



SIMPLIFIED NOTES OF PRIMARY SIX-TERM TWO SCIENCE.

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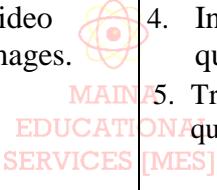
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CONTENT BREAKDOWN FOR PRIMARY SIX SCIENCE –TERM TWO 2024

WK	TOPICS	SUB-TOPICS/TEACHABLE UNITS.
	CLASSIFICATION OF PLANTS	<ol style="list-style-type: none"> 1. FLOWERING PLANTS 2. FLOWERING PLANTS 3. ROOTS 4. OSMOSIS 5. STEMS 6. PROPAGATION 7. LEAF VENATION 8. PHOTOSYNTHESIS 9. TRANSPIRATION 10. FLOWERS 11. POLLINATION 12. GERMINATION 13. TROPISM 14. FRUITS 15. SEED DISPERSAL
	ANIMAL HUSBANDRY	<ol style="list-style-type: none"> 1. CATTLE KEEPING 2. TYPES OF CATTLE 3. TYPES OF CATTLE BREEDS 4. BREEDING OF CATTLE 5. REPRODUCTION IN CATTLE 6. HEAT PERIOD 7. THE REPRODUCTIVE SYSTEM OF A COW AND A BULL 8. FERTILIZATION IN A COW 9. HEAD PERIOD 10. CALF MANAGEMENT ON A FARM 11. CASTRATION 12. MILKING 13. HOUSING AND FENCING 14. DIGESTIVE SYSTEM OF A COW 15. FEEDS 16. GRAZING 17. ANIMAL DISEASES AND PARASITES 18. FARM RECORDS 19. CATTLE PRODUCTS 20. FACTORS CONSIDERED WHEN STARTING A FARM
	RESOURCES IN OUR ENVIRONMENT	<ol style="list-style-type: none"> 1. RENEWABLE RESOURCES 2. NON RENEWABLE RESOURCES 3. ALLOYS 4. RESOURCES FROM PLANTS 5. RESOURCES FROM ANIMALS 6. CONSERVING RESOURCES 7. ENVIRONMENTAL DEGRADATION 8. DEVEGETATION 9. POLLUTION 10. REDUCTION, REUSING, RECYCLING, RETURNING

		AND REFUSING
	RESPIRATORY SYSTEM	1. BREATHING 2. RESPIRATORY ORGAN 3. FUNCTIONS OF THE DIFFERENT PARTS OF THE RESPIRATORY ORGAN 4. GASEOUS EXCHANGE IN THE ALVEOLI 5. COMPOSITION OF AIR BREATHED IN AND OUT 6. DISEASES WHICH ATTACK THE BREATHING SYSTEM

COMPETENCY TABLE

COMPETENCIES EMPHASIZED OR TO BE EMPHASIZED				
Methods to be used.	Skills, Morals and values	Teaching aids	Activity	Reference books
1. Guided discovery. 2. Group discussion. 3. Brainstorming 4. Questions and answers. 5. Nature walk 6. Self-discovery.	1. Effective communication. 2. Fluency . 3. Audibility . 4. Accurate Drawing. 5. Critical thinking. 6. Critical observation. 7. Appreciation 8. Self-awareness. 9. Reading skills. 10. Problem solving. 11. Question approach & answering techniques.	1. Diagrams on chats. 2. Real objects. 3. Text book images. 4. Video images.	1. Project work. 2. Research questions. 3. Discussion questions. 4. Individual questions.  5. Trial questions.	1. Kobta P.6 science. 2. Comprehensive P.6 science. 3. Sipro P.6 Science. 4. Fountain integrated P.6 science 5. Primary six curriculum. 6. MK integrated P.6 science. 7. Prime book six science.

WEEK ONE

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

TOPICS 5 : CLASSIFICATION OF PLANTS

Qn. What is classification as used in plants?

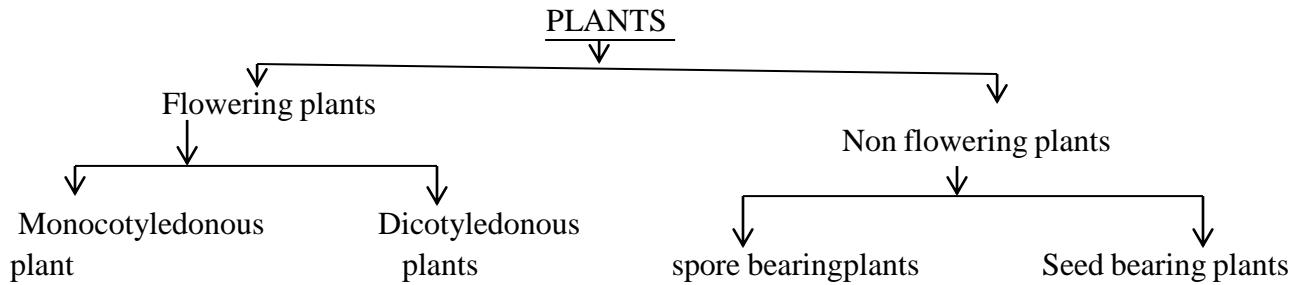
- Classification is the grouping of plants according to their particular characteristics.

Qn. Identify the two groups of plants.

- There are two groups of plants namely: -

 - Flowering plants
 - Non flowering plants

Qn. In space provided below, draw a chart showing classification of plants.



Qn. Mention any four characteristics of plants

- i. Plants make their own food.
- ii. Plants breathe through stomata.
- iii. Plants are multicellular organisms.
- iv. Plants contain chlorophyll.

Qn. What is chlorophyll?

Chlorophyll is a green coloring matter (pigment) found in plants.

Qn. Identify any two differences between plants and animals.

- i. Plants have chlorophyll while animals do not have chlorophyll.
- ii. Plants make their own food while animals do not make their own food.

Qn. Suggest any five similarities between plants and animals.

- i. Both are multicellular organisms.
- ii. Both reproduce.
- iii. Both breathe.
- iv. Both respond to stimuli.
- v. Both move.



Qn. Write down any four ways in which plants benefit from animals?

- i. Both get carbon dioxide from animals.
- ii. Animal provide manure to plants.
- iii. Animals help in seed dispersal.
- iv. Plants get care from animals.

Qn. Mention any four ways in which animals benefit from plants?

- i. Animals get food from plants.
- ii. Animals get oxygen from plants.
- iii. Animals get herbal medicine from plants.
- iv. Animals get shelter from plants.

Qn. State any seven importance of plants in the environment.

- i. Plants are source of food to animals.
- ii. Plants provide herbal medicine to animals.
- iii. Plants are source of fire wood and charcoal.
- iv. Plants provide timber.
- v. Plants provide poles for building houses.
- vi. Plants purify air.
- vii. Plants help in formation of rainfall.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
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NON-FLOWERING PLANNING**Qn. What are non-flowering plants?**

- Non flowering plants are plants that do not bear flowers.

Qn. Identify the two groups of non-flowering plants.

- Spore producing plants
- Conifers

(a) Spore producing plants**Qn. What are spore producing plants?**

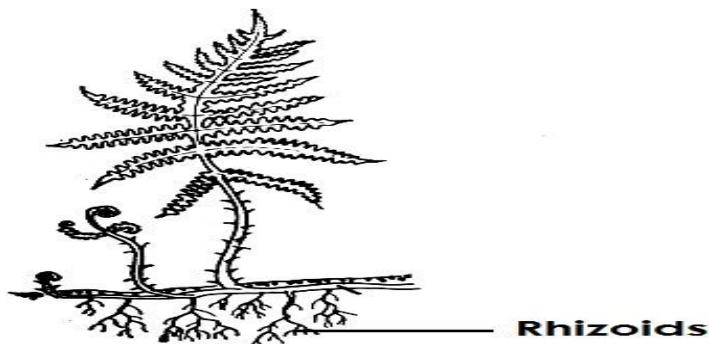
These are non-flowering plants which reproduce by means of spores.



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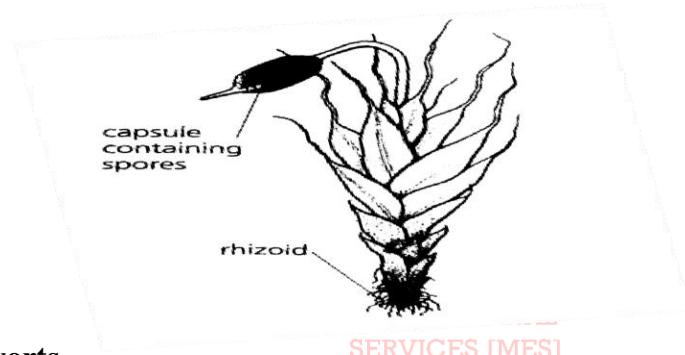
SERVICES



(ii) Mosses

- Mosses grow on house roofs, verandah, tree trunks, logs and soil in the damp and shady places.
- Mosses contain chlorophyll therefore they make their own food.
- Mosses reproduce by means of spores.

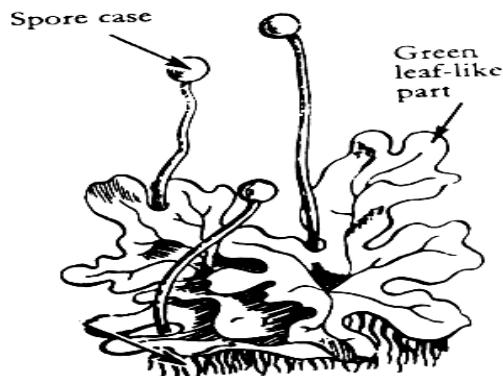
Qn. In the space provided below, draw a diagram showing a moss plant.



(iii) Liverworts

- Liverworts grow in moist places. Way up is down
- Liverworts contains chlorophyll therefore they make their own food.
- Liverworts reproduce by means of spores.

Qn. In the space below, draw the diagram of a liverwort.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
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LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
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(b) Coniferous plants

Qn. What are conifers?

- Conifers are plants that reproduce by means of seeds found in cones.

Qn. Name the structure in which seeds are produced in coniferous plants.

- Cones

Qn. Why are coniferous plants regarded as non-flowering plants yet they reproduce seeds?

- They do not bear flowers

Qn. In space below, draw a diagram showing cones.



Qn. What name is given to male and female cones of a conifer?

- i. Male – staminate
- ii. Female- Ovulate.

Qn. Mention any nine examples of conifers

- | | |
|--------------|----------------|
| i. Fir | vi. Pines |
| ii. Cycads | vii. Ginkgo |
| iii. Cypress | i. Spruce |
| iv. Cedar | ii. Eucalyptus |
| v. Podo | |

Qn. Write down any one economics importance of conifers

- Conifers provide soft wood timber used for making papers, matchsticks, ceiling boards

Qn. Apart from the economic importance, mention any other four importance of conifers

- i. Some conifers provide people with herbal medicine.
- ii. Some conifers provide people with shade.
- iii. Some conifers are planted to act as live fences.
- iv. Some conifers are planted to act as wind breaks.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS	TIME			TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	
						To	

FLOWERING PLANTS**Qn. What are flowering plants?**

Flowering plants are plants that bear flowers.

Qn. How do flowering plants reproduce?

- By means of seeds.

Qn. Identify the two groups of flowering plants.

- Monocotyledonous plants
- Dicotyledonous plants

**Qn. Suggest any seven examples of dicotyledonous plants.**

- | | | |
|----------------|-------------------------------|--------------|
| i. Beans | EDUCATIONAL
SERVICES [MES] | Mangoes |
| ii. Soya beans | Way up is doo | Avocado |
| iii. Cow peas | vii. | Bambara etc. |
| iv. Groundnuts | | |

Note:

- Most dicots are legumes.

Qn. Write down any four characteristics of dicotyledonous plants.

- Dicotyledonous bear seeds with two cotyledons.
- Dicotyledonous undergo epigeal germination.
- Dicotyledonous have a network leaf venation.
- Dicotyledonous have tap root system.

(a). Monocotyledonous plants**Qn. What are monocots?**

These are plants that bear seeds with one cotyledon. Examples of monocotyledonous plants

- | | |
|--------------|--------------|
| i. Maize | vi. Rye |
| ii. Wheat | vii. Oats |
| iii. Sorghum | viii. Millet |
| iv. Rice | |
| v. Barley | |

Note:

-Most of the monocots are cereals

Qn. What is a cereal crop?

A cereal crop is a crop that bears small seeds called grains.

Qn. Mention any four characteristics of monocotyledonous plants.

- i. They bear seeds with one cotyledon.
- ii. Monocots undergo hypogea germination.
- iii. Monocots have a parallel leaf venation.
- iv. Monocots have fibrous root system.

GENERAL EVALUATION

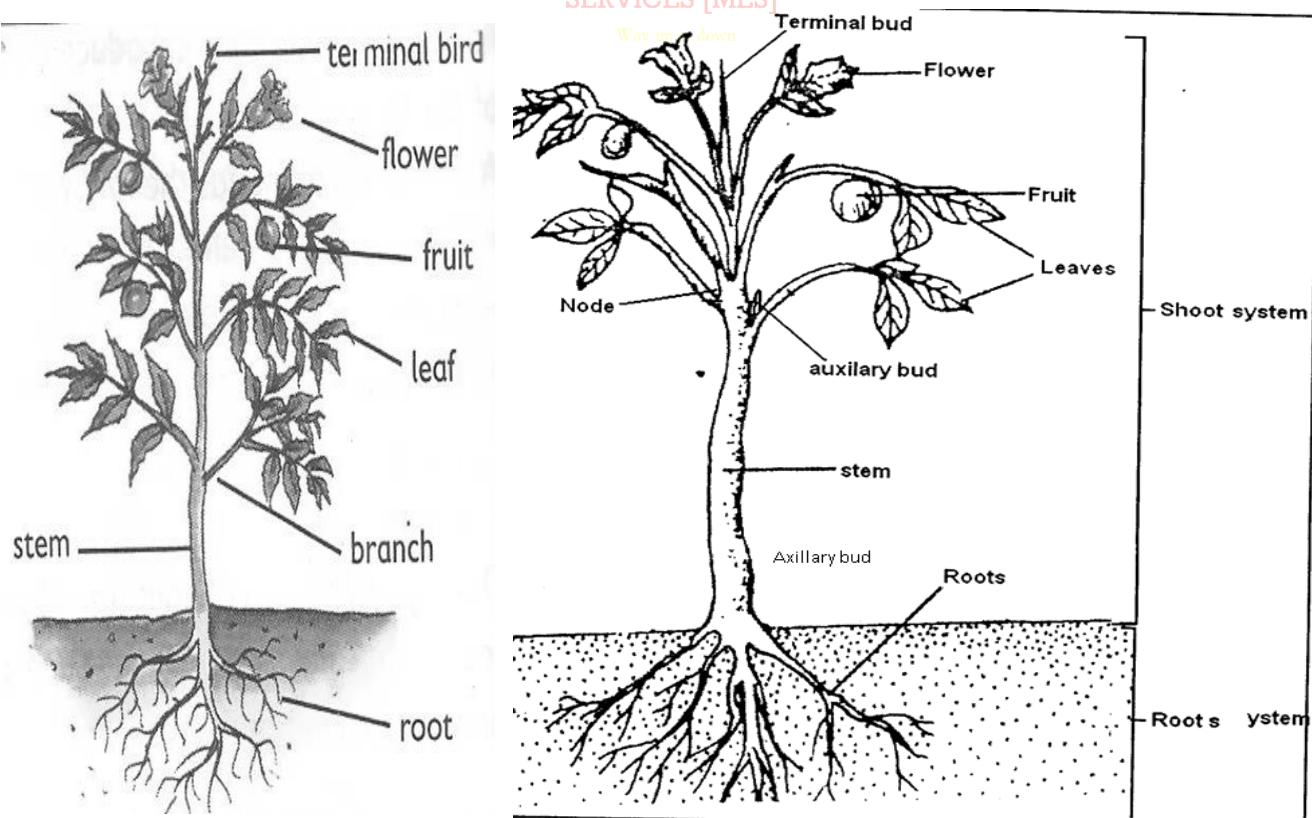
SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. In the space provided below, draw a structure of a flowering plant.

