P.5 SCIENCE LESSON NOTES FOR TERM I

LESSON I

THEME : Science in Human activities and occupation

TOPIC : Keeping poultry and bees

SUB- TOPIC : Keeping poultry

CONTENT: POULTRY

Poultry are domestic birds. Poultry keeping is the rearing of domestic birds or fowls.

Types /examples of poultry

Chicken, guinea fowl, turkeys, pigeons, geese, ducks, parots

Reasons for keeping poultry

i. For egg production

ii. For meat production

iii. For sale to get money (to sell to get money)

Importance of keeping poultry

i. Provide eggs and meat.

ii. To provide dropping used as manure

iii. Sold to get money

iv. For cultural use like dowry

v. Kept as pets (good to look at)

Advantages of keeping poultry

- They occupy little space in the farm
- They produce quickly than other animals.

Terms used in poultry keeping

i. Hen: adult female chicken

ii. Cock: adult male chicken

iii. Cockerel: a young male chicken.

iv. Capon: castrated male chicken

v. Chick young bird from one day to 8 days

vi. Pullet: young female chicken

vii. Fowl: Domestic birds.

viii. Culling : Removal of infected or unproductive birds from the farm.

ix. Caponisation: Act of castrating a young make chicken.

Exercise

1. What are domestic animals?
2. Give two examples of domestic animals.
3. Why do people keep birds?
4. Name two products got from birds.
5. Name two types of poultry
6. How are fowls useful to crop farmers?
7. State any one advantage of keeping poultry over other animals.

LESSON 2

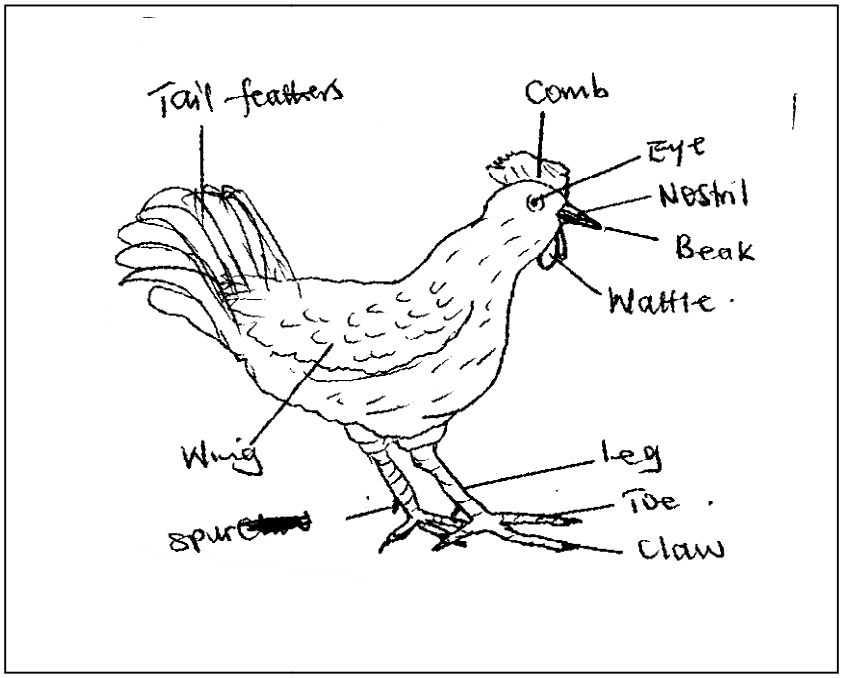
Real objects

Male hen (cock) with a spur.

Activity

Observing parts of a cock.

External parts of a fowl (a cock)



Uses of each part of a cock / a hen

Beak:

i. For picking food
ii. For defence
iii. For turning eggs

Nostril

i. For smelling

Claws

i. For defence
ii. For scratching the ground to get food

Spur

i. For defence during fighting.

Comb / wattle

i. To show the difference between a cock and a hen.

Breast

i) It is the in front of the body of a bird.

Back

i. It is the top body from the neck to the tail.

Earlobes

i. Fold of skin hanging below the ears.

Sickle

i. The two longest feathers on the male's tail.

Hankles

i. Long narrow feathers around the neck and over the saddle.

Saddle

i. Part of the back reaching the tail of a cock and corresponding.

Cushion of a hen.

i. Flesh protruding part on top of the head.

ii. Two flesh parts hanging below the beak.

Differences between a cock and a hen

i. A cock has a big comb while a hen has a smaller comb.

ii. A cock has a big wattle while a hen has a smaller wattle.

iii. A cock has a spur while a hen has no spur

iv. A cock has thick bright long neck teachers while a hen has dull short neck feathers.

Exercise

1. State the duty of beaks to birds
2. State two structural differences between a cock and a hen.
3. How is a spur useful to birds?
4. Name two features used to differentiate between cocks and hens.

LESSON 3

Real objects

All the four types of feathers

Activity

- Collecting different types of feathers
- Observing different types of feathers and classify feathers

FEATHERS

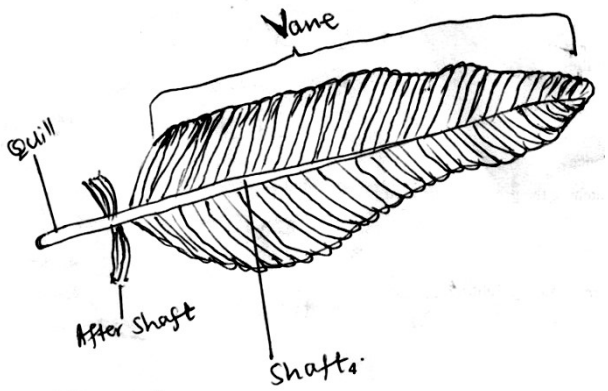
Types of feathers

i. The quill or flight feather
ii. The body or covert feathers
iii. The down feathers
iv. The filoplume or hair feather

The quill / flight feather

i. Primary feathers found on the wings and tail

Structure



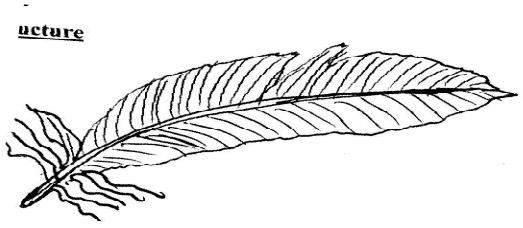
Moultingis the shedding of old feathers by birds.

i. Quill feathers are used for flight

The body or covert feathers

i. They cover most of the body of a bird
ii. They keep the body warm

Structure

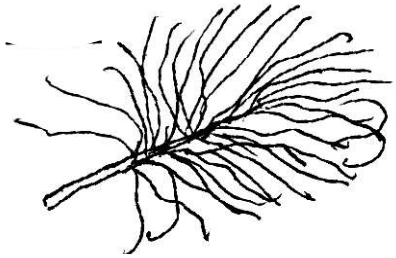


The down feathers

i. The first feathers to appear on a chick

ii. They insulate the bird

Structure

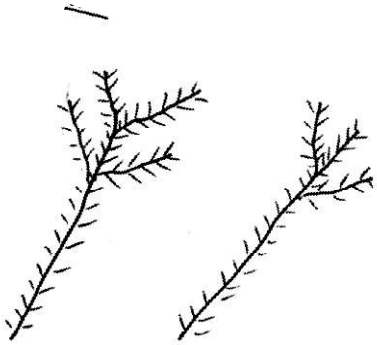


The filoplume or hair feather

i. The tiniest feathers nearer to the skin of a bird.

ii. They are seen after removing the body and down feather.

Structure



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Uses of feathers to a bird

i. Keep the body warm
ii. For flight
iii. Protect the body from injury
iv. Give shape and colour for identification

Uses of feathers to man

i. For decoraction
ii. For making cushions and pillows.
iii. Used as costumes by some tribes in music and dance

Exercise

1. How are feathers useful to people?
2. How are feathers important to birds?
3. What type of feathers help birds in flight?
4. State one cultural importance of feathers to people.
5. By what process do birds shed their feathers?

LESSON 4

TYPES OF CHICKEN

A type of chicken is a group of chicken kept for a special purpose. There are three types of chicken these are:-

a) Layers
b) Broilers
c) Dual purpose

a) Layers (light birds)

These are birds kept for egg production.

Besides egg production, how else are layers useful to man?

i. Provide manure
ii. Eaten as off food
iii. Provide feathers

Examples

i. White leghorn
ii. The brown egger
iii. Ancona
iv. Minorca
v. Sykes

b) **Broilers:** these are birds kept for meat production. They are also called table birds

Examples

i. Light sussex
ii. The Plymouth rock

c) Dual Purpose Breeds

These are birds kept for both meat and egg production

Examples

i. Rhode Island Red
ii. Black Austria Lorp
iii. The New Hampshire

Exercise

i) Give the difference between poultry and poultry keeping.
ii) How are feathers useful to birds?
iii) Give any one example of light birds.
iv) Give two types of poultry
v) Identify two types of chicken
vi) Why do farmers keep table birds?

LESSON 5

BREEDS OF CHICKEN

A breed is a group of chicken with the same characteristics like colour, shape and size.

There are two types of breads of birds

i) Local or indigenous breeds
ii) Exotic breed

a) Local breeds (indigenous breeds)These are breeds of chicken that have been in East Africa for a long time.

These are the most common breeds of birds kept by most farmers or villages because they are easy to look after.

Characteristics of local breeds

i) They have a slow rate of growth. (They grow slowly)
ii) They lay small and few eggs.
iii) They survive on little food and water
iv) *They are more resistant to diseases and parasites.*

b) Exotic breeds

These are breeds imported into Uganda from overseas.

They are mainly kept for commercial purposes.

