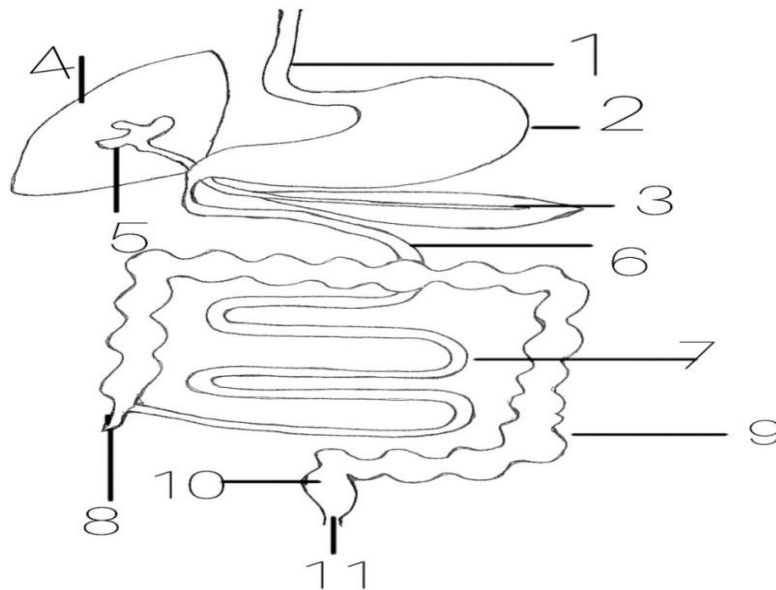
Enzymes; Are chemicals that speed up the rate of digestion.

Absorption/Assimilation; Is the process by which soluble food enters into blood stream.

Disorder; Is the inability of a system or organ to function.

| | | | | | | | |
|----------|----------|----------|--------------|----------|----------|-----------|--------|
| 1 | Gullet | 4 | Liver | 7 | ileum | 10 | rectum |
| 2 | Stomach | 5 | Gall bladder | 8 | appendix | 11 | anus |
| 3 | pancreas | 6 | duodenum | 9 | colon | | |

The diagram showing the human digestive system.



Parts of the digestive system

| Part | Digestive juice | Enzyme | Type of food digested |
|----------|-------------------------------------|--|--|
| Mouth | Saliva | Salivary amylase | Carbohydrate |
| Stomach | Gastric juice | <ul style="list-style-type: none">• Pepsin• Rennin | Proteins |
| Duodenum | Pancreatic juice | <ul style="list-style-type: none">• Amylase• Trypsin• lipase | <ul style="list-style-type: none">✓ Carbohydrate✓ Proteins✓ Fats |
| Ileum | Intestinal juice (succus entericus) | | Absorption of food |

Digestion in the mouth

- Digestion begins in the **mouth**
- The teeth breakdown food into smaller particles
- Digestion by the teeth is called **mechanical digestion**
- Saliva mixes with food to soften it
- **Salivary amylase** breaks down **cooked starch**
- Food is rolled into **bolus** by the **tongue** before swallowing
- Digestion by the enzyme is called **chemical digestion**

Uses of Saliva produced by salivary glands

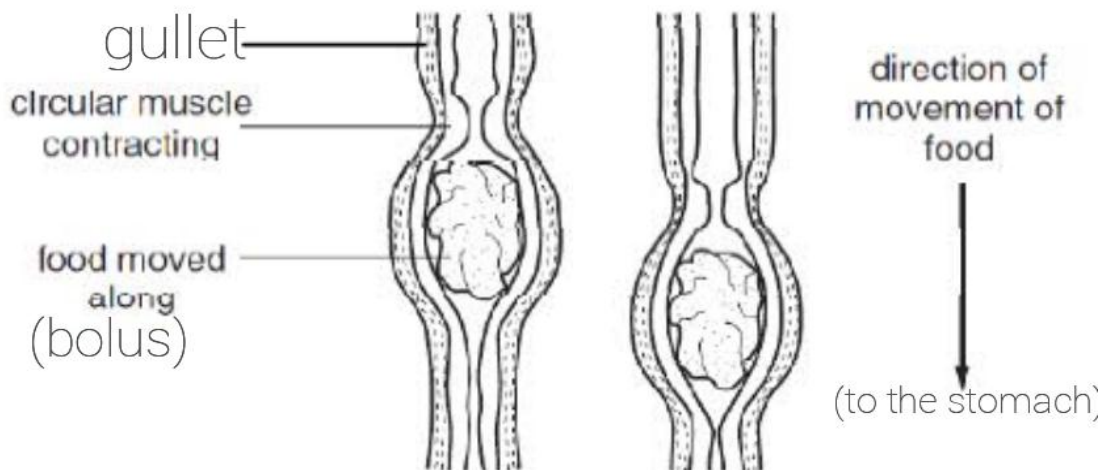
- ✓ Softens food
- ✓ Lubricates food for easy swallowing
- ✓ Contains enzymes that acts on cooked starch
- ✓ It also cools food