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Qn. Identify the two systems of the flowering plant.

- i. Shoot system
- ii. Root system

Root system

Qn. What is a root system?

Root system is the part of a plant that grows underground.

Qn. Mention the two types of root system.

There are two types of root system namely:-

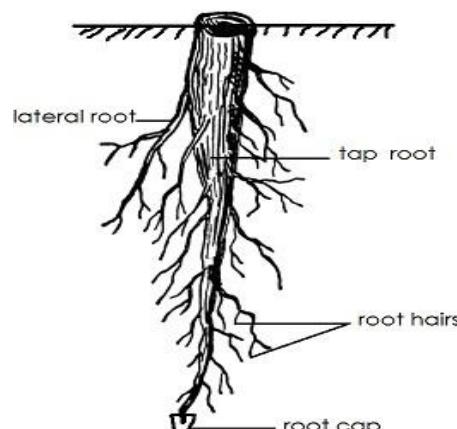
- i. Tap root system
- ii. Fibrous root system

(a) Tap root system

Qn. What is a tap root system?

Tap root system is a root system that grows directly from the radicle.

Qn. In the space provided below, draw the structure of a tap root system.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

WEEK TWO

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. Identify the functions of the following parts of the tap root system:-

- (i) **Main tap root**
 - Holds the plant firmly in the soil.
- (ii) **Lateral roots**

- Give support to the plant in the soil.

(iii) Root hairs

- Absorb water and mineral salt from the soil.

(iv) Root cap

- The root cap protects the growing root tip from damage.

Qn. By what process do root hairs absorb water and mineral salts from the soil?

- Root hairs absorb water and minerals salts from the soil by a process called osmosis.

Qn. What is osmosis?

Osmosis is the movement of water molecules from a region of low salt concentration to a region of high salt concentration through a semi permeable membrane.

Qn. How is osmosis useful to plants?

- Osmosis helps plants to absorb water and minerals salts from the soil.

Qn. By what process does water move from the roots up to the leaves of a plant?

- By capillary attraction / by capillarity

Qn. By which process is dissolved food substances able to move from the leaves to the roots?

-Translocation

Qn. Mention any eight examples of plants with tap system

- | | |
|-----------------|------------------|
| i. Beans | v. Ground nuts |
| ii. Coffee | vi. Cow peas |
| iii. Soya beans | vii. Mangoes |
| iv. Avocado | viii. Jackfruits |



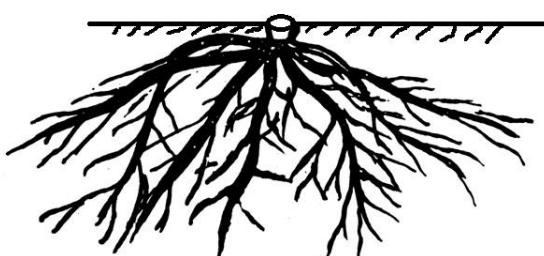
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(b) Fibrous root system

Qn. What is fibrous root system?

- Fibrous root system is the system of a plant that grows from one point at the base of the stem.

Qn. In the space provided below, draw a diagram showing fibrous roots.



Qn. Mention any eight examples of plants with fibrous root system.

- | | |
|-------------|-------------|
| i. Maize | v. Wheat |
| ii. Sorghum | vi. Rye |
| iii. Rice | vii. Barley |
| iv. Millet | viii. Oats |

Qn. List down nine types of roots you know.

- | | |
|--------------------|---------------------|
| i. Tap roots | v. Adventitious |
| ii. Prop roots | vi. Breathing roots |
| iii. Fibrous roots | vii. Storage |
| iv. Stilt roots | |

viii. Clasping roots

ix. Buttress roots

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
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(i) Buttress roots

Qn. What are buttress roots?

Buttress roots are roots that enlarge at the base of a plant.

Qn. Identify the importance of buttress roots to a plant.

- Buttress roots give extra support to the plant.

Qn. In the space provided below, draw a diagram showing buttress roots.



Qn. Mention any six examples of plants with buttress roots.

- | | |
|-----------------|-----------------|
| i. Mahogany | iv. Silk cotton |
| ii. Jack fruit | v. Mvule |
| iii. Ficus tree | vi. Celtis |

(ii) Stilt roots

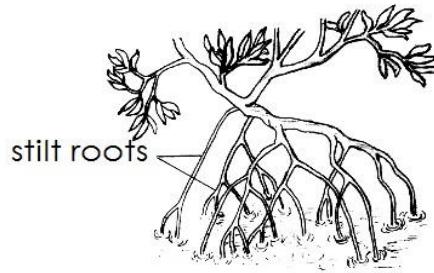
Qn. What are stilt roots?

- Stilt roots are roots that grow from the lateral branches on different branches.
- They give extra support to the plant.
- They are found on plants which grow in swamps.

Note:

Stilt roots are common in mangrove (Rhizophora)

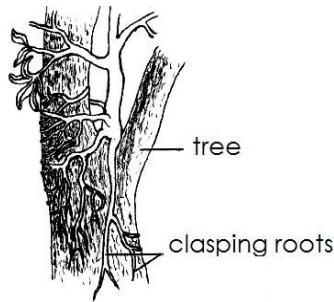
Qn. In the space below, draw a diagram showing stilt roots.



(iii) Clasping roots

- Clasping roots are commonly found in climbing plants.
- Clasping roots enable the plant to climb by growing round and clasping for support.

Qn. In the space provided below, draw a diagram showing clasping roots.



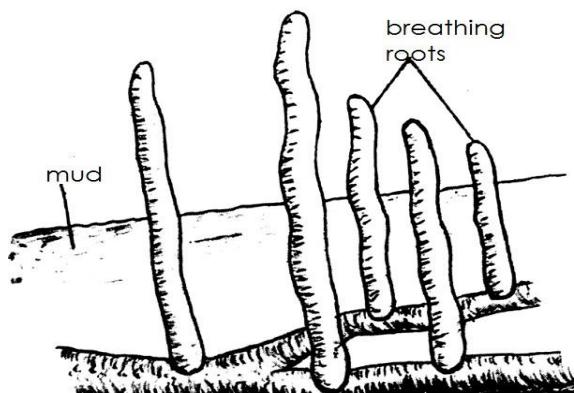
(iv) Breathing roots

Qn. What are breathing roots?



- Breathing roots are roots which grow upwards from soil and act as breathing organs.
- Breathing roots are common in plants in water logged areas.
- Breathing roots are common in black mangrove (Avicenna)

Qn. In the space provide below, draw a diagram showing breathing roots.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
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(v) Prop roots**Qn. What are prop roots?**

- Prop roots are roots that grow from the nodes of a stem.

Note:

- Prop roots mainly grow during the flowering stage in order to give extra support.

Qn. State the main function of prop roots.

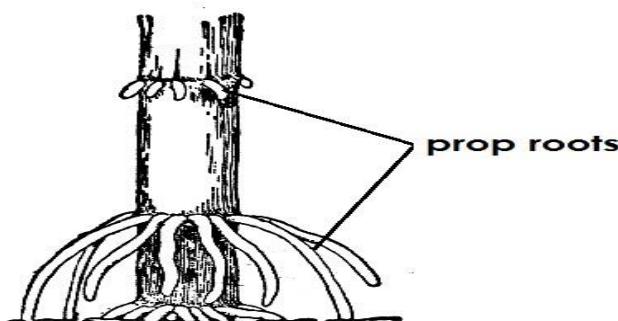
- Prop roots give extra support to a plant.

Qn. Mention any six examples of plants with prop roots.

- | | |
|---------------|------------|
| i. Maize | iv. Rice |
| ii. Sugarcane | v. Wheat |
| iii. Sorghum | vi. Barley |

Note:

- Prop roots are common with monocots.

Qn. In the space provided below, draw a diagram showing the prop roots.**(vi) Adventitious roots.****Qn. What are adventitious roots?**

- Adventitious roots are roots that grow from any other part of a plant other than the radicle.
- Adventitious roots are common with stem tubers, bulbs, rhizomes, corms.

(vii) Storage roots**Qn. What are storage roots?**

Storage roots are roots that store food.

Note:

- The food mainly stored by storage roots is called **starch**.
- Most storage roots are root tubers.

Qn. What are root tubers?

- Root system are plants that store their food in the swollen underground roots.

Qn. Mention any four examples of plants root tubers.

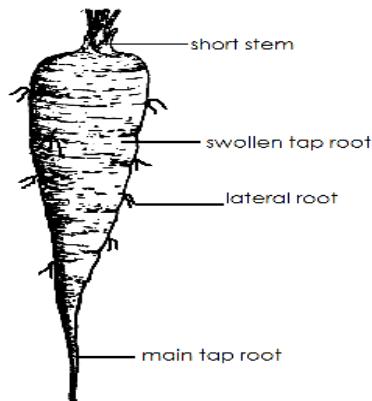
- i. Cassava
- ii. Carrots
- iii. Turnips

iv. Sweet potatoes

Qn. Give one reason why root tubers are swollen.

- Root tubers are swollen because they store food (starch)

Qn. In the space below, draw a well-labeled structure of a carrot



Qn. What type of root system does a carrot have?

- Tap root system

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
	MAINA EDUCATIONAL SERVICES [MES] Way up is down		

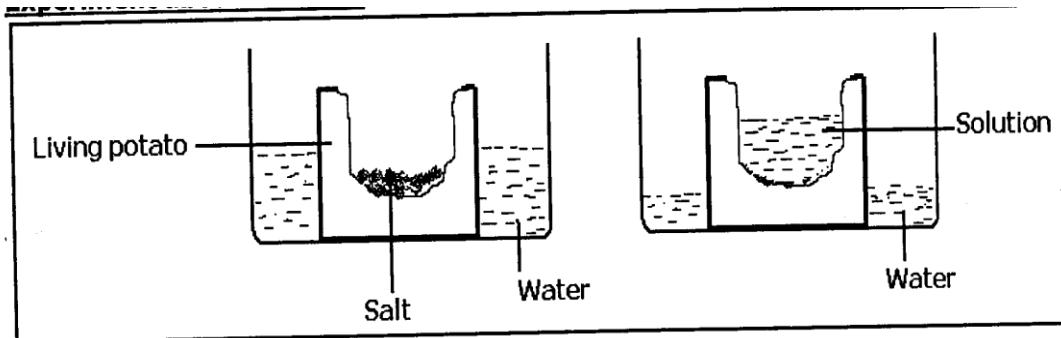
LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. Write down any nine function of roots to plants

- i. Roots hold a plant firmly in the soil.
- ii. Roots absorb water and mineral salts from the soil.
- iii. Some roots store food for the plant.
- iv. Some roots help a plant to breathe. Importance of roots to people / animals
- v. Some roots are source of food.
- vi. Some roots are used as herbal medicine.
- vii. Some roots are sold to get money.
- viii. Some roots are source of firewood.
- ix. Roots of legumes have root nodule which store nitrogen fixing bacteria that add nitrogen into soil.

Qn. Study the experiment below and use it to answer the questions that follow.



Qn. What is the experiment above about?

- Osmosis

Qn. What does the peeled potato act as?

- Semi permeable membrane

Qn. Why is sugar placed in the hole dug in the potato?

- To pull water from the basin

Qn. What does sugar act as in the experiment above?

- Sugar acts as an area of high salt concentration.

Qn. Why did the water level increase as shown in diagram B?

- Sugar pulled water from the basin. EDUCATIONAL SERVICES [MES]
- Water molecules moved from a region of low salt concentration to the region of high salt concentration.

SHOOT SYSTEM

Qn. What is a shoot system?

- The shoot system is the system of a flowering plant that grows above the ground.

Qn. Give any nine parts that make up the shoot system of a plant.

- | | |
|----------------|--------------------|
| i. Flower | vi. Axillary bud |
| ii. Node | vii. Branches |
| iii. Leaves | viii. Terminal bud |
| iv. Internodes | ix. Fruits |
| v. Stems | |

STEMS

Qn. What is a stem?

- A stem is the main long part of a plant from which leaves and flowers grow.

Qn. Briefly, write short notes on the following parts of the stem.

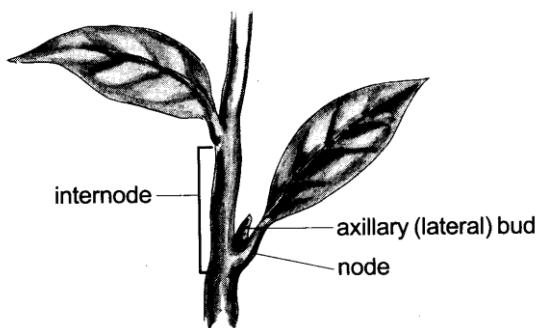
(i) Node

- A node is a part of the stem where the leaf is fixed.

(ii) Internodes

- Internodes is the distance between two nodes.

Qn. In the space provided below, draw a diagram showing the node and internodes.