Characteristics of exotic breeds

i) They grow and mature faster
ii) They are *less* resistant to diseases and parasites
iii) They lay many and big eggs,
iv) They provide / soft meat

How can local breeds of chicken be improved

i) By crossbreeding

What breed of chicken is got after crossbreeding local and exotic breeds?

i) A cross breed

Examples of exotic breeds of chicken

i) White legorn
ii) Light Sussex
iii) Brown egger
iv) Ancona
v) Rhode Island Rd
vi) Plymouth Rock
vii) New Hamp shire
viii) Synes

Examples of Hybrids

i) Thumper 404
ii) Thumper 707
iii) Hill line stock
iv) Showers
v) Ross birds
vi) Sterling

Differences between local breeds and exotic breeds of chicken

i) Local breads are more resistant to diseases and parasites while exotic breeds are less resistant .
ii) Local breads can survive on little food and water while exotic breeds can't survive on little food and water (demerit)
iii) Local breeds grow slowly while exotic breeds grow and mature faster (merit)
iv) Local breeds produce less meat and few eggs while exotic breeds produce more soft meat and many eggs.(merit)
v) Local breeds are mostly reared on free range system while exotic breeds are mostly reared using intensive system.

Exercise

1. Explain the meaning of cross breeding
2. State any two advantages of local breeds over exotic breeds of chicken.
3. How do farmers obtain hybrids?
4. State the way farmers can improve on their local breeds of chicken.
5. Why do some farmers keep local breeds of chicken?
6. Why do some farmers keep exotic breeds of chicken?

LESSON 6

CONTENT: FEEDING CHICKEN

Care for birds

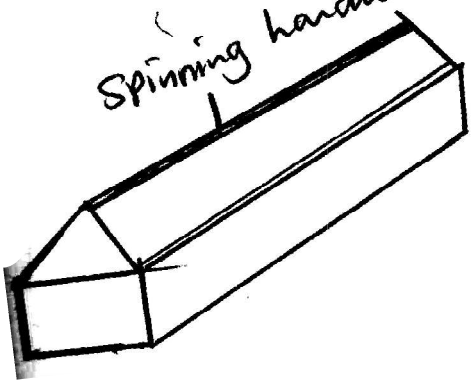
i) Feed**ing birds**
ii) Vaccinate birds
iii) Keep birds
iv) House clean
v) Hang greens in birds houses

Reasons for feeding chicken

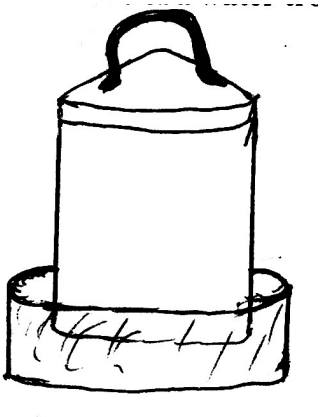
i. To grow well
ii. To lay many eggs
iii. To form muscles and fat in broilers
iv. To keep their bodies healthy
v. The special food for chicken is mash

NB: the food given to birds is called mash. This must be put in a clean trough. A good feeding trough should have a spinning handle in the middle to prevent birds from stepping and spoiling the feeds (mash). Water for birds must be put in a clean water trough.

Structure of a food trough



Structure of a water trough



Spinning handle prevents birds from stepping in the food and spoiling food.

Types of mash

Chicks – chick mash

Broilers – broilers' mash

Layers – layers' mash

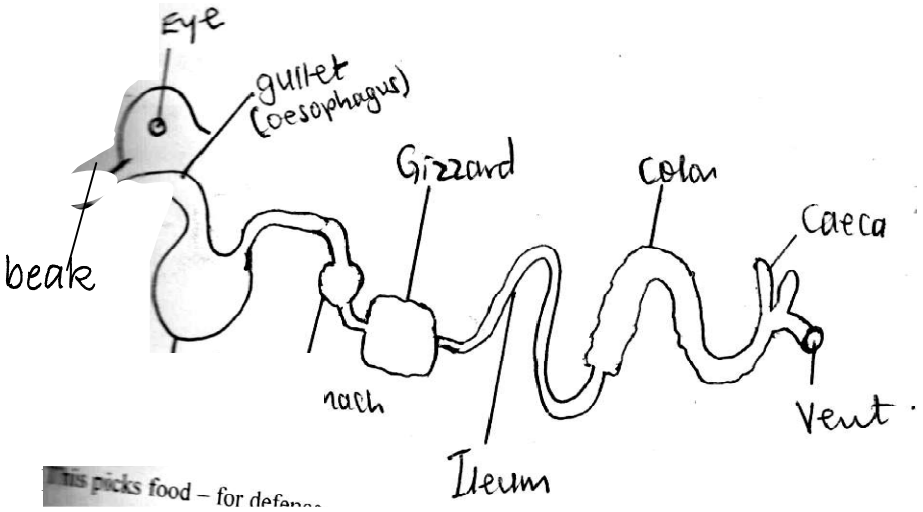
3 – 16 weeks layers – Growers' mash

3 – 16 weeks broilers – Broilers' mash

Note

i) Roasters are birds slaughtered at three to five mouth.
ii) They are given broilers mash

CONTENT: THE DIGESTIVE SYSTEM OF A FOWL



Beak: This picks food – for defence
Gullet: To allow movement of food to the crop. Food moves through the gullet by the process of peristalsis
Crop: It stores, moistens and softens the food before it's passed to the gizzard.
Gizzard contains grits or parables which crush food into small praticles
Ileum this is where food digestion is completed.
Absorption of digested food takes place here
Colon. This absorbs water.
Where absorption of water takes place.
Caeca : this store undigested food materials.
Cloaca.

i. Passes out droppings
ii. Laying eggs
iii. For mating

Note: A bird gets grit by eating small stones in food.

LESSON 7

CONTENT: SYSTEM OF POULTRY KEEPING

There are four system of poultry keeping these are:-

i. Free range system
ii. Fold /pen /ark system
iii. Deep litter system
iv. Battery/ cage system

A. Free range system

This is a system where birds are left to move to look for food by themselves.

It's the commonest system practiced in Uganda

It is widely carried out in village areas.

Advantages of a free range system

i. Birds get enough physical exercises
ii. It's cheap to maintain the birds
iii. Manure is distributed equally in the garden
iv. It controls poultry vices
v. It cuts down the costs of buying the feeds.
vi. *Birds get a variety of food*

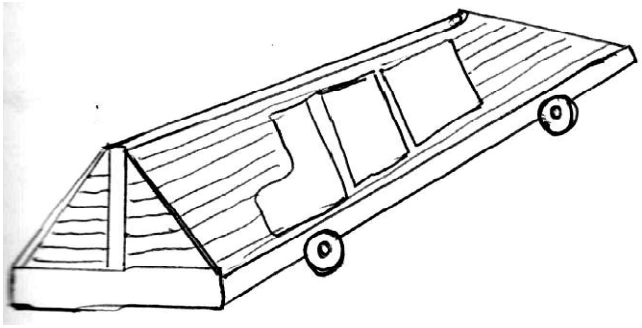
Disadvantages of the system

i. Eggs get lost easily
ii. Birds are killed by wild animals or stolen by thieves
iii. There is easy spread of diseases
iv. Birds are stolen by thieves.

B. Fold/ pen system (*lase)*

This is a system where birds are kept in a movable house (cage / pen / fold.

Structure



Advantages of fold/ pen system

i. It's cheaper compared to battery cage and deep litter systems
ii. It's easy to *collect* manure
iii. It reduces parasites and worm infection
iv. It is easy to collect eggs

Disadvantages

i. It's expensive to construct
ii. It's tiring to move the pen
iii. Birds do not get enough physical exercise
iv. There is easy spread of diseases since the birds are in one place

Exercise

1. How is a beak useful to a bird?
2. How do birds get grit?
3. Name three methods of rearing birds.
4. What happens to food in the crop of a bird?
5. By what process does food move along the alimentary canal?
6. Why do most village farmers prefer free range system of keeping poultry?

LESSON 8

DEEP LITTER SYSTEM

The system where birds are kept in a house with litter.

Qualities of a good deep litter system house

i. It should have perches where birds play an rest on
ii. Is should be well ventilated
iii. It should not be leaking
iv. It should have a laying nest.
v. It should have feeding troughs
vi. It should have litters
vii. Litter are materials put in a floor of a poultry house.

Advantages of a deep litter system

i. Many birds can be kept in a small place
ii. It's easy to control birds
iii. It is easy to collect eggs
iv. It is easy to collect manure
v. It is easy to keep records
vi. Birds are easy to protect from thieves and wild animals
vii. It's easy to cull the birds

Importance of litter in a deep litter house

i. It absorbs moisture from the dropping in order to prevent dampness.

Examples of litter in a deep litter house

i. Coffee husks
ii. Saw dust
iii. Straw
iv. Wood shavings
v. Crushed maize cobs

Disadvantages of a deep litter system

i. It is expensive to maintain
ii. It requires skilled labour to look after the birds
iii. There is easy spread of diseases
iv. Birds may not get a balanced diet
v. Poultry vices are highly practiced by birds
vi. Litter can easily catch fire.

C. BATTERY /CAGE SYSTEM

This is an intensive system of keeping birds in wire cages.

Advantages

i. It's easy to keep records
ii. It's easy to collect eggs
iii. Culling and vaccination are done easily

Disadvantages

i. It's very expensive
ii. It needs qualified personnel
iii. Birds don't have enough exercise (physical)
iv. Cages can easily injure the birds

Qualities of a wire cage

i. Should have a cemented floor
ii. Should be well ventilated
iii. Should have a sloppy floor.

Roost – a place where birds rest from.