Uses of the tongue in digestion

- It rolls food into a bolus
- It pushes food into the gullet(oesophagus)

Gullet (Oesophagus)

- ❖ It directs food to the stomach
- ❖ Food moves through the gullet by peristalsis



Epiglottis

- It is a structure that prevents food from entering the wind pipe.

Digestion in the stomach

- Food is churned (mechanical digestion)
- Food is kept for a short time
- **Gastric juice** and **hydrochloric acid** is produced

- Hydrochloric acid kills germs brought along with food and stops the work of salivary amylase
- Digestion of proteins starts by gastric enzymes

Gastric juice enzymes

- **Pepsin** acts on proteins
- **Rennin** clots or curdles milk in babies
- Absorption of **alcohol** takes place in the **stomach**

The duodenum

- ✓ The duodenum is **the first part** of the small intestine.
- ✓ It receives bile juice from the gall bladder that contains bile salts that break down fats into tiny droplets. **Bile juice** is produced **the liver** and stored in the **gall bladder**.
- ✓ The duodenum receives pancreatic juice from the pancreas
Pancreatic juice contains pancreatic enzymes
 - a. Trypsin** continues digestion of proteins
 - b. Amylase** continues breakdown of carbohydrates
 - c. Lipase** continues breakdown of fats

End products of digestion

- a. Proteins** :- **Amino acids**
- b. Carbohydrates** :- **Glucose**
- c. Fats** :- **fatty acids and glycerol**
- d. Vitamins** and **mineral salts** are not digested as they are already in **simplest soluble** form

The ileum

- It is the second part of the small intestine
- Digestion ends here and **absorption** of soluble food nutrients enter the blood stream

Adaptation of the ileum for its function of absorption of food(Suitability)

- ❖ It has finger-like structures called **villi** that increase the space for absorption
- ❖ It is supplied with blood through blood capillaries
- ❖ The villi are very many in number
- ❖ It is long

The Colon (First part of large intestine)

- Water and mineral salts are absorbed

The Rectum (Second part of large intestine)

- It keeps the undigested food materials before they are passed out as **faeces**

Anus

- ✓ It is the opening through which faeces are passed out of the body

Components of faeces

These are things that make up faeces;

- ❖ Roughages (indigestible food materials)
- ❖ Water
- ❖ Dead cells
- ❖ Bacteria

Diseases of the digestive system

| Disease | Cause | Signs and Symptoms |
|----------------|-------------------|---------------------------------|
| Appendicitis | bacteria | Pain and swelling of appendix |
| Cholera | vibrio cholerae | Abdominal pain |
| Typhoid | Salmonera typhi | Diarrhoea, headache, fever |
| Dysentery | Bacteria, amoeba | Watery stool with blood stains |
| Peptic ulcers | Wounds in stomach | Pain in the stomach when hungry |
| Diarrhoea | Bacteria/virus | Frequent watery stool |

Prevention of Typhoid, Dysentery and Cholera

- i. Drink boiled water
- ii. Wash hands after visiting the toilets
- iii. Cover cooked food
- iv. Wash fruits that are eaten raw
- v. Proper disposal of human waste

Disorders of the Digestive system

- Constipation (Inability to pass out faeces easily)
- Intestinal Obstruction
- Vomiting
- Diarrhoea
- Indigestion
- Heart Burns

Causes of Constipation

- Lack of roughages in the diet
- Drinking little water
- Lack of physical exercise
- Swallowing food before chewing

Prevention of Constipation

- ✓ Eat foods rich in roughages or fibre e.g fruits and vegetables
- ✓ Drink plenty of water after eating food
- ✓ Eat a balanced diet
- ✓ Do plenty of physical exercise