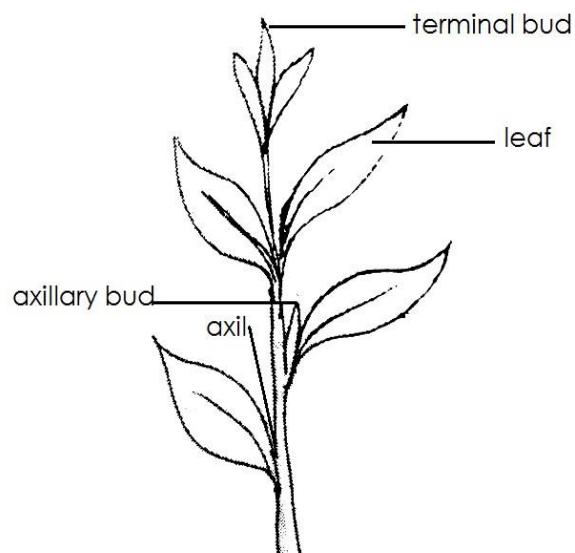
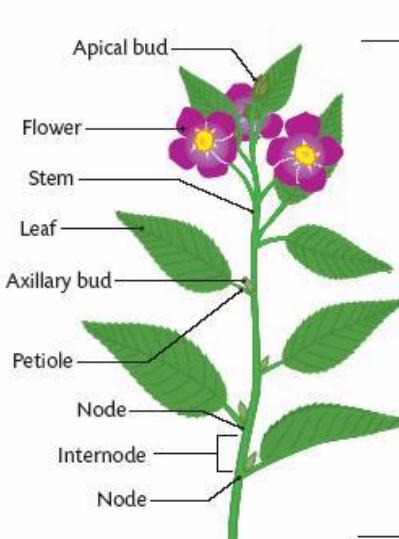
(iii) Terminal bud

- Terminal bud is the growing tip of a plant.

(v) Axillary bud

- An axillary is the bud that can develop into a fruit, flower branch etc.
- An axillary bud is located at the part a plant called axil.

Qn. In the space provided below, draw a diagram showing the axillary bud and axil.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

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			BOYS	GIRLS	TOTAL	From		
						To		

Qn. Mention any six uses of stems to plants.

- i. Some stems store food for the plant.
- ii. Some stems make food for the plant.
- iii. Some stems hold the flower and fruits in the upright position.
- iv. Stems hold flower for easy pollination.
- v. Some stem help in transpiration.
- vi. Stem hold leaves in position for easy trapping of sunlight.

Qn. Give any four uses of stems to people.

- i. Some stems are eaten as food.
- ii. Some stems provide herbal medicine.
- iii. Some stems provide us with timbers.
- iv. Some are source of wood fuel.

Qn. List down any four types of stems.

- i. Upright / erect stem
- ii. Underground stem
- iii. Climbing stem.
- iv. Creeping stem

Upright stems



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Qn. What is an upright stem?

- An upright stem is a stem that grow vertically or straight in space.

Qn. Mention any nine examples of plants with upright stems.

- | | |
|--------------|-----------------|
| i. Beans | vi. Guava |
| ii. Oranges | vii. Soya beans |
| iii. Mangoes | viii. Avocado |
| iv. Apples | ix. Jackfruit |
| v. Maize | |

Creeping stems

Qn. What are creeping stems?

- Creeping stems are stems that grow along the ground.

Qn. Mention any five examples of plants with creeping stems.

- i. Sweet potatoes
- ii. Watermelon
- iii. Pumpkin
- iv. Straw berry
- v. Morning glory

Qn. Give one reason why creeping stems are unable to climb trees.

- Creeping stems are unable to climb because they bear fruits that are heavy.

Climbing stems

Qn. What are climbing stems?

- Climbing stems are stems that are weak and cannot support themselves upright.

Qn. Why do some plants climb others?

- i. To get support.
- ii. To get enough sun light.

Qn. Suggest the three methods used by climbing plants to climb others.

- i. By clasping / twining.
- ii. By using tendrils.
- iii. By using hooks/thorns.

(i) Tendril

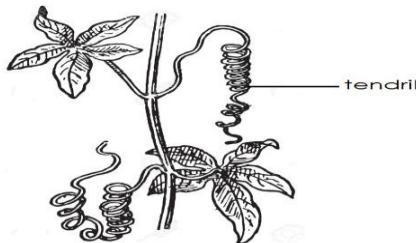
Qn. What is a tendril?

- A tendril is the thin coiling stem that develops from the lateral bud.

Qn. Identify the importance of a tendril to a plant.

- A tendril helps a plant to attach itself for the support.

Qn. In the space provided below, draw a diagram showing a tendril.



Qn. Write down any four examples of plants that use tendrils to climb others.

- i. Passion fruits
- ii. Beans
- iii. Peas
- iv. Cucumber

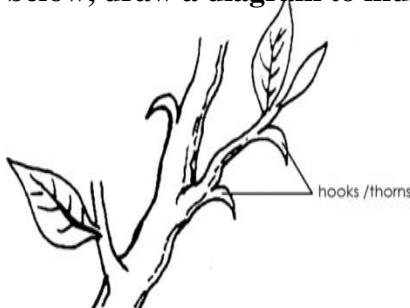
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Way up is down

(ii) Hooks/thorns

Qn. What are hooks/thorns?

- Hooks are downward pointing structures which prevent the climbing plant from slipping off the other plants.

Qn. In the space provided below, draw a diagram to illustrate the hook.



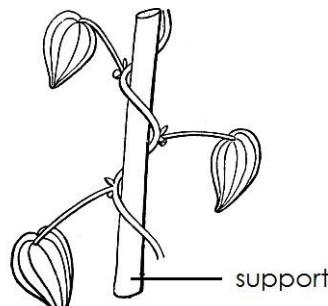
Qn. List any two examples of plants that used hooks to climb others.

- i. Rose flowers
- ii. Thorn apple

(iii) Clasping / twining

Qn. Why do some plants clasp/twin?

Plants twine or clasp their weak stems around to get support.



Qn. Mention any four examples of plants that climb others by twining.

- i. Morning glory
- ii. Some beans
- iii. Tomatoes
- iv. White yams

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
		 MAINA EDUCATIONAL SERVICES [MES] <small>Way up is down</small>	

WEEK THREE

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Underground stems

Qn. What are underground stems?

Underground stems are stems that store food.

Qn. What other name can be referred to underground stems?

Underground stem can also be called storage stems.

Qn. Identify the four groups of underground stems.

- i. Bulbs
- ii. Rhizomes
- iii. Corms
- iv. Stem tubers

(a) Stem tubers

Qn. What are stem tubers?

- Stem tubers are plants that store their food in swollen underground stems.

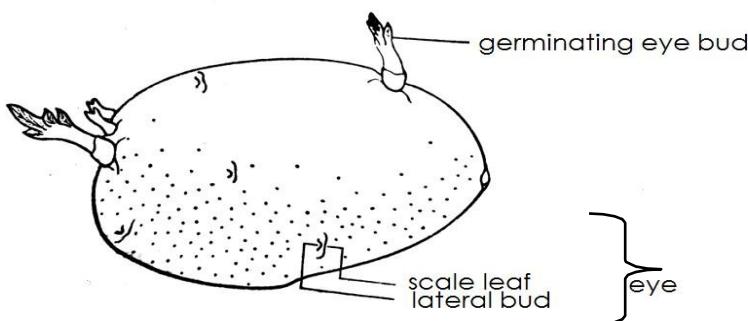
Qn. Write down any two characteristics of stem tubers.

- i. Stem tubers store the food in the swollen underground stems.
- ii. Stem tubers have eyes.

Qn. Mention any two examples of stem tubers.

- i. Irish potatoes
- ii. White yams

Qn. In the space below, draw a diagram showing an Irish potato.



Qn. Give the functions of the following parts of an Irish potato.

(i) Axillary potato

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- It develops into the shoot system.

(ii) Scale leaf

Way up is down

- Protect the axillary bud

Qn. What combined name/ scientific name is given to both axillary bud and scale leaf of the irish potato?

- The axillary bud and the scale leaf make up the eye.

Qn. How are stem tubers propagated?

- By planting stem tubers.

(b) Bulbs

Qn. What are bulbs?

- Bulbs are swollen underground stems with fleshy leaves.

Qn. Identify any three characteristics of bulbs.

- i. Bulbs store food in their fleshy leaves.
- ii. Bulbs have small stems and lateral bud.
- iii. Bulbs have adventitious roots.

Qn. Mention any three examples of bulbs.

- i. Onions
- ii. Garlic
- iii. Spider lily

Qn. How are bulbs propagated?

- i. By planting bulbs

- ii. By planting seeds

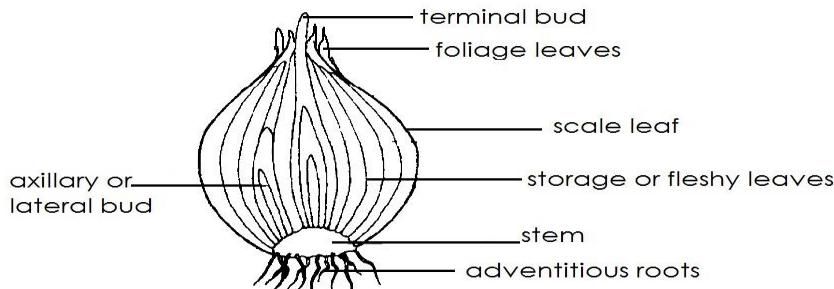
GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. In the space below, draw a diagram showing a bulb (onion).



Qn. Suggest the functions of each part of a bulb.

- (i) **Foliage leaves**
 - Foliage leaves make food for the bulb.
- (ii) **Fleshy or storage leaves**
 - They store food for the bulb.
- (iii) **Scale leaves**
 - Protect the inner parts of an onion.
- (iv) **Lateral bud**
 - It grows into a new plant.
- (vi) **Stems**
 - It holds the storage leaves.
- (vii) **Adventitious roots**
 - They absorb water and mineral salts from the soil.
- (c) **Rhizomes**

Qn. What are rhizomes?

- Rhizomes are horizontal underground stems that store food.

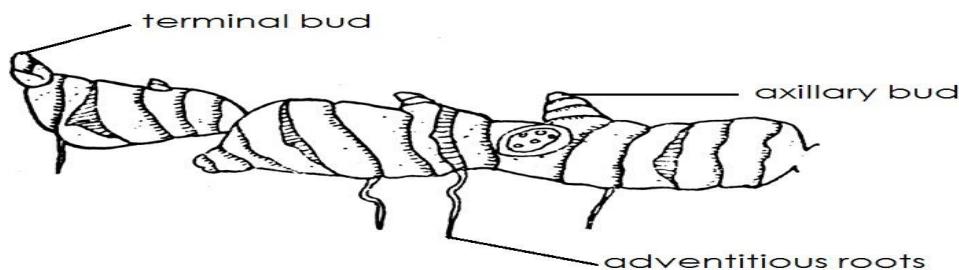
Qn. Give any four examples of rhizomes.

- i. Ginger
- ii. Cana lily
- iii. Turmeric
- iv. Zoyzia

Qn. How are rhizomes propagated?

- By planting rhizomes

Qn. In the space provided below, draw a diagram showing a rhizome.



(d) Corms

Qn. What is a corm?

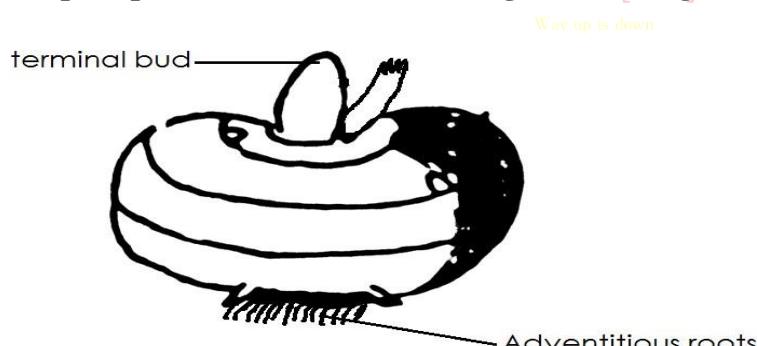
- A corm is a vertical swollen underground stem that stores food.

Qn. Give any three examples of corms.

- i. Cocoyam
- ii. Crocus
- iii. Gladiolus



Qn. In the space provided below, draw a diagram showing a corm.



Qn. How are corms propagated?

- By planting corms

GENERAL EVALUATION

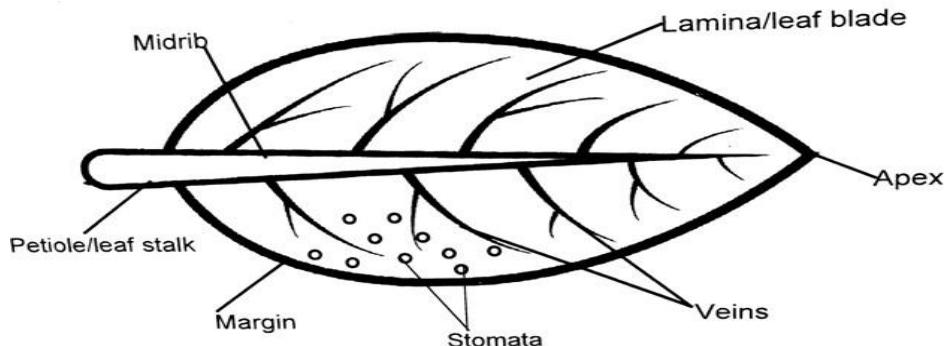
SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

LEAVES

Qn. In the space provided below, draw a diagram showing a leaf.



Qn. Mention the functions of each part of a leaf.

(i) **Leaf stalk**

- i. It holds the leaf on the branch or stem.
- ii. Supplies water from the stem to the leaf.

(ii) **Mid rib**

It transports water and mineral salts from the stalk to the leaf.

(iii) **Veins**

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way up is down

- i. Veins supply minerals salts and water to all parts of the leaf.
- ii. Veins transport manufactured food from all parts of the leaf to the midrib.

(iv) **Lamina / leaf blade**

- i. It is where photosynthesis take place.
- ii. The lamina helps in respiration.

(v) **Stomata**

- i. They are used for breathing
- ii. Stomata help in transpiration

Qn. Write down any five uses of leaves to plants.

- i. Leaves make food for the plant.
- ii. Some leaves store food for the plant.
- iii. Leaves help in transpiration process.
- iv. Leaves enables plants to breathe.
- v. Some leaves are used for propagation.

Qn. Write down any six uses of leaves to people.

- i. Some leaves are eaten as food.
- ii. Some leaves are source of herbal medicine.
- iii. Some leaves are used for mulching.
- iv. Some leaves are used for decoration.
- v. Some leaves are source of income.
- vi. Some leaves are used to make craft.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		
			BOYS	GIRLS	TOTAL	From	To	

Leaf venation

Qn. What is leaf venation?

- Leaf venation is the arrangement of veins in a leaf.