LESSON 9

DISEASES OF POULTRY

POULTRY DISEASES AND PARASITES

Factors that lead to poultry diseases

i. Over crowding the birds

ii. Poor feeding the birds

iii. Poor housing

Diseases of poultry

Coccidiosis – fowl pox, fowl typhoid, new castle, avian leucosis, black head, gumboro

a) **Coccidiosis.** This is caused by a germ called protozoa. It attacks the liver, small and large intestines.

Signs and symptoms

i. Diarrhoea

ii. Blood stained droppings

iii. Ruffled feathers

iv. Loss of appetite

v. Loss of weight

vi. Dullness and dropping of wings

vii. Loss of body shape

viii. Reddish eyes in the birds

Prevention and control

i. Use a drug coccidiostat in the feeds

ii. Kill and slaughter the infected birds.

iii. Culling the sick birds

b) **New castle diseases**

This is the highly infectious disease of poultry caused by a virus

Signs and symptoms

i. Loss of appetite

ii. Drop in egg production

iii. Poor egg smell formation
iv. Moulting of feathers
v. Greenish diarrihea
vi. Staggering dropping of wings and bending of neck

Prevention and control

i. Routine vaccination every after 6 months
ii. Kill and disinfect the houses in case of an out break

c) **FOWL POX**

This is a disease caused by a virus. It is one of the killer diseases of poultry spread through feather and skin pecking.

Signs and symptom

i. Tiny wounds on comb, wattle and wings
ii. Ulcers (wounds) in the mouth
iii. Severe discharge from the mouth and nostrils
iv. Difficult breathing
v. The eyes get sleepy and stuck

Poultry diseases caused by bacteria

i. Fowl typhoid

Poultry diseases caused by protozoa

i. Coccidiosis
ii. Black head

Prevention and control

i. Routine vaccination strict hygiene
ii. Cull and slaughter the effected ones
iii. Spraying the house

Poultry diseases caused by a virus

i. Fowl pox
ii. New castle disease
iii. Avian leucosis

LESSON 10

Parasites

A parasite is an organism that depends on another organismfor food and shelter.

Types of parasites

i. Endoparasites
ii. Ecto parasites

a) Endo parasites

These are parasites that live inside the body of an organism. They are also called internal parasites.

Examples of endo parasites

i. Tape worms
ii. Hook worms

b) Ecto parasites

These are parasites that live on the body of an organism. They are also called external parasites.

Examples of external parasites

i. Fleas
ii. Lice
iii. Ticks
iv. Mites

How to control parasites in poultry

i. Spraying the house
ii. Regular cleaning of the house
iii. Deworming of birds
iv. Dipping in acaricides

Exercise

i) Why is a pin worm called a parasite?
ii) How do tape worm spread?
iii) Explain why fleas regarded as ecto parasite.
iv) What are a canicides?
v) Who is a host?

Fowl typhoid

This is caused by bacteria of the salmonella. Its transmitted to chicks carrier by hens.

Signs and symptoms

i) White yellowish or green yellowish diarrhea

ii) Dullness with dropping wings and sleepy eyes
iii) Anaemia combs and wattles get skunken and pale yellow
iv) Sudden death is usual

Prevention and control

i) Vaccinate regularly
ii) Testing and killing infected ones
iii) Keeping poultry houses clean, dry and well ventilated

e) **AVIAN LEUCOSIS**

It is an infectious disease of poultry

Signs and symptoms

i) Paralysis of wings and legs
ii) Swollen liver and legs

Prevention and control

i) Get chicks from single source
ii) Don't mix age groups
iii) Use resistant breeds.
iv) Disinfect equipments when there is an out break

BLACK HEAD

This is caused by protozoa

Signs and symptoms

i) Yellowish diarrhea
ii) Dark and purple head
iii) Yellow green circular lesions on the head

Prevention and control

i) Avoid overcrowding birds
ii) Separate turkeys from other birds

General control of poultry diseases

i) Regulate vaccination against disease like new castle, fowl pox fowl typhoid and avian leucosis
ii) Disinfect and maintain cleanliness of the house
iii) Have foot bath at the door to keep off disease and parasites
iv) Isolate the sick birds
v) Penure, burn and burry the sick ones
vi) De-worm the birds regularly

Exercise

1. Name the bacteria which causes fowl typhoid
2. Point out any two factors that lead to diseases in poultry.
3. Give one protozoan poultry disease.
4. State two diseases that attack both human being and poultry.

LESSON 11

POULTRY/FOWL VICES

Fowl vices

Fowl vices are bad habits practiced by poultry

Examples of fowl vices

i. Cannibalism
ii. Pecking
iii. Egg eating

Examples of pecking

i. Feather pecking
ii. Skin pecking
iii. Toe pecking

Cannibalism

Is when a bird is pecked at and eaten by other birds. It is mainly causes by prolapse.

Prolapse

Is when the oviduct of the hen comes out of the vent.

Causes of poultry vices

i. Boredom
ii. Too much light around the nest

Other causes of cannibalism

i) Boredom
ii) Lack of protein in the diet
iii) Little food given to birds

Signs of cannibalism

i) Chicken bleeding at the vent
ii) Blood on their beaks

Prevention

i) Hang greens to occupy birds
ii) Give birds mash containing protein values.
iii) De-beak all the birds
iv) Isolate the pecked birds

1. **Egg eating.** *This is the act of birds eating their own eggs.*
   Causes of egg eating

i) Too much light in the house
ii) Taking long to collect eggs
iii) Little food given to birds
iv) Lack of calcium in the diet (main)

Signs of egg eating

i) Yellow stains on the beaks
ii) Broken eggs in the poultry house

Prevention

i) Give birds mash containing calcium and protein value
ii) Remove all broken shells.
iii) Avoid over crowding
iv) Provide proper nesting for the birds to lay eggs
v) De beak the birds.
vi) Remove or cull the egg eaters
vii) *De beaking is the act of cutting the bird's beak short*

2. Feather and skin pecking

This is when the bird's feathers and skin are plucked by other birds

Prevention of feather and skin pecking

i) Hang greens in a poultry house
ii) Don't over crowd birds
iii) Isolate the pecked ones
iv) Give mash containing protein content

3. Toe pecking

This is when other chicks peck other birds feet

Exercise

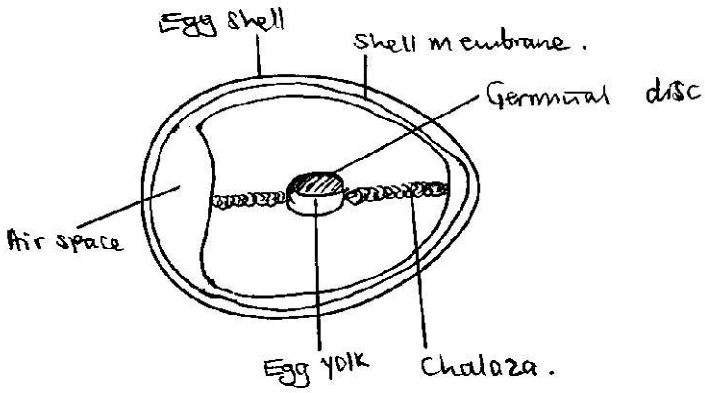
1. What is a deep litter system of keeping poultry?
2. State the main cause of egg eating.
3. Point out the two raw materials for photosynthesis.
4. Name two viral diseases of poultry
5. State two signs of coccidiosis in poultry.
6. State two external parasites in poultry.
7. Why do farmers hang greens in their poultry houses?

LESSON 12

Activity

- Breaking unboiled eggs to observe internal part
- Unshelling boiled egg to observe internal part.

INTERNAL STRUCTURE OF UN FERTILISED EGG



Functions of the parts

Egg shell:

i. It protects the inner parts of an egg

ii. It also allows easy exchange of gasses i.e. it is porous

Air space: This stores oxygen for the embryo.

Albumen: It stores food for the embryo.

Egg Yolk: It's a source of proteins and fats for the embryo

Embryo: It grows into a chick.

Chalaza: It holds embryo and Yolk in one position.

Classes of food that the egg yolk contains

- Proteins
- Fats

LESSON 13

INCUBATION

The act of giving good conditions to an egg to hatch into a chick.

Incubation periods

Bird	Incubation period
hen	21 days
turkey	28 days
duck	28 days
pigeon	16 days
goose	30 days

Methods /types of incubation

a. Natural incubation

b. Artificial incubation

Natural incubation Is when a hen sits on eggs to hatch into chicks.

Advantages of natural incubation

i. It is cheap to the farmer

ii. Hen provides enough warmth to eggs

Disadvantages

i. Few chicks are hatched at a time

ii. It leads to egg eating

Exercise

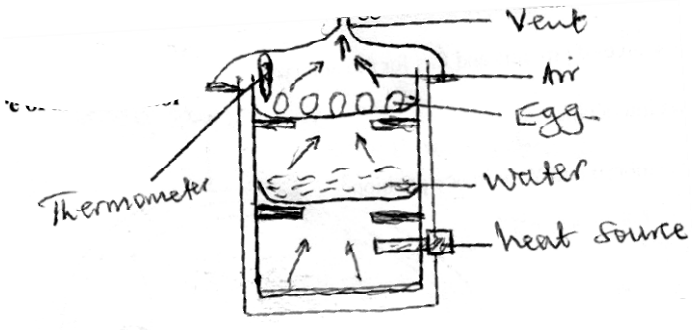
1. Why is the eggshell porous?
2. State the role of the chalaza in an egg.
3. How is an air space useful to an egg?
4. State the incubation period of a hen.
5. Which part does an egg use for exchange of gases?

Artificial incubation

This is when an incubator is used to hatch.

An incubator is a machine used to enable an egg hatch into a chick.

Structure of an incubator



Note:
Thermometer- It measures the temperature in the incubator.
Heat source- It provides warmth to the eggs
Water – It provides moisture to the eggs.