Causes of indigestion

- i. Improper chewing of food
- ii. Over eating especially cold food

Prevention of Indigestion

- ❖ Chewing of food properly before swallowing
- ❖ Drinking enough water after eating food

Enzymes

- Enzymes are chemicals that speed up the rate of chemical reactions in the body

Examples of chemical reactions in the body

- Digestion
- Metabolism (breaking down molecules)
- Anabolism (building up molecules)
- Respiration

Examples of digestive enzymes

- Salivary amylase/Ptyalin in the mouth
- Pepsin (in the stomach)
- Rennin (in the stomach)
- Pancreatic amylase (in the duodenum)
- Trypsin (in the duodenum)
- Lipase (in the duodenum)

Characteristics of enzymes that enables them to work

- ❖ They work on specific type of food
- ❖ They work at warm or optimum or moderate temperature
- ❖ They work at specific pH (acidic or alkaline condition)

Other characteristics of enzymes

- They are protein in nature
- They are destroyed by very high temperature
- They are inactive at very low temperature

Topical Questions

1. Give the **type** of digestion in which teeth are used to breakdown food

2. What is the **role** of the tongue in digestion?

3. By what **process** does food move through the gullet to the stomach?

4. Where does digestion of **carbohydrates** begin from?

5. Apart from cooling food, give **one** role of saliva.

6. Why is **carbohydrate** food not digested in the stomach?

7. Which **type** of food substance is absorbed from the stomach?
-
8. Name the **enzyme** that curdles milk in the stomach of babies
-
9. Under what **condition** do enzymes in the stomach work?
-
10. State the **role** of the liver in digestion of food.
-
11. Why is it **not advisable** to swallow food before proper chewing?
-
12. Give the type of **mechanical** digestion that occurs in the stomach.
-
13. Why should food be **churned** in the stomach?
-
14. How is the function of the **liver** different from that of the **gall bladder** during digestion?
-
15. Which **enzyme** completes digestion of carbohydrates in the duodenum?
-

16. Name the **first** part of the small intestine.

17. Name **one** digestive juice produced in the duodenum

18. Identify any **one** component of faeces.

19. Give one importance of **hydrochloric acid** in the stomach.

20. Why are **vitamins** and **mineral salts** not digested?

21. (a) Give the digestive process that takes place in;

(i) The ileum

(ii) the colon

(b) Give **two** ways the ileum is suitable to carry out absorption of food.

(a)

(b)

22. (a) Name the smallest soluble particles of the following

(i) Carbohydrates;

(ii) Proteins :

(b) Which **class of food** is digested by enzymes under;

(i) Acidic condition?

(ii) Alkaline
condition? _____

23. Identify **two** diseases and **two** disorders of the alimentary canal.

(a) diseases

(i) _____ (ii) _____

(b) disorders

(i) _____ (ii) _____

24. (a) Give **two** ways of caring for the digestive system

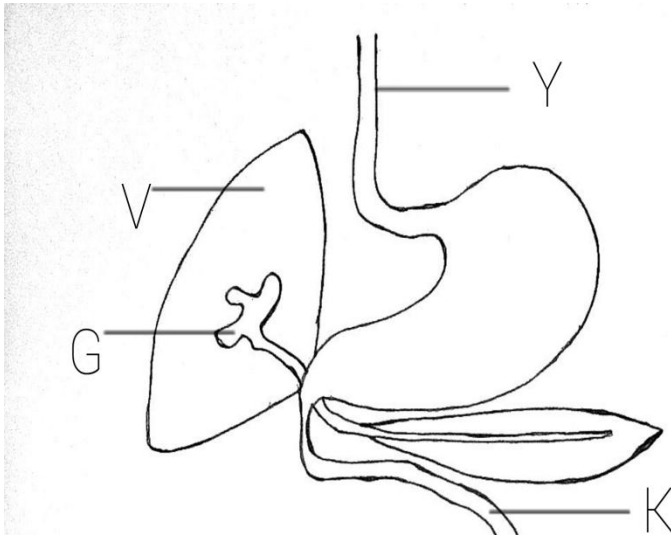
(i) _____

(ii) _____

(b) What causes **constipation**?

(c) State **one** way of avoiding constipation.

25. The diagram below is of a human body system



(a) Name the body **system** to which it belongs

(b) Label parts Y and G

Y; _____

G; _____

(c) Where does part K lead to?

(d) Which part produces **bile juice**?