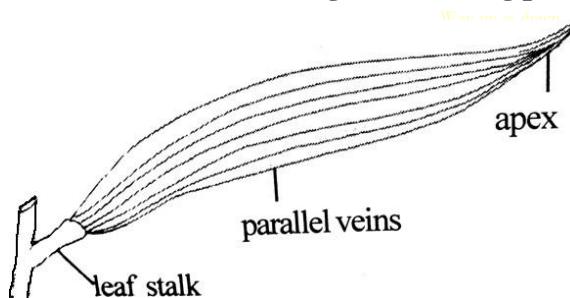
Qn. Identify the two types of leaf venation.

- Parallel leaf venation
- Network leaf venation

(a) Parallel leaf venation

- Parallel leaf venation is the type of venation where veins run from the stalk to the apex without crossing each other.

Qn. In the space left below, draw a diagram showing parallel leaf venation.



Qn. Mention any eight examples of plants with parallel leaf venation.

- | | |
|---------------|------------|
| i. Gram | v. Wheat |
| ii. Sorghum | vi. Barley |
| iii. Rice | vii. Rye |
| iv. Sugarcane | viii. Oats |

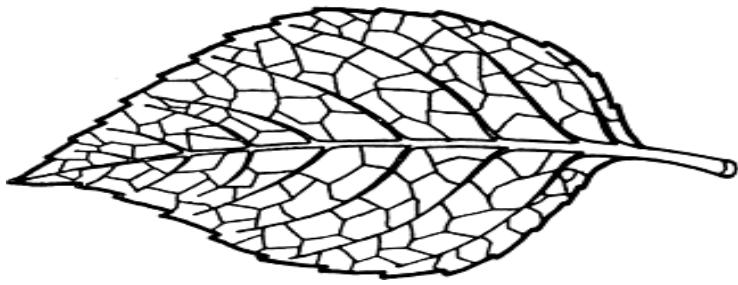
Note:

- Parallel leaf venation is common in monocots.

(b) Network leaf venation

- Network leaf venation is a type of venation where veins make something like a net in a leaf.

Qn. In the space provided below, draw a diagram showing network venation.



Qn. Write down any seven examples of plants with network leaf venation

- | | |
|----------------|----------------|
| i. Beans | v. Soya beans |
| ii. Avocado | vi. Groundnuts |
| iii. Peas | vii. Coffee |
| iv. Jackfruits | |

Types of leaves

Qn. Identify the two types of leaves you know.

- i. Simple leaves
- ii. Compound leaves

(a) Simple leaves

Qn. What is a simple leaf?

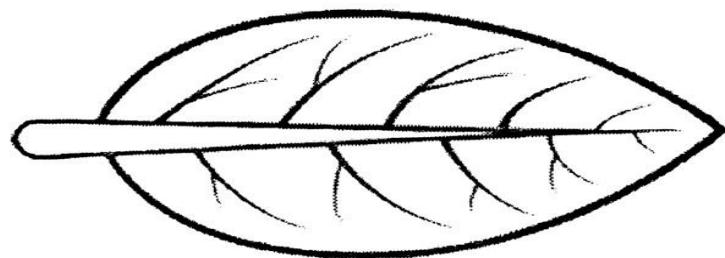
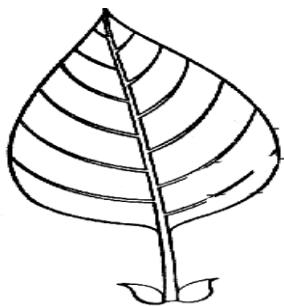
- A simple leaf is a type of leaf with one leaflet on the leaf stalk.

Qn. Mention the six types of simple leaves you know.

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Way up is down
- i. Simple entire leaf
 - ii. Simple lobed
 - iii. Simple serrated leaf
 - iv. Simple divided entire
 - v. Simple palmate
 - vi. Monocotyledonous leaf (simple lanceolate)

Qn. In the space provided below, draw different diagrams showing different simple leaves.

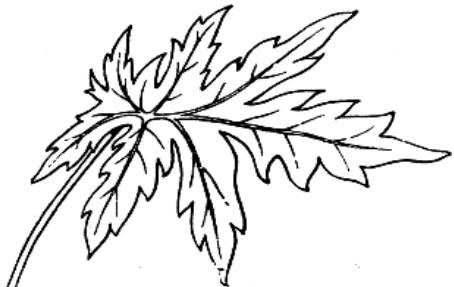
(a) Simple entire leaf



Qn. Identify any four examples of plants with simple entire leaves.

- i. Mangoes
- ii. Jackfruit

- iii. Avocado
 - iv. Oranges
- (b) Simple palmate leaf



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

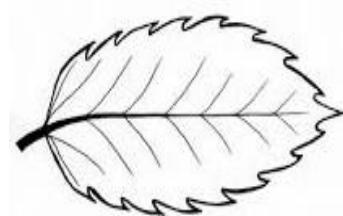
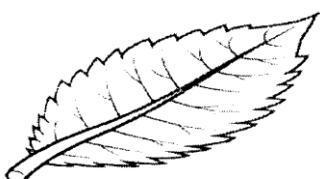
LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
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Qn. Write down any two examples of plants with simple palmate leaves.

- i. Pawpaw
 - ii. Castor oil
- (c) Simple serrated leaf



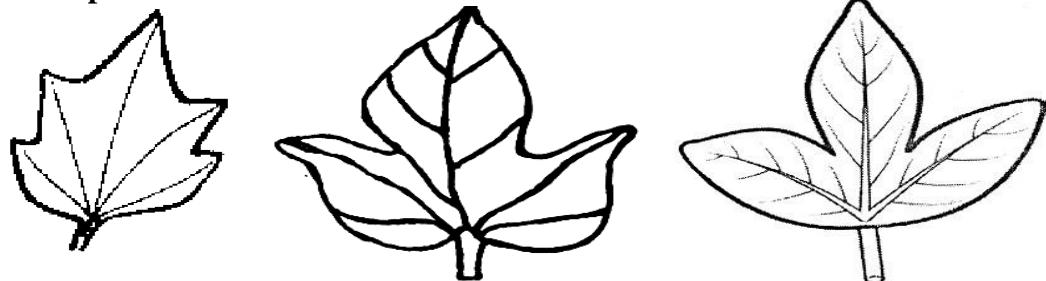
Qn. Give any two examples of plants with simple serrated leaves.

- i. Black jack
- ii. Tick berry plant

(d) Simple lobed leaf



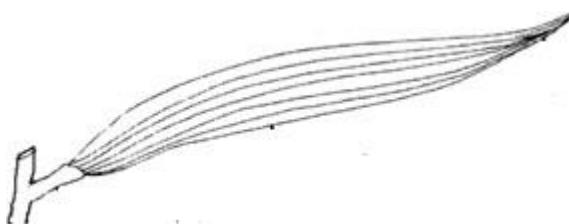
(e) Simple divided entire leaf



Qn. Give any one examples of plants with simple divided entire leaves.

Passion fruit

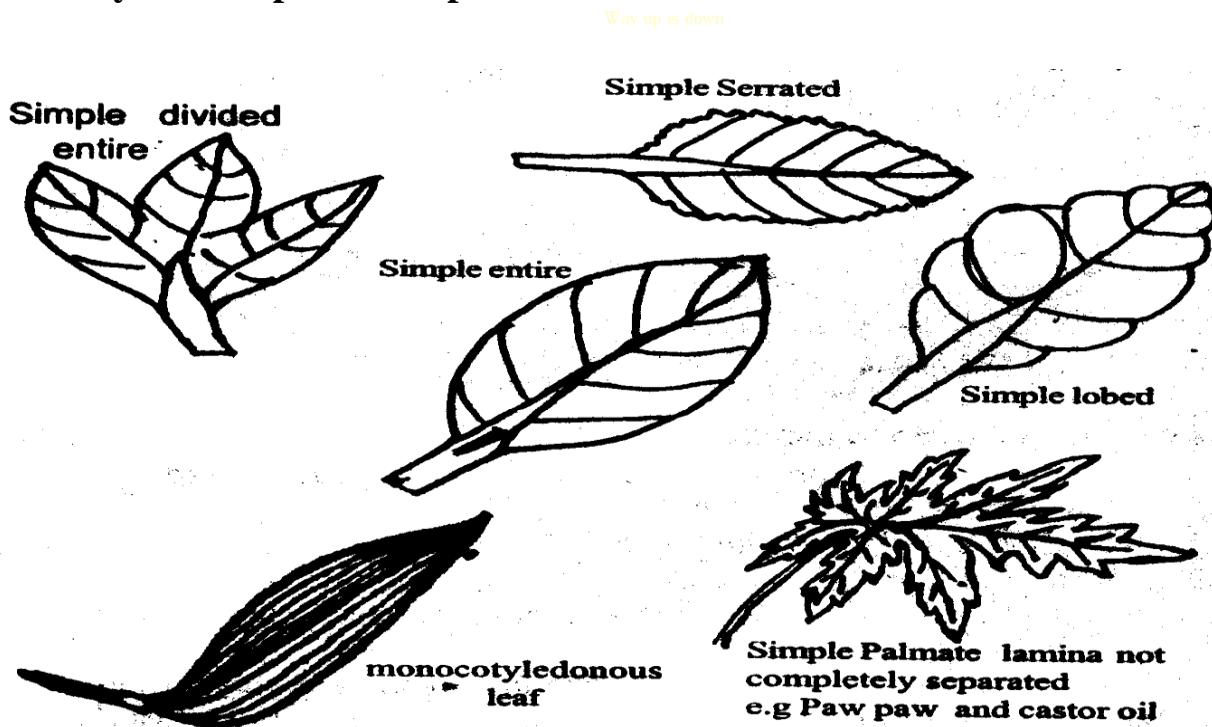
(f) Monocotyledonous leaf (simple lanceolate)



Qn. Give any six examples of plants with a monocotyledonous leaf.

- | | | |
|-------------|-----------------------------------|---------------|
| i. Maize | MAIN A
EDUCATIONAL
SERVICES | iv. Rice |
| ii. Sorghum | | v. Wheat |
| iii. Millet | | vi. Sugarcane |

Summary of examples of simple leaves are as below:-



b) Compound leaves.

Qn. What are compound leaves?

- Compound leaves are leaves with many leaflets on a leaf stalk.

Qn. Give any six examples of plants with compound leaves.

- Cassava
- Jacaranda
- Beans
- Soya beans
- Ground nuts
- Acacia trees

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

WEEK FOUR**LESSON ONE**

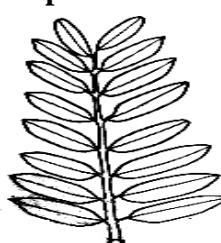
DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

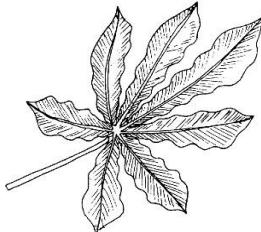
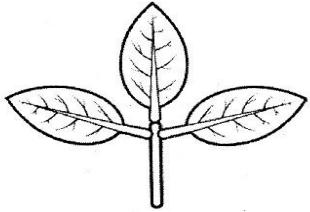
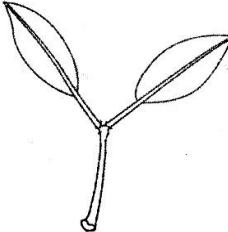
SERVICES [MES]

Qn. Mention the type / examples of compound leaves.

- Compound trifoliate leaf.
- Compound bi-foliate leaf.
- Compound pinnate leaf.
- Compound bi-pinnate leaf.
- Compound digitate.

Qn. In the space provided below, draw the diagrams showing different compound leaves

EXAMPLES OF COMPOUND LEAVES	EXAMPLES OF PLANTS WITH SUCH A LEAF
1. Compound pinnate leaf 	Acacia tree

2. Compound bipinnate 	Jacaranda
3. Compound digitate 	cassava
4. Compound trifoliate leaf 	i. Beans ii. Soya beans iii. peas
5. Compound bifoliate 	Bryophyllum

Qn. Identify the three important processes that take place in a leaf.

- i. Photosynthesis
- ii. Transpiration
- iii. Breathing

Photosynthesis

Qn. What is photosynthesis?

- Photosynthesis is the process by which plants make their own food called starch.

Qn. What name is given to the food made by plants during photosynthesis?

- Starch

Qn. Briefly give the meaning of the following:-

- i. **Photo** means light
- ii. **Synthesis** means building up / making / manufacturing.

Raw materials for photosynthesis

Qn. What is a raw material?

- A raw material is a basic material for making a product.

Product made during photosynthesis

Qn. Mention the two products made during photosynthesis.

- i. Starch
- ii. Oxygen

Qn. Mention the bi product of photosynthesis.

- Oxygen

Qn. Mention the raw materials for photosynthesis.

- i. Carbon dioxide
- ii. Water

Qn. Write down the two conditions for photosynthesis.

- i. Sunlight energy
- ii. Chlorophyll.



Way up is down

Qn. Identify the four requirements necessary for photosynthesis.

- i. Chlorophyll
- ii. Sun light energy
- iii. Carbon dioxide
- iv. Water

Qn. How is chlorophyll useful during photosynthesis?

- Chlorophyll traps sun light energy from the sun.

Qn. How is water useful during photosynthesis?

- Water combines with carbon dioxide to form starch.

Qn. How is water absorbed from the soil?

- Water is absorbed from the soil by the help of root hairs.

Qn. State the function of sunlight during the process of photosynthesis.

- Sunlight splits water into hydrogen and oxygen.

Note:

- Photosynthesis takes place during day.
- Photosynthesis cannot take place at night.

Qn. Give a reason why photosynthesis cannot take place at night?

- There is no sun light energy at night.

Qn. Why is photosynthesis able to take place during day time?

- There is sunlight energy during day time.

Summary of photosynthesis and its products

- Water + carbon dioxide + chlorophyll + sunlight energy → starch + oxygen

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
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Qn. State any four ways how plant leaves are adapted to the process of photosynthesis?

- Plant leaves have their walls to allow carbon dioxide diffuse through.
- Plant leaves have chlorophyll that help to trap sunlight energy.
- Leaves have a broad shape to increase the surface area for absorbing sunlight. Note
- Photosynthesis is a chemical change in plants.

Qn. (a) List down the four steps of testing for starch in a leaf.

- Pluck a leaf from a plant.
- Boil the leaf in water.
- Boil the leaf in methylated spirit.
- Wash the leaf in cold water and pour iodine solution on the leaf.

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(b) Write down the observations seen after all the above steps have been taken.

The leaf turns dark blue or blue black.

(c) Why is the leaf boiled in water?

- To kill the cells in a leaf.

(d) Give the reason of boiling the leaf in methylated spirit

- To remove chlorophyll.