Advantages

i) Many eggs are hatched at ago.
ii) Egg eating is reduced.

Disadvantages

i) It is expensive to the farmer.
ii) It is tiring to change the eggs.

Conditions necessary for an incubation to hatch

i) Warmth
ii) Oxygen

Factors that may fail an egg to hatch into a chick

i) Cracks in the egg shell
ii) Having blood spots inside
iii) When the embryo is not in the right position
iv) Contact with water

Candling Is the act of checking the quality of an egg using light.

LESSON 14

Brooding This is the taking care of chicks.

Types of brooding

i) Natural brooding
ii) Artificial brooding

Natural brooding

It when the mother hen takes care for the chicks.

A hen taking care for chicks is called a broody hen.

Advantages of Natural brooding

i) It is cheap to the farmer.
ii) Chicks eat a variety of food.
iii) Chicks get enough physical exercises

Disadvantages

i) Vices are practiced
ii) Chicks are killed by bad weather
iii) Chicks are eaten by predators

Artificial incubation

This is when chicks are cared for from a brooder.

A brooder is a special house where chicks are cared for from.

Advantages

i) Many chicks are cared for at ago
ii) Chicks are protected from predators
iii) Chicks are protected from bad weather.

Disadvantages

i) It is expensive to the farmer.
ii) Chicks can die due to much heat.
iii) It requires much labour.

Exercise

1. Give the difference between incubation and incubation period.
2. What is brooding?
3. Give two conditions needed for incubation.
4. What is an incubator?
5. Why should an incubator have a thermometer?
6. State two advantages of natural brooding.
7. Why may an egg fail to hatch into a chick?

LESSON 15

BEE KEEPING

Social insects – These are insects that live and work together with others.

Characteristics of social insects

i) They live together with others
ii) They work together with others

Examples of social insects

i) Termites
ii) Black ants
iii) Wasps
iv) Honey bees
v) Rodents

Solitary insects -These are insects which move live and work alone.

Characteristics of solitary insects

i) They live alone
ii) They work alone
iii) The move alone

Examples of solitary insects

i) Grasshoppers
ii) Locusts
iii) Crickets
iv) Houseflies
v) Mosquitoes
vi) Bumble bees
vii) Carpenter bees
viii) Walking stick insects

Common terms in bee keeping

i) **A piculture** – The act of rearing honey bees
ii) **Honey bees** – Social insects that live in a hive
iii) **A colony** – A group of honey bees staying together
iv) **A swarm** – A group of honey bees flying together

Types of honey bees

i) Queen bee
ii) Drone bee
iii) Worker bee

The Queen bee

i) The female fertile bee
ii) It is larger than others
iii) It lays two types of eggs. (sterilized and fertilized eggs)
iv) It feeds on special food called Royal Jelly

How a queen bee is formed

- Feeding a grub on Royal Jelly.

Function/ role of the queen bee

i) To lay eggs

The drone bee

- The male fertile bee in the hive
- It is larger than the worker bee

How a drone be is formed

- Formed from unfertilized eggs

Function / role of a drone bee

- To mate with the queen bee

Note

Nuptial flight

- The flight where a queen bee mates with a drone bee.
- The drone bee dies after mating with the queen bee because it loses its sexual organs during mating.

Life cycle of honey bees

- Undergo complete metamorphosis e.g eggs, larva, pupa, adult.

LESSON 15

The worker bee

i. It is the female sterile bee in the hive
ii. It is the smallest bee in the hive.

Note

i. Sterile means unable to lay eggs (produce)

Functions / roles of a worker bee

i. To feed the queen bee and the grub (brood) on royal jelly
i. To protect the bee hive from danger
ii. To repair the bee hive
iii. To build the comb cells for the queen bee to lay eggs
iv. To control the temperature around the hive. (by flapping its wings)
v. To collect nectar, water and pollen(main)

Note

i. The chief role of a worker bee is to collect nectar.
ii. Nectar is the sugary substance produced by the nectary glands at the base of the petals of a flower.
iii. Pollen is the food for worker bees and collected in the pollen basket on their hind legs.
iv. Propolis is a sticky substance collected from trees.
v. Honey bees make honey combs using wax

Products got from propolis

- Vanish
- Glue

Bee products

- Wax
- Honey
- Propolis
- Pollen

Wax products

- Shoe polish

- Wood polish
- Candle wax
- Cosmetics
- Crayons

Uses of honey

- Eaten as food
- Sweetens tea
- Sweetens bread

Importance of bees

- Bees pollinate crops
- They provide honey
- They provide wax
- They provide pollen

Uses of propolis

i. To smoothen the inside part of the hive.
ii. To seal the cracks in the hive.
iii. To prevent water from entering the brood cells

Exercise

1. State two ways insects are useful to people.
2. State two ways insects are harmful to people.
3. Name the special food for a queen bee.
4. Give the difference between propols and proboscis
5. What food value do we get from eating pollen

LESSON 17

BEE HIVES

A bee hive is a place where bees live

An apiary is a place where many of bee hives are kept

Types of bee hives

i) Local or traditional bee hives
ii) Modern bee hives
iii) Natural bee hives

Modern bee hives

i) Properly made with chambers, top bars and peers

Examples of modern bee hives

i) Box hive
ii) Top bar hive

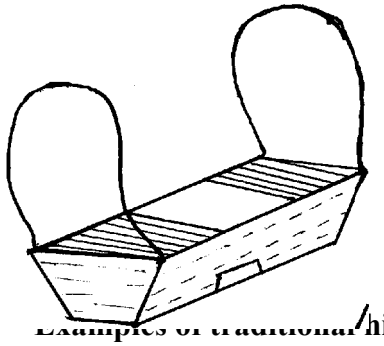
Characteristics of modern hives

i) They have honey chambers
ii) They have brood chambers

Advantages of modern hives

i) They last longer
ii) Cleaner honey is harvested from them
iii) It is easy to inspect honey and wax from them.
iv) Brood nests are not damaged when removing combs.

Top bar hive



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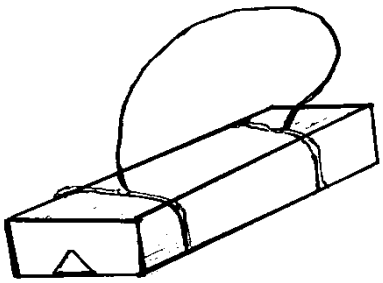
Examples of traditional hives

Box bee hive



i) Kigezi bee hive
ii) Dug out long hive

Advantages of traditional hives

i) Cheap and easy to make
ii) The colony is not disturbed by the bee keeper

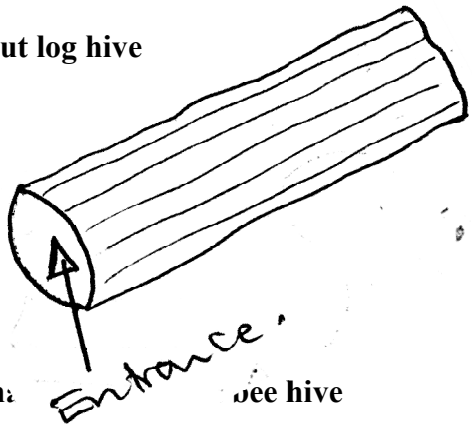
Disadvantages of traditional hives

i) The colony can't be inspected.
ii) The hive is damaged when harvesting honey.
iii) It is difficult to prevent swarming.

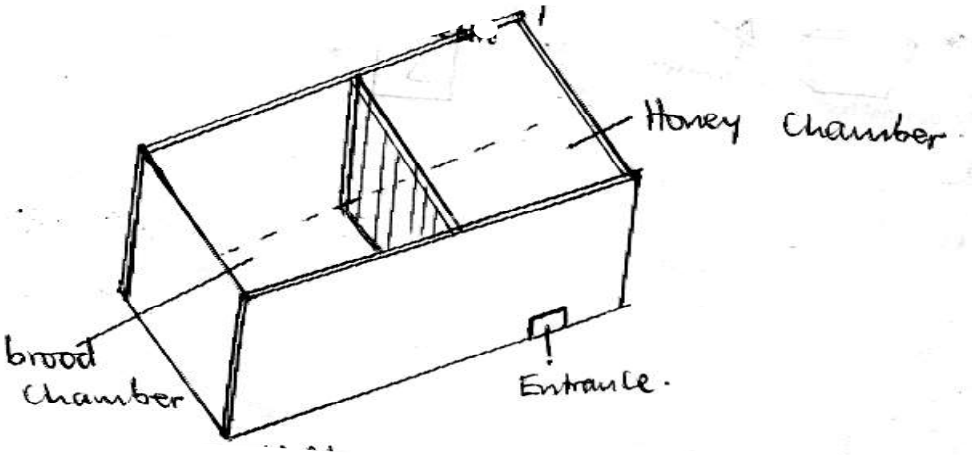
Queen excluder

i) Prevents queen from eating honey.
ii) Prevents queen from laying eggs in honey.
iii) Kigezi bee hive

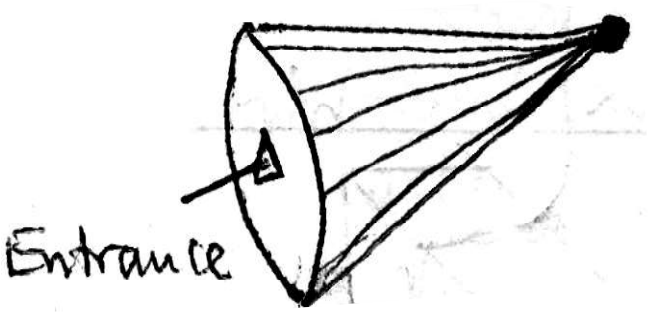
Dug out log hive



Interna bee hive



Kigezi bee hive



Swarming

This is the massive movement of honey bees from one place to another looking for a new hive.

Reasons for bee swarming

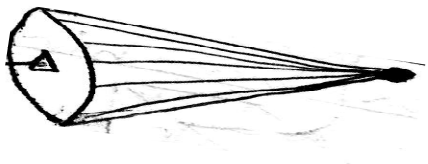
i) Too much noise near the hive.
ii) Death of the queen bee
iii) Bad smell near the hive.
iv) Leaking of the new hive when new queen bee is born.
v) When a new queen bee is born

Control of swarming

- Putting hives near water source
- Setting a hive near flowers
- Setting hives in quite place

Exercise

1. Give the difference between an Apiary and Apiculture
2. How can farmers prevent their bees from swarming?
3. State two advantages of modern bee hives?
4. How are local bee hives of advantage over modern ones.
5. How is a queen excluder useful in a modern bee hive?
6. What type of bee hive is shown below?



LESSON 18 AN 19

SITING THE HIVE

It refers to the selection of a suitable place to put the bee hive.

Factors to consider

i. Should be located away from houses, roads and animals
ii. Should be in a quite place
iii. Should be near to plants
iv. Should be near a water source
v. Should not be direct to sunlight

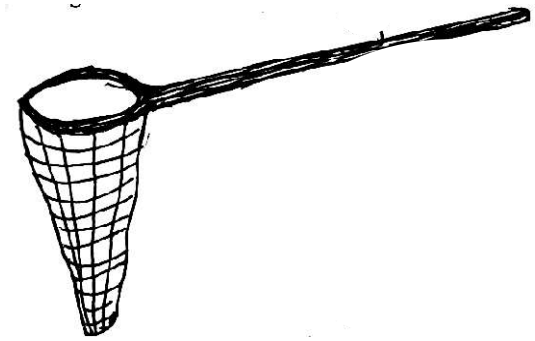
Stocking the hive.

This is the act of putting honey bees in an empty bee hive/ the act of encouraging honey bees to occupy an empty hive.

Ways of stocking a hive

i. Setting up the hive a permanent place
ii. Using a catcher box
iii. Catching a swarm

A swarm catching a hive



Harvesting honey

This is the removal of honey combs from the hive

Requirements needed when preparing to harvest honey

i. A bee veil
ii. Overall
iii. Knife
iv. A bee keeper gloves
v. Gumboots
vi. Smoker
vii. Clean bucket

Structure

Uses of each requirement above

i. **Overall and bee veil**
   - To protect the body of a person from bee stings

ii. **Smoker**
   - Provide smoke that calms bees.

iii. **Gloves**
   - To protect the hands of a person from bee stings

iv. **Gumboots**
   - To protect the legs from bee stings and sharp objects from piercing the legs.

v. **Knife**
   - To cut wax capping from the honey combs

vi. **Bucket**
   - For collecting and store honey for some time.
   - Put the combs in a bucket.

Extraction of honey

This is the act of removing honey from honey combs.

Methods of extraction of honey

i) Floating the wax method
ii) Pressing honey method
iii) Centrifuging method

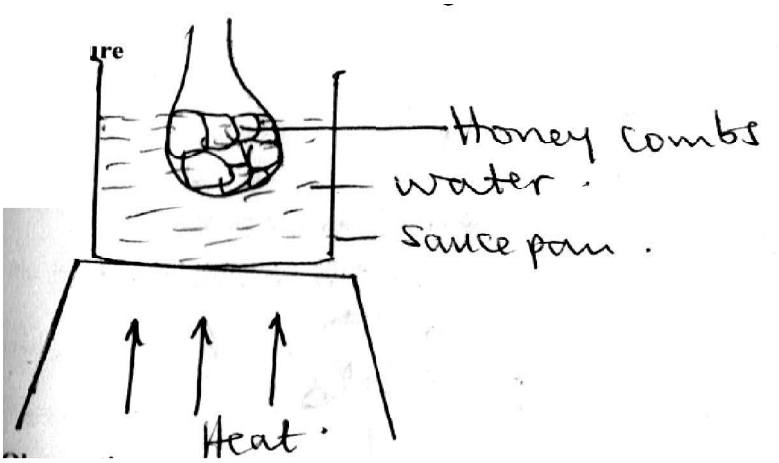
Floating the wax method

Steps taken

i) Break honey combs into smaller pieces and put in a sauce pan.

ii) Put that sauce pan with combs in boiling water.

Structure



Observations

i) Later the wax and honey will melt

ii) The wax then floats on top of the honey

Conclusion

i) Put the results in the honey sieve and leave it hanging for a night.

ii) The honey will then filter through

Pressing the honey method

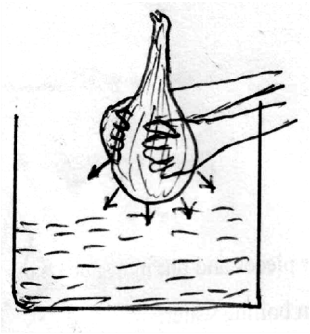
Steps taken

i) Break honey combs into pieces

ii) Tie or wrap those pieces in a clean cloths.

iii) Suspend the cloth on a bucket to allow the honey to drip through

Structure



Centrifuging method

Steps taken

i) The honey s removed from the combs using a machine (a centrifugal honey extractor)

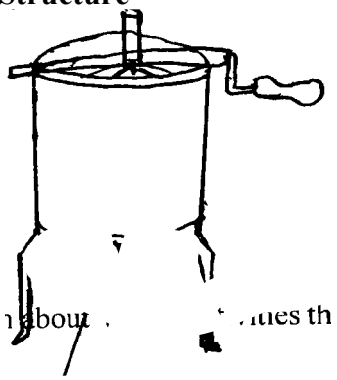
ii) The wax seals the combs is removed before putting in the machine.

iii) The machine then will turn the honey combs at a very high speed.

iv) The honey will then be forced out and settles at the bottom of the machine.

v) The honey is then boiled and stored in a clean container.

Structure



Exercise

How is a smoker useful to a bee harvester?

1. State two methods of extracting honey.
2. Why is it bad to harvest honey using fire?
3. Why do bee harvesters need buckets?
4. Name any two protective materials a honey harvester should have.
5. What is bee harvesting?

LESSON 20

MEASURING

Mass :

i) The amount of matter in an object .

Units for measuring mass

i) The basic units – grammes (g)

ii) The standard units – kilogrammes (kg)

Weight

i) The force an object has due to gravity or the amount of gravity acting upon an object.

ii) Weight is measured in Newtons (N)

Gravity

i) The force that pulls objects toward the centre of the earth.

Importance of gravity

i) It enables rain to fall

ii) It enables fruits to fall from plants / trees

iii) It prevents objects from floating in air

Differences between mass and weight

i) Mass is constant while weight changes

ii) Mass is measured in grammes while weight is measured in Newtons.

LESSON 21

Comparison of objects in measurements

iii) The bigger the object in mass, the bigger the weight it has.

iv) The smaller the object in mass, the smaller the weight it has.

Note

i) Both mass and weight can be measured by weighing.

ii) The mass of an object is always constant while the weight changes

iii) When an object is put in water, it weighs less than what it weighs on land

iv) Water has a force that acts on an object to reduce its weight. (up thrust / buoyancy forced)

Instruments used to measure mass and weight

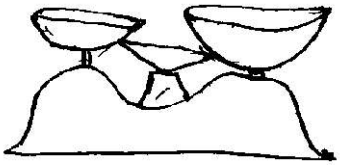
i) Sets of scales

ii) Beam balance

iii) Spring balance

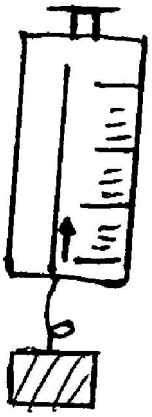
iv) Scale balance

Sets of scales



Beam balance

Spring balance



Exercise

1. Name the units for measuring the following:-
    a. Mass
    b. Weight
    c. Volume
2. What is volume?
3. State two differences between mass and weight.
4. Name two equipment used for measuring weight and mass.
5. In which one way is gravity useful to people?

LESSON 22

VOLUME

Is the amount of space occupied by an object? Lt's measured in cubic units e.g. Cm^3, mm^3. M^3. It is measured in litres.

Types of objects

i. Regular objects
i. Irregular objects

Regular objects – These are objects with definite shapes.

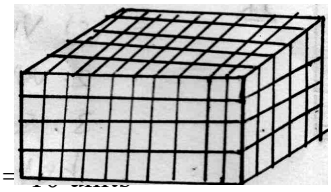
Examples of regular objects

i. Box
ii. Cuboid
iii. Glass block
iv. Cube
v. Cylinder

Volume of regular objects

Examples 1

i. Find the volume of the box below



l =

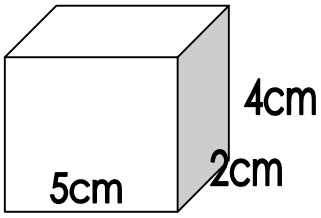
w = 5 units

h – 4 units

Volume = (lxw) x h
= (10 x 5) sq. unit x 4
= 50 sq. unit x 4cm
∴ **Volume = 200sq. units**

Example II

Calculate the volume of the object below



$V = l \times w \times h$

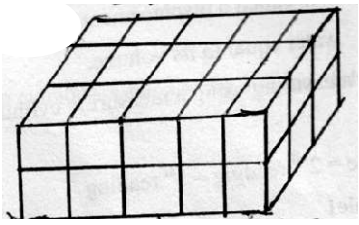
$= 5cm \times 2cm \times 4cm$

$= 10cm^2 \times 4cm$

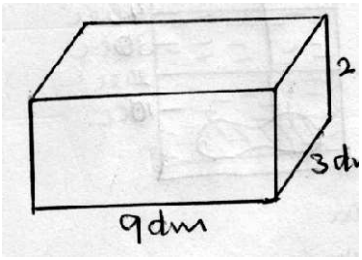
$= \underline{\boldsymbol{40cm^3}}$

Exercise

1. Find the volume of the figure below



2. Name two examples of regular objects.
3. List down two examples of irregular objects.
4. Find the volume of the object below.