(e) Why is the leaf washed before pouring iodine solution?

- To remove methylated spirit.

(f) Name the chemical used to test for starch in a leaf.

- Iodine solution

TRANSPERSION

Qn. What is transpiration?

- Transpiration is the process by which plants lose water in the form of water vapour to the atmosphere through the stomata.

Qn. How is transpiration important to plants?

- Transpiration cools the plant.
- Transpiration enables plants to absorb water and mineral salts from the soil.

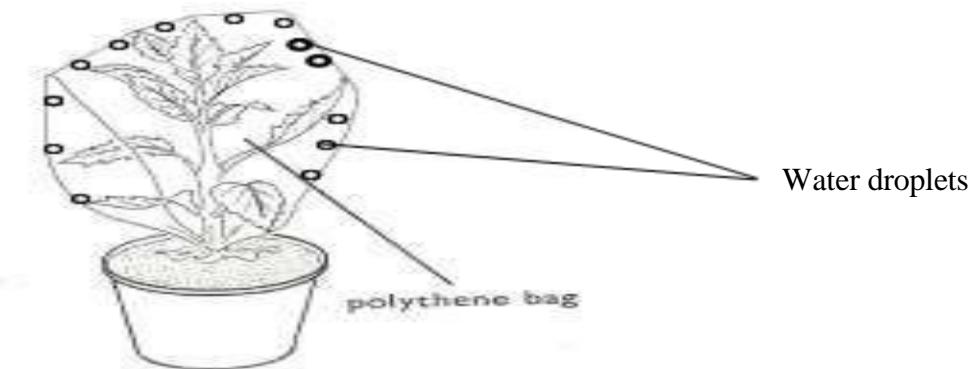
Qn. State the importance of transpiration to the environment

v. Transpiration help in rain formation.

Qn. Briefly, outline the four steps followed during an experiment to show transpiration.

- i) Get a transparent polythene paper.
- ii) Look for a plant well placed in sunlight.
- iii) Tie a polythene paper on one of the branches.
- iv) Leave it there for some time.

Qn. In the space below, draw a diagram showing transpiration in plants



Qn. Briefly, write down one sentence on your observation during the above experiment.

- Water droplets are formed on the sides of the polythene paper.

Qn. From the above observations, why are water droplets formed inside the polythene paper? (Conclusion).

- It is due to condensation.

Qn. State the function of the polythene paper in the experiment above?

- Trap water droplets

Qn. Identify the six factors that affects the rate of transpiration in plants.

- i. Temperature
- ii. Wind
- iii. Size of the leaf
- iv. Humidity
- v. Light intensity
- vi. Number of stomata in a leaf

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. How does temperature affect the rate of the transpiration?

-The higher the temperature, the higher the rate of transpiration and the lower the temperature, the lower the rate of transpiration.

Qn. Why do plants lose a lot of water on hot days than on cold days?

On hot days, the temperature is high leading to high rate of temperature while on cold days, the temperature is very low leading to low rate of transpiration.

Humidity

Qn. What is humidity?

Humidity is the amount of water vapour in the atmosphere.

Qn. How does humidity affect the rate of transpiration

The higher the humidity the lower the rate of transpiration and the lower the humidity the higher the rate of transpiration,

Qn. Why does low temperature take place on high humidity?

When there is high humidity, there is a lot of water vapour in the atmosphere, leading to low transpiration.

Wind



Qn. How does wind affect the rate of transpiration?

When there is a lot of wind there is high rate of transpiration and when there is less wind there is low rate of transpiration.

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Qn. Why does the rate of transpiration increase when there is a lot of wind?

Wind blows away water vapour from the leaves leading to high rate of transpiration.

Light intensity.

Qn. How does light intensity affect the rate of transpiration?

When there is a lot of sunlight in the atmosphere high rate of transpiration will take place.

Qn. Why does the rate of transpiration increase when there is high sunlight in the atmosphere?

When sunlight is too much, stomata are opened leading to high rate of transpiration.

Number of stomata

Qn. How does the number of stomata affect the rate of transpiration?

The greater the number of stomata, the higher the rate of transpiration.

Size of the leaf

Qn. How does size of the leaf affect the rate of transpiration?

The larger the leaf the higher the rate of transpiration and the smaller the leaf the lower rate of transpiration.

Qn. Mention any six factors that increase the rate of transpiration.

- i. High light intensity
- ii. Low humidity
- iii. High number of stomata

- iv. Large size of the leaf
- v. High temperature
- vi. Wind

Qn. List any five factors that lower the rate of transpiration.

- i. High humidity
- ii. Low temperature
- iii. Small size of the leaf
- iv. Low light intensity
- v. Few stomata in a leaf

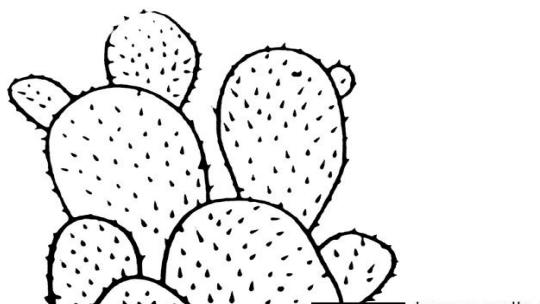
Qn. Write down any five ways through which plants reduce the rate of transpiration.

- i. Some plants shed their leaves during the dry season.
- ii. Some plants reduce the size of their leaves to thorns.
- iii. Some plants put a layer of wax on their leaves to cover the stomata.
- iv. Some plants fold their leaves during the dry seasons.
- v. Some plants grow very small leaves to reduce the rate of transpiration.

Qn. How do cactus plants reduce the rate of transpiration?

- By reducing the size of their leaves to thorns.

Qn. In the space provided below, draw a diagram a cactus plant



Qn. Give a reason why some plants shed their leaves during the dry season.

- To reduce the rate of transpiration

Qn. What are deciduous plants?

- Deciduous plants are plants which shed their leaves during the dry season.

Qn. State any six examples of deciduous plants

- i. Mvule trees
- ii. Willow trees
- iii. Oak trees
- iv. Ficus trees
- v. Sycamore trees
- vi. Fig trees

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
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LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS	TIME	TEACHER'S NAME			
			BOYS	GIRLS	TOTAL	From	To	

FLOWERS

Qn. What is a flower?

- A flower is a reproductive part of a plant.

Qn. Give two reasons why a flower is regarded as a reproductive part of a plant?

- i. A flower produces seeds that develop into young plants.
- ii. A flower contains gametes or reproductive cell.

Qn. What are the main two functions of the flower to a plant?

- i. For reproduction
- ii. To produce seeds and fruits

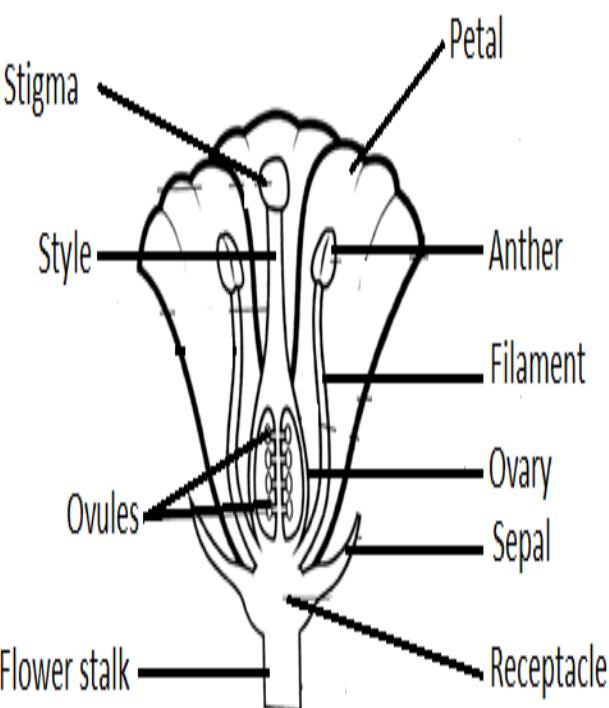
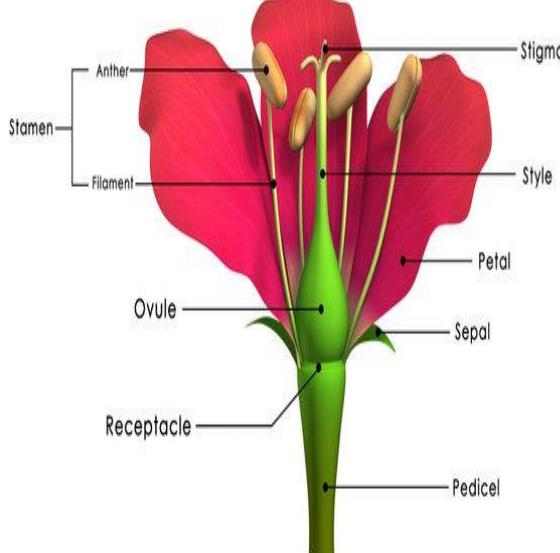


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Qn. In the space provided below, draw a well-labeled Structure of a flower



Qn. Identify the functions of each of part o f a flower

(a) Petals

- i. Petals protect the inner parts of a flower.
- ii. Petals attract pollinating agents.

Qn. What name is given to a group of petals?

- Corolla

Qn. How are petals adapted to attracting pollinating agents?

- They are brightly coloured

(b) Sepal

- i. Sepals protect the flower during the bud stage.
- ii. Sepals make food for the flower.

Qn. What name is given to a group of sepal?

- Calyx

(a) flower stalk

- i. It holds the flower in an upright position.
- ii. It supplies water to the flower.

Qn. What does a flower stalk develop into after fertilization?

- Fruit stalk

(d) Stigma

- It receives pollen grains

(e) Anthers

- They produce and store pollen grains.



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(f) Style

- Holds the stigma in upright position.

(g) Filament

- Holds the anthers in an upright position.

way up is down

(h) Receptacle

- i. Receptacle protects the ovary and ovules.
- ii. Receptacle protects the nectaries.

Qn. What is the importance of nectaries?

- They produce and store nectar

Qn. Mention the main two parts of a flower

- i. Stamen
- ii. Pistil

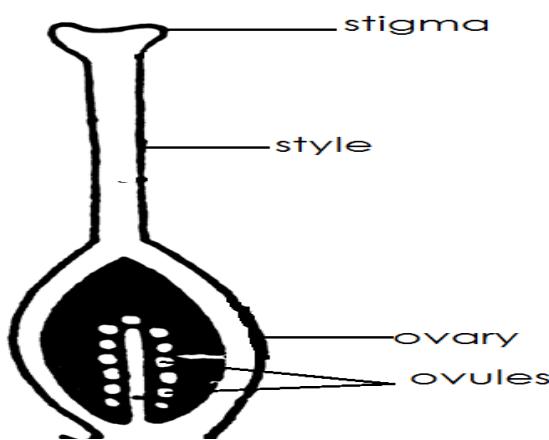
Qn. What is the pistil?

- A pistil is a female part of a flower.

Qn. Mention the four major parts of the pistil.

- i. Stigma
- ii. Style
- iii. Ovary
- iv. Ovules

Qn. In space provided below, draw a diagram of a pistil.



Stamen

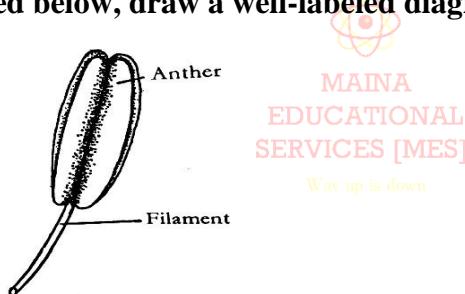
Qn. What is a stamen?

A stamen is a male of a flower.

Qn. List down the two major parts of a stamen.

- Anther
- Filament

Qn. In the space provided below, draw a well-labeled diagram showing a stamen



Qn. Suggest any seven uses of flower to people.

- Flowers are used for decoration.
- Flowers are used to show love.
- Flowers are source of income.
- Some flowers are used to make perfumes.
- Some flowers are eaten as food.
- Some flowers are used for making dyes.
- Some flowers are used for making insecticides.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From		
						To		

POLLINATION**Qn. What is pollination?**

- Pollination is the transfer of pollen grains from the anthers to the stigma.

Qn. Suggest any two ways how pollination is important?

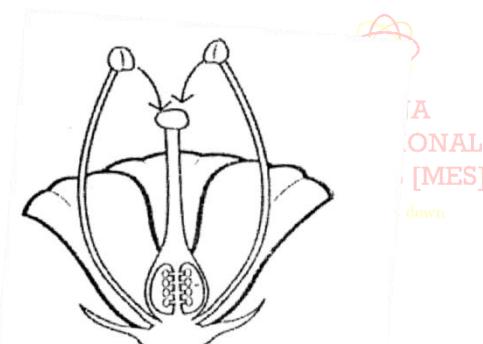
- i. Pollination enables fertilization to take place in plants.
- ii. Pollination enables high yield in farmer's harvest.

Qn. Mention the two types of pollination.

- i. Self-pollination
- ii. Cross pollination

Self-pollination**Qn. What is self-pollination?**

- Self-pollination is the transfer of pollen grains from anthers to the stigma of the same flower.

Qn. In the space provided below, draw a diagram showing self-pollination.**Qn. Write down any four characteristics of self-pollination (Adaptation of some flowers to self-pollination).**

- i. The stamen is longer than the pistil.
- ii. The anthers and stigma mature at the same time.
- iii. The flowers remain closed until self-pollination has taken place.
- iv. The flowers are hermaphrodites (have both male and female organs)

Qn. List any three examples of plants that have self-pollination.

- i. Groundnuts
- ii. Tomatoes
- iii. Apples

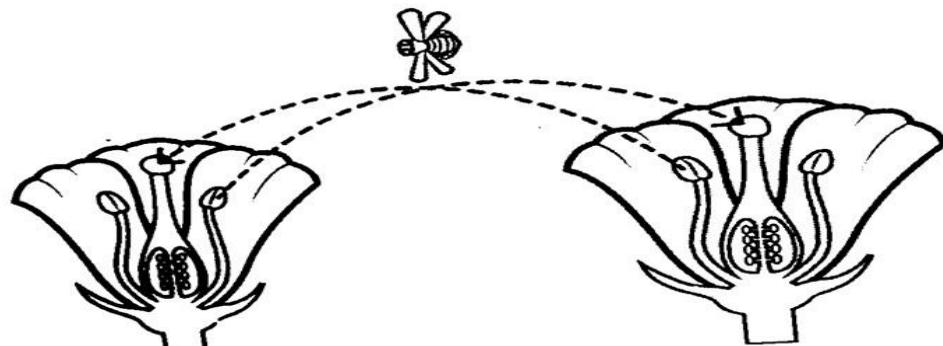
Qn. How are tomatoes adapted to self-pollination?

- The pistil and stamen mature at the same time.

Cross pollination**Qn. What is cross pollination?**

Cross pollination is the transfer of pollen grains from the anthers to the stigma of another flower but of the same kind.

Qn. In the space provided below, draw a diagram showing cross pollination.



Qn. Give any four Characteristics of cross pollination (Adaptation of some flowers to cross pollination)

- i. The pistil is longer than stamen.
- ii. Both the male and female flowers may occur on the same plant but mature at different times.
- iii. The male and female flowers grown on separate plants.
- iv. Pollen grains cannot germinate on the stigma of the same flower.

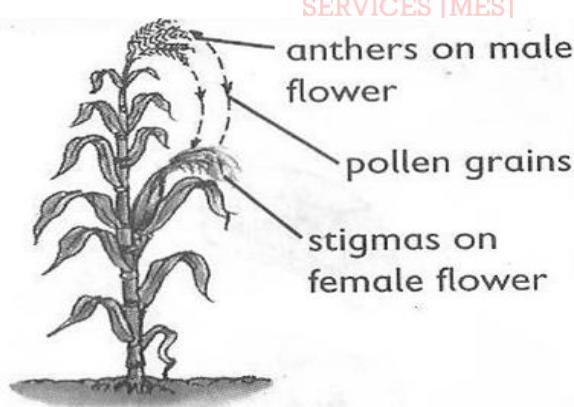
Qn. Identify any three examples of plants that undergo cross pollination

- i. maize
- ii. pawpaw
- iii. coconut



EDUCATIONAL
SERVICES (MES)

Qn. In space provided below, draw a diagram showing maize plant.



Qn. Write down the adaptation of pawpaw plants to cross pollination.

- The male and female flowers grow on separate plant.

Qn. How does a maize plant avoid self-pollination?

- The male and female flowers mature at different times.

Qn. How does a pawpaw plant avoid self-pollination?

- The male and female flowers grow on separate plants.

Agents of pollination.

Qn. What is an agent of pollination?

An agent of pollination is a factor or thing that help in transfer of pollen grains from the anthers to the

stigma.

Qn. List down the major five agents of pollination.

- i. Insects
- ii. Animals
- iii. Birds
- iv. Wind
- v. Water

Qn. How are some animals adapted to pollinating flowers?

Some animals have hair on their bodies that helps to carry pollen grains from the anthers to the stigmas of another flower.

Note:-

-Human beings mainly pollinate vanilla.

Qn. How do some birds help to pollinate flowers?

- Some birds rub their bodies on the anthers and stigma as they collect nectar.

Qn. Mention any two examples of birds that pollinate flowers.

- i. Sunbirds
- ii. Hummingbirds

Qn. How are sun birds adapted to pollination?

-Sunbird have a long slender and slightly curved beaks.

Qn. How are insects adapted to carrying out pollination?

- Insects have a hairy body on which pollen grains get attached.

Qn. Why do insects visit flowers?

Insects visit flowers to collect nectar.

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SERVICES [MES]

Qn. Suggest any six characteristics of insect pollinated flowers.

- i. Insect pollinated flowers produce scent (good smell)
- ii. Insect pollinated flowers have brightly coloured petals.
- iii. Insect pollinated flowers are large and easily seen.
- iv. Insect pollinated flowers produce a lot of nectar.
- v. Insect pollinated flowers produce less pollen grains.
- vi. Insect pollinated flowers produce heavy and sticky pollen grains.

Qn. List any four examples of insects that pollinate flowers

- i. Bees
- ii. Butterflies
- iii. Moth
- iv. Beetles

Qn. Which insect pollinates flowers during night hours or time?

- Moths pollinate flowers at night.

Qn. How is a moth able to pollinate flowers at night?

- By the help of the scent produced by some flowers at night.

Qn. Mention any six characteristics of wind pollinated flowers.

- i. They produce a lot of pollen grains.
- ii. Wind pollinated flowers have dull coloured petals.
- iii. Wind pollinated flowers do not produce nectar.

- iv. Wind pollinated flowers produce light pollen grains.
- v. Wind pollinated flowers do not produce scent.
- vi. Wind pollinated flowers have a long feathery stigma to increase chances of pollination.

Qn. Why do wind pollinated flowers produce a lot of pollen grains?

- To increase the chance of pollination since most of it may fall on wrong parts of a plant.

Qn. Why do wind pollinated flowers produce light pollen grains?

- To easily be blown by wind.

Qn. List down any six examples of plants pollinated by wind.

- i. Maize
- ii. Barley
- iii. Millet
- iv. Rice
- v. Sorghum
- vi. Wheat

Qn. Suggest any five differences between wind pollinated flowers and insect pollinated flowers.

- i. Wind pollinated flowers produce light pollen grains while insect pollinated flowers produce heavy and sticky pollen grains.
- ii. Wind pollinated flowers have dull coloured petals while insect pollinated flowers have brightly coloured petals.
- iii. Wind pollinated flowers do not produce nectar while insect pollinated flowers produce nectar.
- iv. Wind pollinated flowers produce a lot of pollen grains while insect pollinated flowers produce less pollen grains.
- v. Wind pollinated flowers have small petals which are not easily seen while insect pollinated flowers have large petals which are easily seen.

Qn. How is water adapted to pollinating some flowers?

When water droplets fall on the anthers, the pollen grain may float and come into contact of another flower leading to pollination.

Qn. Mention any two examples of plants pollinated by water.

- i. Water lily
- ii. Cauliflower

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

WEEK FIVE

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS	TIME	TEACHER'S NAME
			BOYS	GIRLS	TOTAL
			From		

						To		
--	--	--	--	--	--	-----------	--	--

FERTILIZATION IN PLANTS

Qn. What is fertilization?

Fertilization is the union of a male and female gametes to form a zygote.

Qn. What is a gamete?

- A gamete is a reproductive cell.

Qn. Where does fertilization take place?

- In the ovary

Qn. How do we call:-

(a) the male gametes in plants?

-The male gametes in plants are called pollen grains.

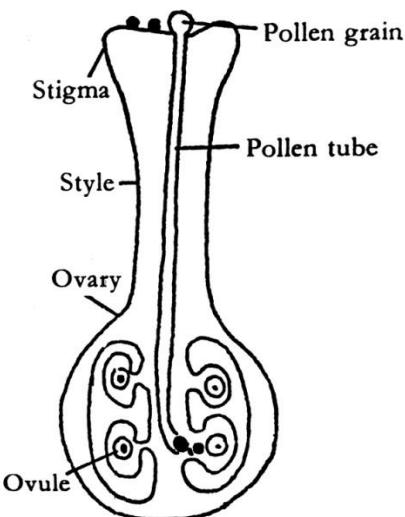
(b) the female gametes in plants?

-The female gametes are called ovules.

Qn. How does fertilization occur in plants?

After pollination has taken place, a pollen tube is formed through the style and pollen grain will travel down to the ovary to join with ovules.

Qn. In the space provided below, draw a diagram showing fertilization in a flower



Qn. What do the following develop into after fertilization?

- (i) Ovary - fruit
- (ii) Ovules - seeds
- (iii) Flower stalk - fruit stalk

Qn. What happens to the pollen grains when they reach the stigma?

- A pollen tube is formed

Qn. Besides the ovary, which other part of a flower can develop into a fruit?

- Receptacle

SEEDS

Qn. What is a seed?

- A seed is the fertilized ovule.

Qn. How are seeds important to plants?

- Seeds help plant to multiply in number.

Qn. Identify the two types / groups / classes of seeds.

- Dicotyledonous seeds
- Monocotyledonous seeds

Dicotyledonous seeds

Qn. What are dicotyledonous seeds?

- Dicotyledonous seeds are seeds with two cotyledons.

Qn. Give any three characteristics of dicotyledonous seeds.

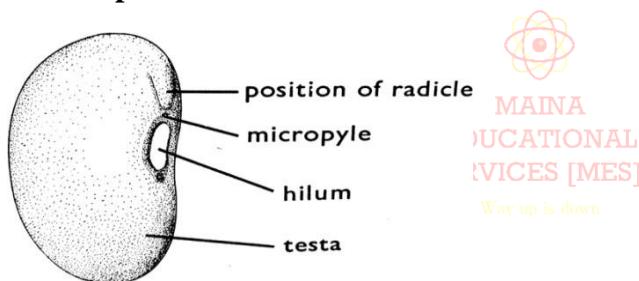
- Dicotyledonous seeds tap root system.
- Dicotyledonous seeds have two cotyledons.
- Dicotyledonous seeds undergo epigeal germination.

Qn. List down any four examples of dicotyledonous seeds.

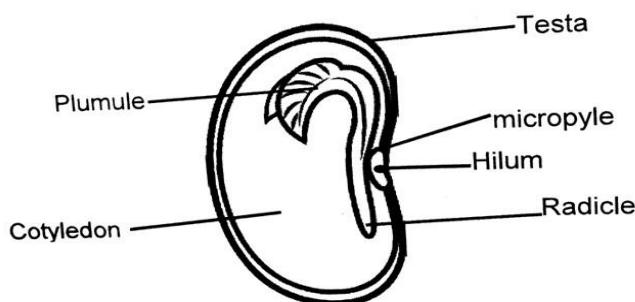
- Beans
- Soya beans
- Cowpeas
- peas

Qn. In the space provided below, draw well-labeled diagrams of dicotyledonous seed (bean seed)

(i) External parts of a bean seed



(iii) Internal parts of a bean seed



Qn. Write down the functions of the parts of a bean seed.

(i) Micropyle

- The micropyle lets in water and air into the bean seed.

(ii) Hilum

- Hilum is a scar that attaches the bean seed to the pod.

(iii) Cotyledon

- Cotyledon stores and supplies food to the embryo.

- (iv) **Testa / seed coat**
 - Testa protect the inner parts of the seed.
- (v) **Radicle**
 - The radicle develops into the root system.
- (vi) **Plumule**
 - The plumule develops into the shoot system.

Qn. What scientific name is given to both the plumule and radicle.

- It is an embryo.

Monocotyledonous seeds

Qn. What are monocotyledonous seed?

- Monocotyledonous seeds are seed with one cotyledon.

Qn. Give any three characteristics of monocotyledonous seeds.

- i. Monocotyledonous seeds have one cotyledon.
- ii. Monocotyledonous seeds undergo hypogea germination.
- iii. Monocotyledonous seeds have fibrous root system.

Qn. List any five examples of monocotyledonous seeds.

- i. Maize
- ii. Barley
- iii. Wheat
- iv. Rice
- v. Sorghum



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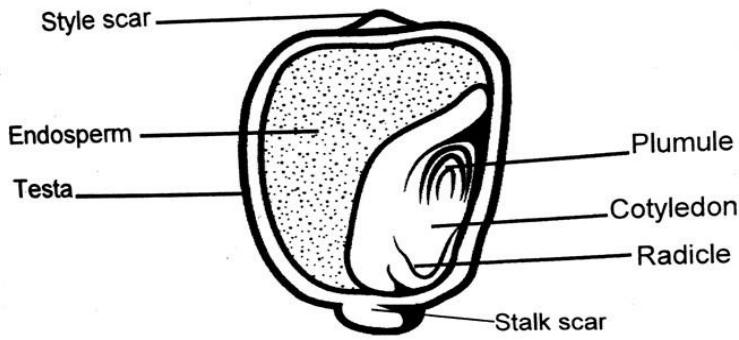
GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. In the space below, draw a well labeled Structure of a maize grain



Qn. Give the functions of the parts of a maize grain.

(i) Testa

- Testa protects the inner parts of a maize grain.

(ii) Plumule

- Plumule develops into shoot system

(iii) Radicle

- The radicle develops into root system.

(iv) Endosperm

- The endosperm stores food for the embryo.

(v) Cotyledon

- Cotyledon supplies food to the embryo.

(vi) Stalk stalk

- Stalk power attaches the maize grain to the cob.

(vii) Style scar

- Style scar is where the style of a flower is attached.

Note:

- The plumule and radicle make up embryo.

Qn. Why is a maize grain called a fruit?

- A maize grain has two scars i.e style scar and stalk scar.

Qn. Name the two scars of a maize fruit.

- i. Style scar
- ii. Stalk scar

Qn. Give two differences between a maize grain and a bean seed.

- i. Maize grain has two scars while a bean seed has a one scar.
- ii. A maize grain stores food in the endosperm while a bean seed stores food in the cotyledon.

GERMINATION

Qn. What is germination?

Germination is the development of a seed embryo into a seedling.

Qn. What is a seedling?

- A seedling is a young plant.

Qn. Write down the major five steps or stages of germination.

- i. The seed first absorbs water from the soil to soften the testa.

- ii. The seed swells.
- iii. The radicle grows and root hairs develop.
- iv. The radicle pushes the testa and comes out of the soil.
- v. The plumule grows and pushes itself of the soil.

Qn. Give one reason why the radicle comes out first before the plumule.

- The radicle comes out first to absorb water and mineral salts from the soil in order for the plumule to grow.

Qn. List down the two types of germination.

- i. Epigeal germination
- ii. Hypogea germination

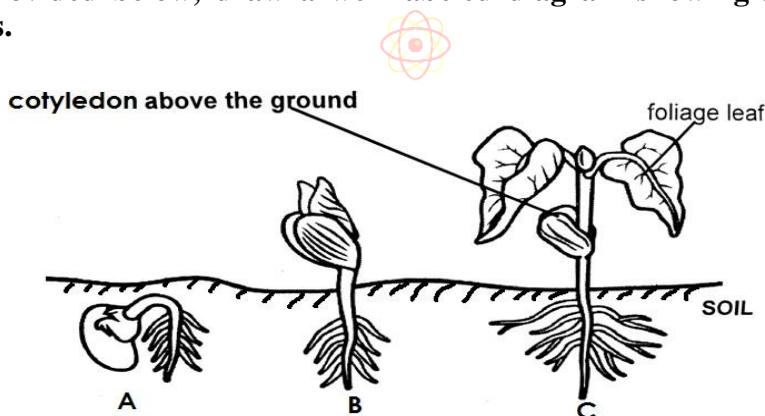
Qn. What is epigeal germination?

Epigeal germination is the type of germination where the cotyledon grows above the ground.

Qn. Mention any five examples of plants that undergo epigeal germination.

- i. Beans
- ii. Soya beans
- iii. Cowpeas
- iv. Peas
- v. Groundnuts

Qn. In the space provided below, draw a well-labeled diagram showing stages of germination in dicotyledonous seeds.



Qn. How are the cotyledons useful to the seedling of stage B?

- The cotyledons make food for the plant.