5. What is weight?

LESSON 23

IRREGULAR OBJECTS

Irregular objects

These are objects that do not have definite shapes e.g. Pawpaws, sweet potatoes, stones e.t.c

Instruments used to measure the volume of irregular objects

i. Measuring cylinder
ii. *An over flow can/ Eureka*
iii. *Sting*

Note:

i. The volume of an irregular object is got by measuring using the displacement method.
ii. It is called a displacement method because an irregular object displaces the amount of water equal to its volume.

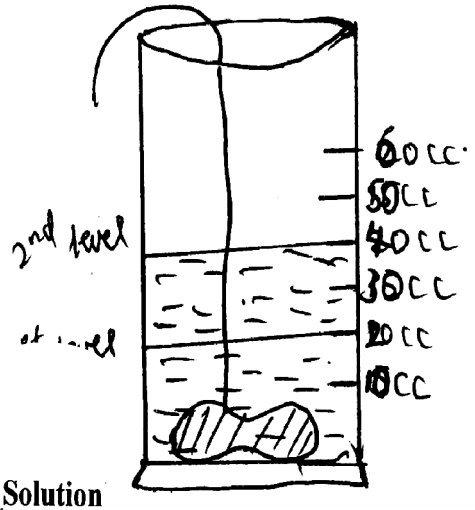
When measuring using a measuring cylinder subtract the first reading from the second reading i.e.

Volume = 2^{nd} reading – 1^{st} reading

Example1

Volume of an irregular object using a cylinder only

A stone of mass 60g was immersed in water cylinder as shown below. Calculate its volume.



Solution

2^{nd} level = 40cc

Volume = 2^{nd} level – 1^{st} level

= 40cc – 20cc

∴ Volume = 20cc

S/W

40

\- 20

20

Example 2

Measuring the volume using both an over flow can and measuring cylinder

Steps to follow.

Practical

i. Fill the can with water till it over flows through the spout or hole.
ii. Lower the stone whose volume you want to measure into the can gently with a sting.
iii. When there is water pouring out, bring a measuring cylinder and put it below the spout such that it can collect water

NB. The amount of water collected in the measuring cylinder is equal to the volume of the stone as shown in the diagram below.

DENSITY

This is the mass per unit volume. The unit for measuring density is g/cc(g/cm)
g/m. it is measured using an instrument called hydrometer
To find density we use density (D)=$^{m}/_{v}$

Example 1

Calculate the density of an object whose mass is 150g and volume is 50cc

Solution

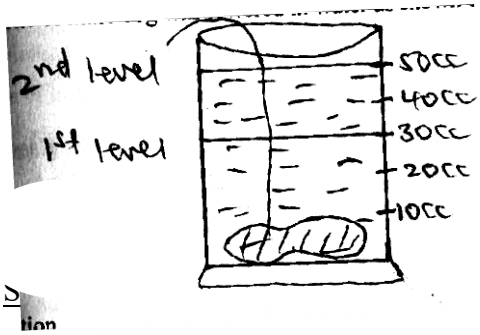
$$D = \frac{m}{v}$$

$$D = \frac{\cancel{150g}}{\cancel{50cc}}$$

D = 3g/cc

Example 2

A stone of mass 60g was lowered in water as shown below



Solution

Volume $= 2^{nd} - 1^{st}$

$= 50cc - 30cc$

$= 20cc$

$\therefore$ Density $= 3g/cc$

LESSON XXIV

Behavior of objects in water

Floating - This is a situation where an object rests on the surface of water/ a liquid.

Floating objects - These are objects that remain on top when placed in water e.g. feathers, cork, a leaf , oil, ship etc.

Density of water - It is always 1g/cc

Note

Objects float on water because ;

i. Their density is less than that of water or
ii. They are less dense than water

Sinking

This is a situation where an object goes to the bottom of water.

Sinking objects

These are objects that go to the bottom when put in water. e.g. stones, sand, metals, glass.

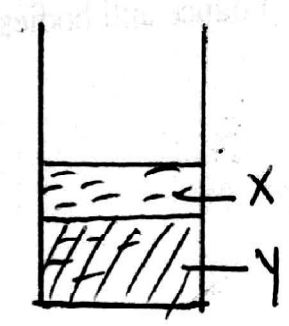
Note

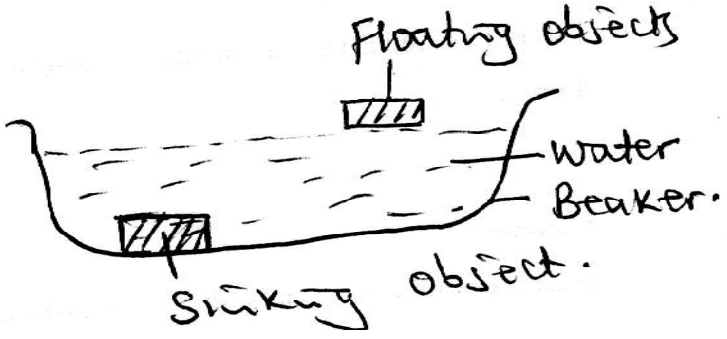
Objects sink in water because;

i. Their density is more than that of water
ii. They are denser than water.

An experiment on floatation and sinking

A P.5 pupil accidentally poured water on the cooking oil as shown below





i. Name substance X and Y
   X – oil
   Y – water
ii. Explain why substance X settle on top.
iii. State any two examples of Y.

LESSON 25 AND 26

IMMUNITY:

This is the ability of a body to fight against diseases causing germs or is the ability of the body to resist infections.

Types of immunity

i. Natural immunity
ii. Artificial immunity

Natural immunity

This is the type of immunity got without using any vaccine.

Ways of acquiring natural immunity

i. After recovering from illness (sickness)
ii. From mother to unborn child through the placenta
iii. Good feeding
iv. Breast feeding

Artificial immunity

This is got through immunization or vaccination or through injection of antibodies .

Immunization

This is the introduction of vaccines into the body to make it produce anti bodies against certain diseases.

Vaccines

These are medical substances which are introduced in the body to make it produce anti-bodies against certain diseases.

Anti bodies

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

Methods of immunization/ How immunization is administered

i. Injection method
ii. Oral method

Types of vaccines

There are three types of vaccine. These are:-

i. Toxoids
ii. Killed vaccines
iii. Attenuated living vaccines

Toxoids

Are vaccines made from poisons produced by bacteria.

Examples

Tetanus toxoid

Killed vaccines

These are killed bacteria / viruses that have been grown in other animals.

Examples

Cholera vaccine

Polio vaccine

Attenuated living vaccines

These are weakened bacteria developed from other animals.

Examples

BCG vaccine.BCG vaccine was discovered by two French bacteriologists called Calmette and Guerin. BCG stands for Bacilli Calmette / Guerin.

Exercise

1. What is immunity?
2. How are vaccines useful to the body?
3. Give one example of killed vaccines
4. Why do people immunize children?
5. State one way of acquiring natural immunity.
6. Write BCG in full.

LESSON 27 AND 28

THE CHILDHOOD IMMUNISABLE DISEASES

These are diseases that attack most children below the age of 5 years because their immunity is still weak.

These include:-

i. Polio
ii. Tuberculosis
iii. Measles
iv. Tetanus
v. Hepatitis
vi. Whooping cough / pertussis
vii. Haemophilius Influenza B
viii. Diphtheria

The childhood immunisable diseases

Disease /Cause	Spread	Symptoms and Signs	Prevention /Treatment
1. Measles Affects the skin and caused by virus	Spreads through contaminated air	• Rash over the body(sign) • High fever(symptom) • Red eyes(sign) • Runny noise(sign)	• Isolate the infected person • Immunize using measles vaccine injected on the left upper arm at 9 months of age of a baby. **NB** measles vaccine is given at the age of 9months because the baby is born with immunity that lasts to around 9 months
N.B: - Babies at 6 months can be immunized against measles if there is an out break - Measles is air borne			
2. **Polio** (poliomyelitis) . It is caused by a virus and it affects the limbs or bones (skeleton)	Drinking contaminated water	• High fever(symptom) • Body weakness(symptom) • Paralyzed limbs (tissues and nerves) or lameness (sign)	• Drink boiled water • Immunize using polio vaccine This is done by giving 3 drops through the mouth (orally) • The first dose is given at birth and it is called Polio O, Polio 1, Polio 2 and Polio 3. These are given at an interval of 1 month.