Qn. State the function of foliage leaves at stage C?

- Foliage leaves make food for the seedling

Qn. Why are the cotyledon no longer useful to the seedling at stage C?

- At stage C the seedling has developed foliage leaves that make food.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

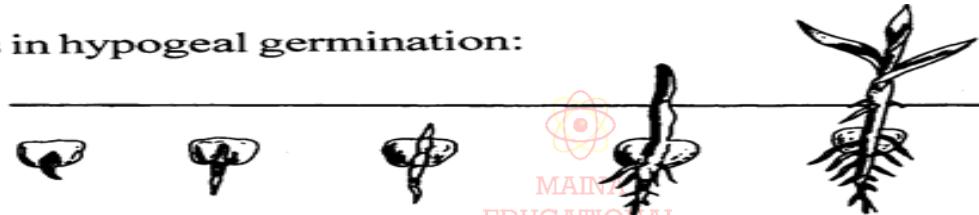
DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Hypogea germination**Qn. What is hypogea germination?**

- Hypogea germination is the type of germination where the cotyledon remains under the ground.

Qn. List down any six examples of plants that undergo hypogea germination.

- | | |
|-------------|-----------|
| i. Maize | v. Millet |
| ii. Sorghum | vi. Oats |
| iii. Wheat | |
| iv. Barley | |

Qn. In the space provided below, illustrate the stages of germination of a monocot seed.**s in hypogea germination:****Qn. Which part of a seed comes out first during germination?**

- Radicle

Qn. Why does the radicle come out first during germination?

- To absorb water and mineral salts from soil.

Qn. Mention the three conditions necessary for germination.

- i. Warmth
- ii. Oxygen
- iii. Moisture (water)

Qn. Write down the importance of each condition below in seed germination:-**(a) Warmth (moisture)**

- i. Water softens the testa for the radicle to come out.
- ii. Water dissolves food nutrients within the seed.

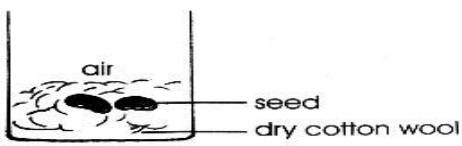
(b) Warmth (optimum temperature)

- For metabolism

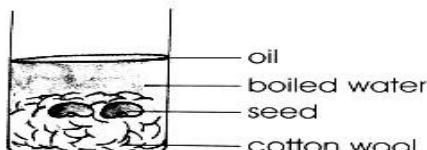
(c) Oxygen

- i. For oxygen
- ii. Oxygen oxidizes food to produce energy used by the embryo during germination.

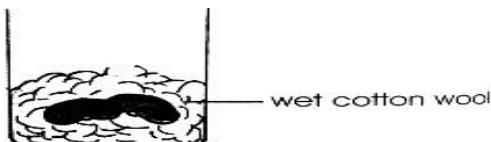
Qn. Below is an experiment to find out conditions necessary for germination, use it to answer questions that follow:-



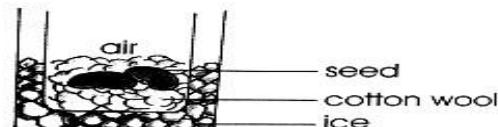
warmth, air , no water



warmth, water, no air



warmth, air , water



water, air , no warmth

Questions

(a) Why didn't the seeds in the test A germinate?

- Seeds in test tube A didn't germinate because there isn't moisture.

(b) Why will the seeds fail to germinate in test tube B?

- Seeds in test B will fail to germinate because oxygen supply was cut off.

(c) Give a reason why seeds in test C will germinate.

- Seeds in test tube C will germinate because all the conditions are present.

(d) Why will seeds in test tube D fail to germinate?

- Seeds in test tube D will fail to germinate because there is no warmth.

SEEDS VIABILITY AND SEED DORMANCY.

Seed viability

Qn. What is seed viability?

- Seed viability is the ability of seeds to germinate under favourable conditions.

Qn. Identify any four qualities of a good viable seed.

- A good viable seed should be mature.
- A good viable seed should be dry.
- A good viable seed should be healthy.
- A good viable seed should not be broken.

Seed dormancy

Qn. What is seed dormancy?

- Seed dormancy is the inability of a seed to germinate.

Qn. Suggest any six factors that can lead to seed dormancy.

- Planting diseased seeds.
- Planting premature seeds.
- Planting broken seeds.
- Too much heat in the soil.

- v. Dampness of seeds during storage.
- vi. Lack of necessary conditions.

Qn. Mention any four ways of protecting seeds from dormancy.

- i. Dusting seeds.
- ii. Proper drying of seeds before storage.
- iii. Keeping seeds in dry place.
- iv. Putting rat guards in granaries.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	



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Tropism

Qn. What is tropism?

- Tropism is a plant growth response towards stimuli.

Way up is down

Qn. What is stimulus?

- A stimulus is a change in the environment to which a plant is sensitive to.

Qn. Identify the five types of tropism.

- i. Phototropism
- ii. Geotropism
- iii. Thigmotropism (Haptotropism)
- iv. Chemotropism
- v. Hydrotropism

(a) Phototropism

Qn. What is phototropism?

- Phototropism is the growth movement of a plant shoot towards sunlight.

Qn. Which part of the plant responds to sunlight?

- The part of the plant that responds to sunlight is the shoot system.

Qn. In the space below, draw a diagram showing phototropism.



(b) Hydrotropism

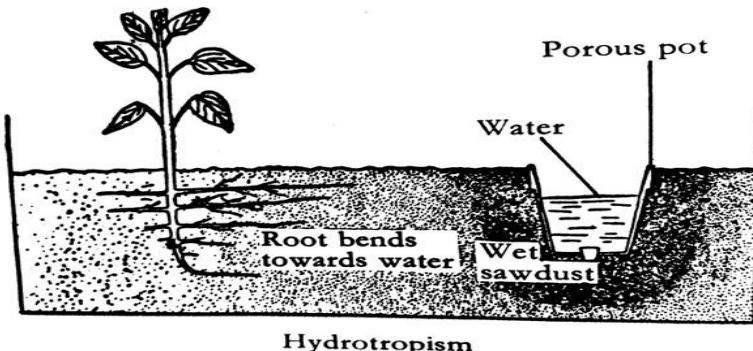
Qn. What is hydrotropism?

- Hydrotropism is the growth movement of plant roots towards the source of water.

Qn. Which part of the plant responds towards water?

- It is the root system.

Qn. In the space below, draw a diagram showing hydrotropism.



(c) Geotropism

Qn. What is geotropism?

- Geotropism is the growth movement of plant roots towards the directions of force of gravity.

Qn. Which part of the plant responds to force of gravity?

- The part of a plant that responds to force of gravity is root system.

(d) Chemotropism

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Qn. What is chemotropism?

- Chemotropism is the growth movement of plants parts towards a source of chemicals.

Qn. Give an example of chemotropism in plants.

- Movement of pollen tubes from the stigma through the style towards the ovary.

(e) Thigmotropism

Qn. What is thigmotropism?

Thigmotropism is the growth movement of certain parts of some plants in response to the stimuli of touch.

Qn. In which plants is thigmotropism common?

- It is common in climbing plants.

Qn. How is Thigmotropism important to climbing plants?

- Thigmotropism enables climbing plants to twine on other plants.

Summary of tropism

- Tropism	- Stimulus
- Phototropism	- sunlight
- Geotropism	- Force of gravity
- Hydrotropism	- Water and moisture
- Thigmotropism/ Haptotropism	- Touch
- Chemotropism	- Chemicals

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Fruits

Qn. What is a fruit?

- A fruit is a developed ovary.

Qn. Mention any four characteristics of fruits.

- i. Fruits have two scars.
- ii. Fruits have no micropyle.
- iii. Fruits have the ovary to protect the seeds.
- iv. Fruits have a pericarp which forms external parts.

Qn. Identify any four differences between a fruit and a seed.

- i. A fruit has two scars while a seed has one scar.
- ii. A fruit has no micropyle while a seed has a micropyle.
- iii. A fruit has a pericarp that forms the external parts while a seed has a testa that forms the external parts.
- iv. A fruit has a pedicel as its stalk while a seed has a funicle as its stalk.

Qn. Mention any four similarities between a fruit and a seed.

- i. Both have scars.
- ii. Both have stalks.
- iii. Both contain food substances.
- iv. Both have outer coating forming external parts.

Qn. State any two importance of fruits to plants.

- i. Fruits help in seed dispersal.
- ii. Fruits protect the seeds.

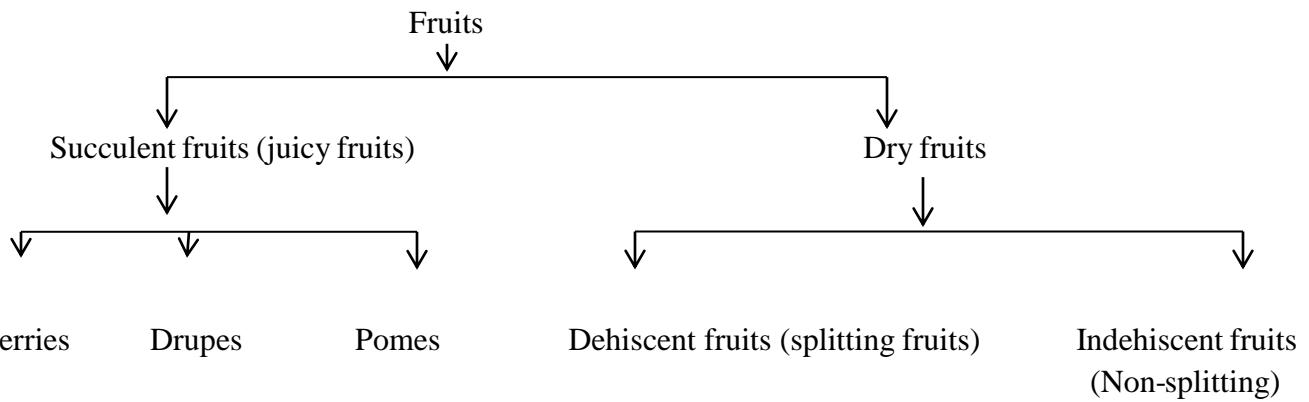
Qn. State any three importance of fruits to people.

- i. Fruits are eaten as food.
- ii. Fruits are a source of income.
- iii. Some fruits are source of herbal medicine.

Qn. Identify the two groups / classification of fruits.

- i. Juicy fruits (succulent fruits)
- ii. Dry fruits

Qn. Illustrate a chart showing groups of fruits.



Succulent fruits (juicy fruits)

Qn. What are succulent fruits?

- Succulent fruits are fruits with a lot of juice inside them.

Qn. List down the three layers that consists a pericarp.

- A pericarp consists of three layers i.e.
 - Epicarp
 - Mesocarp
 - Endocarp

Qn. Name:-

- A thin outer most layer – Epicarp
- The juicy or fleshy layer – Mesocarp.
- The hard layer that encloses the seed - Endocarp

Qn. Identify the four groups of succulent / juicy fruits.

- Berries
- Drupes
- Pomes
- Compound fruits

(a) Drupes

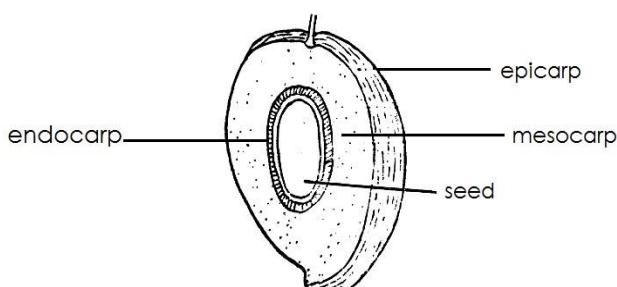
Qn. What are drupes?

- Drupes are fruits with one seed inside their pericarps.

Qn. Suggest any four examples of drupes.

- Avocado
- Coconut
- Oil palm fruit
- Peach

Qn. In the space provided below, draw a diagram showing a drupe (mango).



(b) Berries

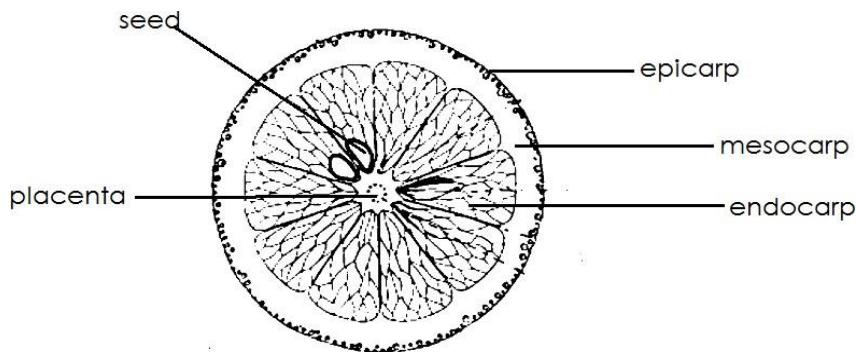
Qn. What re berries?

- Berries are fruits with many seeds insides their pericarp.

Qn. Mention any eight examples of berries.

- | | |
|---------------------|-------------------|
| i. Tomatoes | v. Lemon |
| ii. Oranges | vi. Watermelon |
| iii. Passion fruits | vii. Strawberries |
| iv. Pawpaw | viii. Jackfruit |

Qn. In the space provided below, draw a diagram showing a berry fruit.



(c) Pomes

Qn. What are pomes?



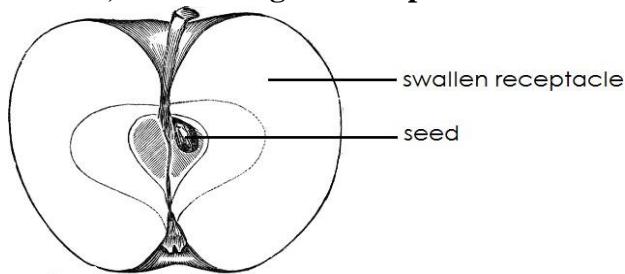
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Writ up is down

Qn. Give one example of a pome.

- Apple

Qn. In space provided below, draw a diagram of a pome.



(d) Compound / multiple fruits.

Qn. What is multiple fruit?

- This is a fruit formed from many flower on a stalk.

Qn. Mention any three examples of compound fruit.

- Pineapple
- Straw berry
- Dry fruits

Qn. What are dry fruits?

- Dry fruits are fruits whose pericarp is dry and woody.

Qn. Identify the two groups of dry fruits.