N.B: Polio is water borne			
3. Tuberculosis(TB) It's caused by mycobacterium.	Mycobacterium tuberculosis that causes tuberculosis of the lungs spreads through the contaminated air. Mycobacterium which causes TB of the alimentary canal and the Skeleton spreads through un boiled milk from infected cows N.B: it is air borne	• Pain in bones, joints and backache • Persistent fever • Coughing and spitting with blood stain • Prolonged cough • Loss of body weight • Pain in bones, joints and backach N.B: Bacteria were first discovered by Robert Koch in 1882	• Isolate the infected ones • Immunize with **BCG** vaccine injected on the right upper hand at birth. • Treat the infected per in the recognized hospital. NB. This vaccine is given at birth because the newly born baby is not born with immunity against TB
4. <u>Tetanus</u> It is caused by bacteria found in soil.	It enters into the body through fresh cuts and wounds. In newly born babies, it can enter through the umblical cord if it is cut with a dirty razor blade	• Stiff body muscles • Spasms when touched • The baby stops sucking the mother's breast	• Immunize using three doses of **DPT** vaccine starting at 6 months • Give TT vaccine to girls and women between age of 14 to 45 years to prevent catching tetanus • Give all pregnant women TT vaccine that gives their babies maternal immunity
Why TT vaccine is given to girls and women between 14-45 years • To prevent their babies from catching tetanus during birth **Why pregnant women are given TT vaccine** • To prevent them from catching tetanus.			
5. <u>Diphtheria</u> Its caused by a bacteria	Spreads through contaminated air borne	• Sore throat • Swollen neck • Difficulty in breathing • convulsions	• Immunize using DPT vaccine injected on the left upper thigh.
6. <u>Whooping cough</u> It's also called pertussis Its caused by bacteria	• It spread through contaminated air **N.B**: Air borne	• Coughing that lead to vomiting • Gasp for breath • Running nose	• Immunization using DPT vaccine injected on the left upper thigh. NB. This vaccine is called triple vaccine because it prevents three diseases Diphtheria, tetanus, whooping cough (pertussis)

LESSON 29

IMMUNIZATION SITE SCHEDULE

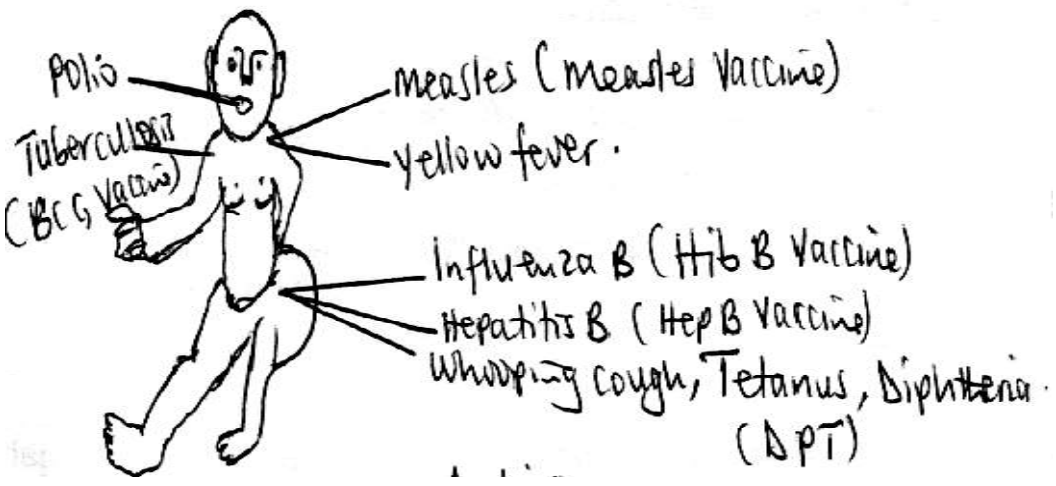
Age	Vaccine	Disease	Mode of Administration
At birth	BCG	Tuberculosis	Inject on the right upper arm
	Polio Vaccine	Polio	Drops in the mouth
6 weeks	DPT vaccine	Diphtheria, Tetanus, pertusis or whooping cough	Inject on the left upper thigh.
	Polio Vaccine PCV	Polio pneumonia	Drops in the mouth Injection on right upper
10 weeks	DPT vaccine	Dipheria, tetanus Whooping cough	*Injection on the left upper thigh*
	Polio Vaccine PCV vaccine	Polio pneumonia	Drops in the mouth Injection on right upper
14 weeks	DPT vaccine	Diphheria Pertussis Tetanus	Injection on the left thigh
	Polio Vccine PCV vaccine	Polio pneumonia	Drops in the mouth Injection on right upper
9 months	Measles vaccine	Measles	Injection on the left upper arm

PCV – Pneumococcal vaccine

Rotavirus vaccine is given to control diarrhea

Why is Immunization done at different age and sites

Structure of a baby showing immunization sites



Other immunisable diseases

i. Cholera
ii. Meningitis

iii. Yellow fever
iv. Rabis
v. Typhoid
vi. German measles (Rubella)

Exercise

1. Why is DPT called a Triple vaccine?
2. Why is Tuberculosis immunized against at birth?
3. Which vaccine is given on right upper thigh?
4. How does measles spread from one person to another?
5. Name one immunisable waterborne disease.
6. Besides the childhood immunisable diseases, name two other diseases that can be immunized.
7. Write in full
    a. DPT
    b. PCV
    c. Hib B
    d. Hep B

LESSON 30 AND 31

A CHILD HEALTH CARD

The document given to the baby at birth to monitor its health and growth.

Types of information a child Health Card

i. Health information
ii. Growth information

Information in a child Health Card

i. Child's name
ii. Father's name
iii. Mother's name
iv. Date of birth
v. Place of residence
vi. Diseases immunized and their schedules

Importance of a Child Health Card

i. Remind parents on the next date of immunization (To parents)
ii. Helps a doctor to monitor the growth of a child. (To a health worker)
iii. Helps a doctor to know which vaccine has been given. (To a health worker)

UNEPI

Uganda National Expanded Programme on Immunizaton.

Importance of UNEPI

i. It organizes immunization days

NIDs

i. National Immunization Days

Roles of an individual immunization

i. Informs and reminds others on immunization
ii. Tells others the importance of immunization
iii. Takes children for immunization

Roles of a family in immunization

i. It ensures that all members are immunized

Roles of a community in immunization

i. Organizes immunization seminars
ii. Organizes immunization centres

Places where immunization is carried out

i. Clinics
ii. Health centres
iii. Schools
iv. Hospitals
v. Army barracks

Ways people get information about immunization

i. Talk shows on radios and T.V stations
ii. Seminars
iii. Role play and drama
iv. Workshops

Importance of immunization

i. Prevents childhood immunizable diseases
ii. Boosts the immunity of the body
iii. Reduces high infant mortality rate

Exercise

1. Why is immunization free of charge?
2. How can children get involved in immunization?
3. How is a child Health Card useful to the school?
4. Write NIDs in full
5. How can the government sensitize people about immunization?

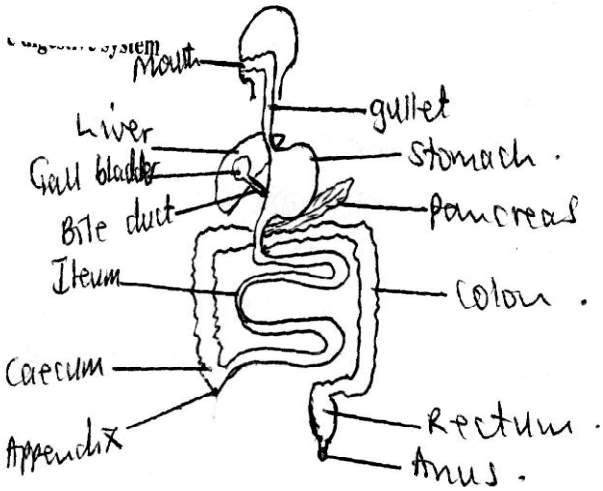
Topical test

LESSON 32

THE DIGESTIVE SYSTEM

This is a group of organs that help to break down food into its simplest form.

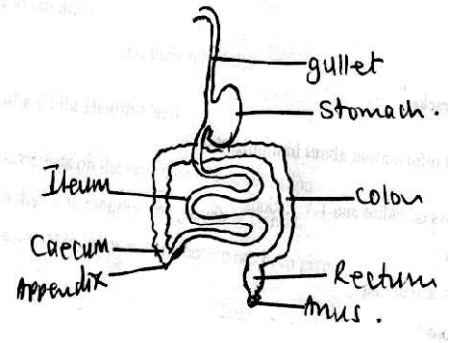
Parts of the digestive system



e mouth to the anus.

ii. It is roughly 10m / 30ft long

Parts of alimentary canal



FUNCTIONS OF THE PARTS OF THE DIGESTIVE SYSTEM.

1. Mouth. Is where digestion of food starts from.
2. Epiglotics. This prevents food from entering the trachea (wind pipe)
3. Gullet (oesophogus) is the passage of food to the stomach.
4. Stomach -Stores food
   -Produces hydrochloric acid which aids enzymes to function well.
   -Absorbs alcohol, salts and simple sugars
5. Pancreas. Produces pancreatic juice.

6. Pancreatic juice .this contains enzymes that complete the digestion of carbohydrates that was not digested in the mouth.
7. Duodenum. Receives bile through the bile duct.
8. Liver – this produces bile juice.
9. Gall bladder – This stores bile juice.
10. Bile. Contains bile salts that break down fats into tiny droplets for easy digestion. (muenjulsityfatsn of fats)
11. Colon . Absorbs water
12. Saliva- Softens food and moistens it.
13. Ileum - Its where digested food is absorbed into the body.
    - Is where digestion of food ends
14. Anus - Is where undigested food as faeces passes out of the body .
15. Rectum- It stores undigested food asfaeces before is passed out as faeces

N.B:

1. Food absorption. Is the process by which digested dissolved food substances enters into the blood stream. It takes place in the ileum .
2. Peristalsis. Refers to the wave like movement of food through the alimentary canal.
3. The longer the undigested food stays in the rectum, the harder it becomes.

Exercise

1. State the role of teeth during digestion.
2. How is the epiglottis useful during eating food?
3. Name the useless part of digestive system.
4. State the role of the following parts of the digestive system
   a. Ileum
   b. Colon
5. By what process does food move along the alimentary canal?

LESSON 33

Digestion of food This sis the process by which food is broken down into soluble substance.

Note

i. The process of digestion takes place in the alimentary canal.
ii. The digestion of food starts from the mouth and ends in the ileum.

Types of digestion

i. Mechanical digestion
ii. Chemical digestion

Mechanical digestion - This is the physical break down of food in the alimentary canel.

Note

i. It takes place in the mouth

Chemical digestion - This is the type of digestion where enzymes are involved to break down food.

N.B; It takes place throughout the alimentary canal

Enzymes - These are chemicals that speed up the digestion of food.

Types of enzymes

i. Amylases – Act or carbohydrates (glucose
ii. Lipases – Act on fats
iii. Proteinases – Act on proteins

Characteristics of enzymes

i. They are made of proteins
ii. They are destroyed by too much heat
iii. They act on only one type of food
iv. They form the same end products
v. They act best within a narrow temperature range

Exercise

1. How is bile useful during food digestion?
2. State the duty of enzymes during food digestion.
3. What are enzymes?
4. Which material is absorbed from the stomach.

LESSON 34 AND 35

i. Description of digestion in each part of the alimentary canal
ii. Digestion in the mouth
iii. Components of the mouth and their uses

The teeth

i. Breaks down food into smaller particles

The tongue

i. Rolls chewed food into a bolus
ii. Tastes chewed food
iii. Mixes chewed food with saliva

Saliva (The digestive juice produced by the salivary gland)

i. Softens chewed food
ii. Cools chewed food
iii. Lubricates chewed food for easy swallowing
i) Contains salivary amylase or ptyalin enzyme which digests cooked starch into maltose

Epiglottis

i. Prevents food from entering the wind pipe (trachea)

Note

i) Peristalsis starts from the gullet and occurs throughout the alimentary canal.
ii. Peristalsis is the wave like movement of food through the alimentary canal.

Digestion in the stomach

Component of stomach

i) Gastric juice (The digestive juice produced by the walls of the stomach)

Hydrochloric acid

iii. It kills germs that come along with food.
iv. It provides best conditions for enzymes to act on food.

Note

i) Gastric juice contains Rennin and Pepsin enzymes.

Roles of each enzyme in the stomach

i) Rennin

a. It clots milk proteins in the stomachs of young children.

ii) Pepsin

a. It digests proteins into peptides

Roles of the stomach

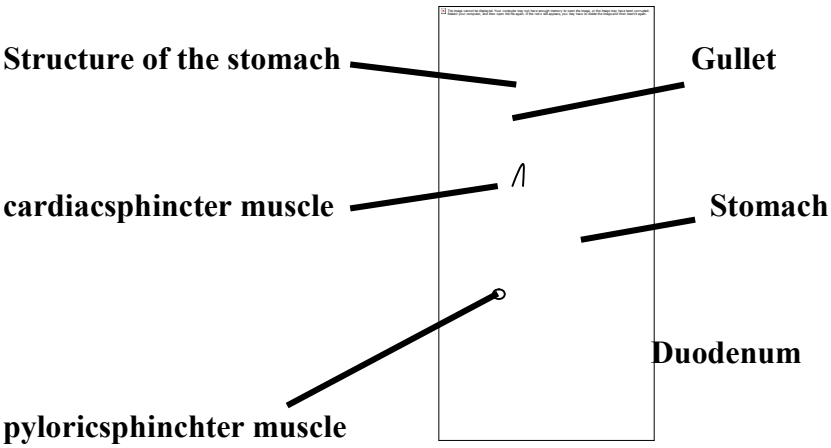
i) It stores food for a short time

ii) It is where digestion of proteins takes place

iii) It is where absorption of alcohol, salts and simple sugars take place.

Note

i) Chyme is the food mixed with gastric juice in the stomach by the action of chyming.



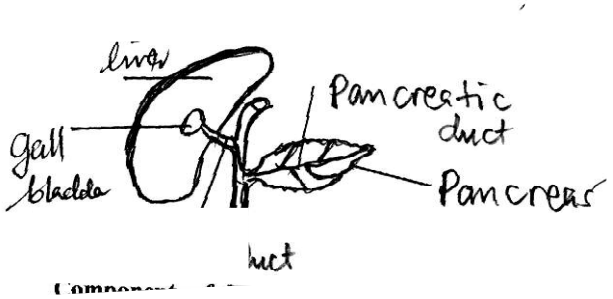
Note

ii) Pyloricsphinchter muscle keeps the lower end of the stomach closed.

iii) It also allows little chyme to the duodenum

LESSON 36

Digestion in the duodenum



Components of the duodenum

i) The duodenum is the first or upper part of the small intestine
ii) It is u shaped and 25cm long
iii) The duodenum receives bile through the bile duct
iv) The gall bladder stores bile
v) Bile contains bile salts which break down (emulsify) fats into smaller droplets.

Note

i) Emulsification – Is the process by which fats are broken down into smaller droplets.
ii) The pancreas produces pancreatic juice (digestive juice in the duodenum)
iii) The pancreatic juice contain three enzyme
   a. amylace – breaks undigested starch in the mouth into maltose
   b. Lipase - breaks fats into fatty acid and glycerol
   c. Trypsin – breaks proteins into amino acids

Other uses of the liver

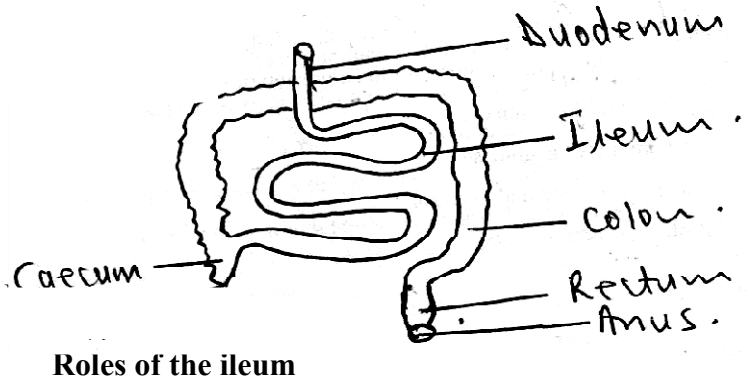
i) It store vitamins A,D, E and K
ii) It controls blood sugar
iii) Produces bile
iv) Generates heat
v) Makes harmful subsistence in food harmless

Diseases of the liver

i) Hepatitis
ii) Liver cirrhosis
iii) Liver cancer

LESSON 37

Digestion in the ileum



Roles of the ileum

i) It is where digestion of food ends
ii) It is where absorption of food takes place

Note

i) Ileum is both the digestive and absorptive organ in the alimentary canal.
ii) The ileum uses the villi to absorb digested food into the body.
iii) Villi are the finger like structures that cover the walls of the ileum.

Adaptations of the ileum for absorption of digested food

i) It has the Villi which increase the large surface area for absorption of digested food
ii) It is long enough for proper absorption of digested food.
iii) It has thin walls for proper diffusion of food.

Note: Diffusion is the movement of molecules from a high concentrated area to a low one.

LESSON 37

The digestive juice in the ileum

i) The walls of the small intestine produce intestinal juice called successentericus
ii) Succusentericus contains five enzymes
   a. Maltase – completes the digestion of maltose to glucose
   b. Lactase – completes the digestion of lactose to glucose
   c. Sucrase – completes the digestion of sucrose to glucose
   d. Lipase – completes the digestion of fats to fatty acids and glycerol.
   e. Peptidase (erepsin) – completes the digestion of proteins to amino acids
iii) The end product of digestion of;
   a. Carbohydrates is glucose
   b. Fats is fatty acids and glycerol
   c. Proteins is amino acids

The large intestine

The upper part of the large intestine is the colon while the lower part is the rectum.

Roles of each component of the large intestine

i) Colon - Where absorption of water takes place
ii) Rectum – it stores undigested food before it is passed out as faeces.
iii) Anus – it egests faeces

Exercise

1. What are enzymes?
2. Name two characteristics of enzymes.
3. Name the materials absorbed from the following
   a. Colon
   b. Stomach
   c. Ileum
4. How is the tongue useful during digestion?
5. How is saliva useful during digestion?
6. State the end products for digestion of the following
   a. Carbohydrates
   b. Fats and oils
   c. proteins

LESSON 38

Processes involved in digestion

i. Ingestion – The process of taking in food into the alimentary canal through the mouth.
ii. Absorption – the process by which digested food is taken into the body.
iii. Assimilation – the process by which absorbed food enters into the body cells.
iv. Metabolism – the process by which absorbed food is used by the body.
v. Egestion – The process by which faeces are removed from the body.

Disorders of the digestive system

i. Indigestion
ii. Vomiting
iii. Intestinal obstruction
iv. Constipation

a) Constipation – This is the difficulty in passing out faeces

Diseases of the digestive system

i) Diarrhea
ii) Dysentery
iii) Peptic ulcers
iv) Appendicitis
v) Typhoid
vi) Cholera
vii) Worm

Causes of constipation

i) Lack of roughage in the diet.
ii) Shortage of water in the body

Control of constipation

i) Easting food rich in roughage
v. Drinking enough water

b) Indigestion – This is a situation where food fails to be properly digested.

Causes of indigestion

i) Failure to chew food properly

Control of indigestion

i) Chewing food properly

Intestinal obstruction

i) This is the a twisting of the intestine

Causes of intestinal obstruction

i) Poor posture

Control of intestinal obstruction

i) Having good posture

Ways of maintaining the proper working of the digestive system

i) Doing regular body physical exercises
ii) Proper chewing of food
iii) Eating food rich in roughage
iv) Drinking enough water
v) Regular eating of food

Exercise

1. How important is roughage in one's diet?
2. Name two diseases of the digestive system.
3. Name two disorders of the digestive system
4. Which enzyme clots milk proteins in the stomach of babies?
5. Name one enzyme found in the pancreatic juice.
6. Name one disease of the liver
7. List down two enzymes found in the succusentericuss juice
8. How is hydrochloric acid useful in the stomach?
9. How are the following useful during digestion?