- Dehiscent fruits (splitting fruits)

ii. Indehiscent fruits (Non splitting fruits)

(a) Dehiscent fruits

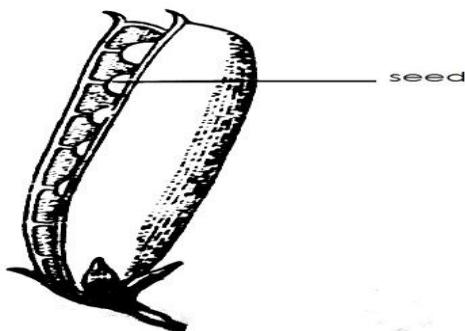
Qn. What are dehiscent fruits?

- Dehiscent fruits are fruits with pods which split to disperse the seeds.

Qn. Give any three examples of dehiscent fruits.

- Beans
- Peas
- Castor oil

Qn. In the space provided below, draw a diagram showing dehiscent fruits.



(b) Indehiscent fruits

Qn. What are indehiscent fruits?

- Indehiscent fruits are fruits that do not split to disperse the seeds.

Qn. Mention any four examples of indehiscent fruits.

- Maize fruit
- Sunflower
- Black jack
- Tridax

Qn. What name is given to fruits that develop from many flowers on the same stalk?

They are called compound fruit e.g. jack fruit.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

WEEK SIX

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Seed and fruits dispersal

Qn. What is seed dispersal?

- Seed dispersal is the scattering of seeds from a parent plant over a wide area.

Qn. Suggest any six importance of seed dispersal.

- Seed dispersal enables plant to colonise new areas.
- Seed dispersal prevents overcrowding of plants in an area.
- Seed dispersal reduces competition for plant nutrients.
- Seed dispersal reduces on competition for sunlight.
- Seed dispersal increases survival for plant species.
- Seed dispersal reduces on spread of diseases among plants.

Qn. Write down any two disadvantage of seed dispersal in the environment.

- Leads to spread of weeds.
- Agents of seed dispersal

Qn. What is an agent of seed dispersal?

- An agent of seed dispersal is anything that helps in scattering of seeds from a mother plant over a new area.

Qn. List down the three agents of seed dispersal.

- Water
- Wind
- Animals



MAINA
EDUCATIONAL
SERVICES [MES]
Way up is down

Qn. Mention the four types of seed dispersal / mechanisms of seed dispersal.

- Animal dispersal
- Wind dispersal
- Water dispersal
- Explosive mechanism

(a) Animal dispersal

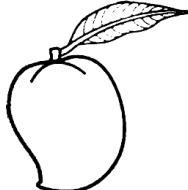
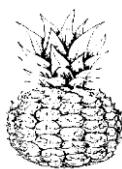
Qn. Give any five characteristics / adaptations of seeds / fruits dispersal by animals.

- Some seeds have hooks to attach to the animal's body.
- Some fruits have sticky hair.
- Some seeds have tough testa which prevents them from being digested after being eaten by animals.
- Most of the fruits eaten by animals are sweet and juicy.
- Many of the fruits eaten by animals have brightly coloured epicarp when they are ripe.

Qn. Mention any seven examples of seeds and fruits dispersed by animals.

- | | | |
|-----------------|----------------|-------------------|
| i. Jack fruit | v. Oranges | ix. Passion fruit |
| ii. Water melon | vi. Pineapples | x. Black jack |
| iii. Mangoes | vii. Apples | xi. Guava |
| iv. Lemons | viii. Paw paws | xii. Avocado |

Below are the images of some fruits and seeds dispersed by animals:-

		
Mango	Tomato	pineapple
		
Black jack	Paw paw	

Qn. How is a black jack adapted to its mode of dispersal?

- It has hooks that attach on the animal's body

(b) Wind dispersal

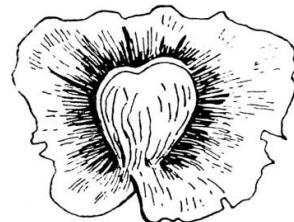
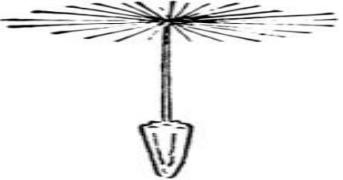
Qn. Identify any five characteristics /adaptations of seed dispersed by wind.

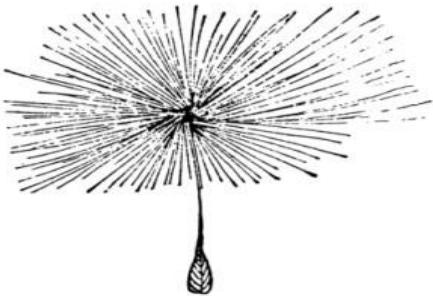
- i. Some have wing like structures e.g. jacaranda
- ii. They are small and light.
- iii. Some have tiny thread like or feather structures.
- iv. Some seeds have parachute like structures e.g. Tridax
- v. Some seeds have a layer of tough hair e.g. cotton seed

Qn. List down any five examples of plants dispersed by wind.

- | | |
|-----------------|------------|
| i. Jacaranda | iv. cotton |
| ii. Dandelion | v. Tridax |
| iii. Calotropis | |

Below are some of the images of plants dispersed by wind:-

	
Jacaranda	Dandelion

	
Calotropis	cotton
	
Tridax	

(c) Water dispersal

- Seeds dispersed by water have a lot of air space that enables them to float on water.

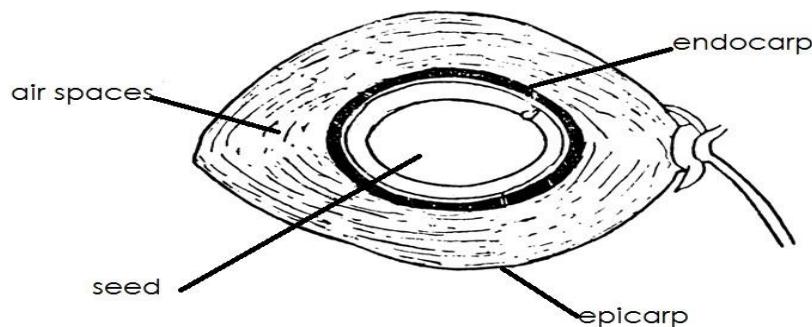
Qn. Identify any two characteristics /adaptations of seeds dispersed by water.

- i. They are light and this enable them to float on water.
- ii. They have air spaces which help them to float.

Qn. Mention any two examples of seeds dispersed by water.

- i. Coconut
- ii. Water lily

Qn. In space provided below, draw a well-labeled diagram of a coconut.



Self-dispersal/explosive mechanism.

Qn. What is explosion?

- Explosion is the bursting of fruits/pods with a loud noise.

Qn. What is explosive mechanism/self-dispersal?

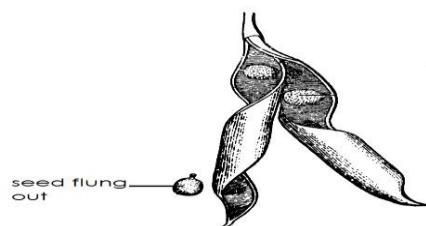
- Explosive mechanism is the type of dispersal where the fruits ripens, dries up and splits with force to disperse seeds.

Qn. List any six examples of fruits / seeds that undergo explosive mechanism/self-dispersal.

- | | |
|--------------|----------------|
| i. Beans | iv. Cassava |
| ii. Mahogany | v. Castor oil |
| iii. Peas | vi. Soya beans |

Qn. In the space provided below, draw a diagram showing self-dispersal.

Bean



castor oil



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
		 MAINA	

LESSON TWO

EDUCATIONAL
SERVICES [MES]

DATE	CLASS	SUBJECT	NO. OF PUPILS <small>(is down)</small>	TIME			TEACHER'S NAME
				BOYS	GIRLS	TOTAL	
				From	To		

PLANT PROPAGATION

Qn. What is plant propagation?

- Plant propagation is a method of making plants to multiply.

Qn. Identify the two methods of plant propagation.

- Seed propagation
- Vegetative propagation

Seed propagation

Qn. What is seed propagation?

- Seed propagation is a method of propagation where seeds are used to obtain new plants.

Qn. Suggest any seven examples of plants propagated by means of seeds.

- | | | |
|------------|----------------|-----------------|
| i. Carrots | vi. Tomatoes | x. Groundnuts |
| ii. Wheat | vii. Sorghum | xi. Beans |
| iii. Maize | viii. Cow peas | xii. Soya beans |
| iv. Peas | ix. Oats | |
| v. Barley | | |

Qn. Mention the two methods of planting seeds.

- i. Row planting
- ii. Broad casting

(a) What is broadcasting?

- Broadcasting is a method of planting where seeds are scattered in a well prepared garden.

Qn. Mention any four examples of seeds planted using broadcasting.

- i. Simsim
- ii. millet
- iii. Rice
- iv. Wheat

Qn. Give any three advantages of broadcasting.

- i. Broadcasting saves time.
- ii. Broadcasting require less labour.
- iii. Many seeds are planted at a time.

Qn. Give any seven disadvantages of broadcasting.

- i. Broadcasting makes weeding difficult.
- ii. Broadcasting encourages overcrowding of crops.
- iii. Broadcasting leads to easy spread to diseases.
- iv. Broadcasting makes harvesting difficult.
- v. Broadcasting requires large piece of land.
- vi. Broadcasting makes thinning difficult.
- vii. Many seeds are used.

Row planting

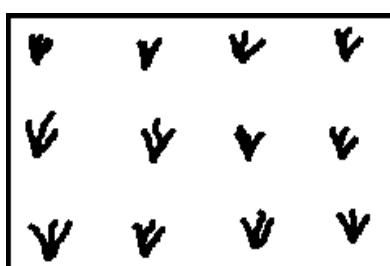
Qn. What is row planting?

- Row planting method is a method of planting where seeds are planted in rows or lines.

Qn. Mention any twelve examples of seeds / plants planted using row planting.

- | | | |
|--------------------|----------------|----------------|
| i. Cabbage | v. Beans | ix. Watermelon |
| ii. Passion fruits | vi. Pineapples | x. Tomatoes |
| iii. Maize | vii. Carrot | xi. Oranges |
| iv. Soya beans | viii. Bananas | xii. Mangoes |

Qn. In the space provided below, illustration using a pencil and a ruler to show row planting method.



Qn. Mention any five advantages of row planting.

- i. Row planting makes weeding easy.
- ii. Row planting makes harvesting easy.

- iii. Few seeds are used.
- iv. Row planting prevents overcrowding of plants.
- v. Row planting makes spraying easy.

Qn. Write down any three disadvantages of row planting.

- i. Row planting is time consuming.
- ii. Row planting requires large human labour.
- iii. Row planting is tiring.

Vegetative propagation

Qn. What is vegetative propagation?

- Vegetative propagation is a sexual reproduction in which another part of a plant other than seeds are used to grow a new plant.

Qn. What is asexual reproduction?

- Asexual reproduction is a form of reproduction where reproductive cells are not used.

Qn. Identify the four forms/examples of asexual reproduction.

- i. Spore formation in fungi.
- ii. Budding in yeast.
- iii. Vegetative propagation in plants.
- iv. Cell division / binary fission in bacteria.

Qn. Give the two methods of vegetative reproduction.

- i. Natural vegetative propagation.
- ii. Artificial vegetative propagation.

(a) Natural vegetative propagation

Qn. Write down any six methods of natural vegetative propagation.

- | | |
|----------------------|------------------------|
| i. Use of corms | iv. Use of leaves |
| ii. Use of bulbs | v. Use of suckers |
| iii. Use of rhizomes | vi. Use of stem tubers |

(i) Use of corms

Qn. What is a corm?

A corm is a vertical swollen underground stem that stores food.

Qn. List down any three examples of plants propagated by means of corms.

- i. Coco yams
- ii. Gladiolus
- iii. Crocus

(ii) Use of rhizomes

Qn. What is a rhizome?

- A rhizome is a horizontal underground stem that stores food.

Qn. List any four examples of plants propagated from rhizomes.

- i. Ginger
- ii. Turmeric
- iii. Cannally
- iv. Zoyzia

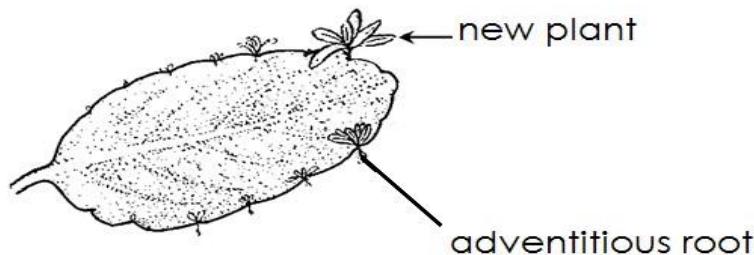
(iv) Use of leaves

- Some leaves develop adventitious roots on their margin if favourable conditions are found.

Qn. Mention any two examples of plants propagated from leaves.

- i. Bryophyllum
- ii. Cactus

Qn. In the space provided below, draw a well-labeled illustration of a bryophyllum.



(v) A sucker.

Qn. What is a sucker?

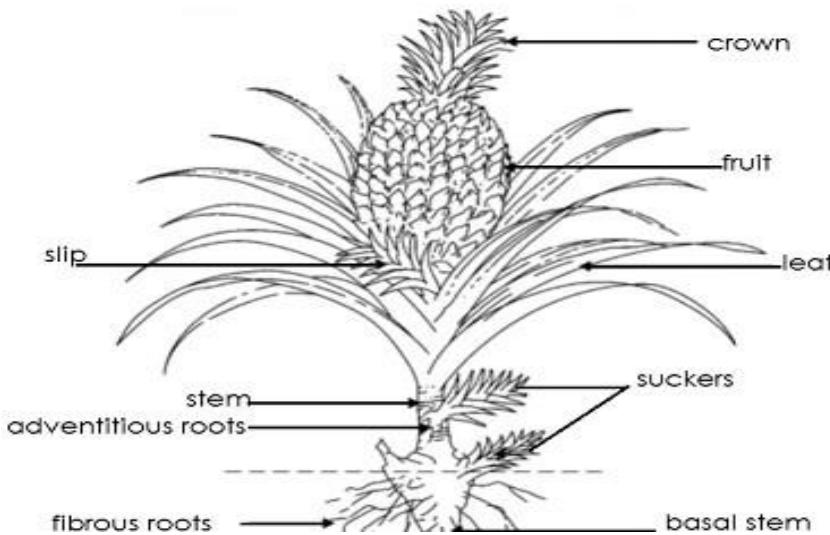
- A sucker is a lateral branch from the terminal bud that develop from the base of a parentplant.

Qn. Mention any four examples of plants propagated by planting suckers.

- i. Bananas
- ii. Aloevera
- iii. Pineapples
- iv. Sisal



Qn. In the space provided below, draw a well-labeled diagram showing a pineapple sucker.

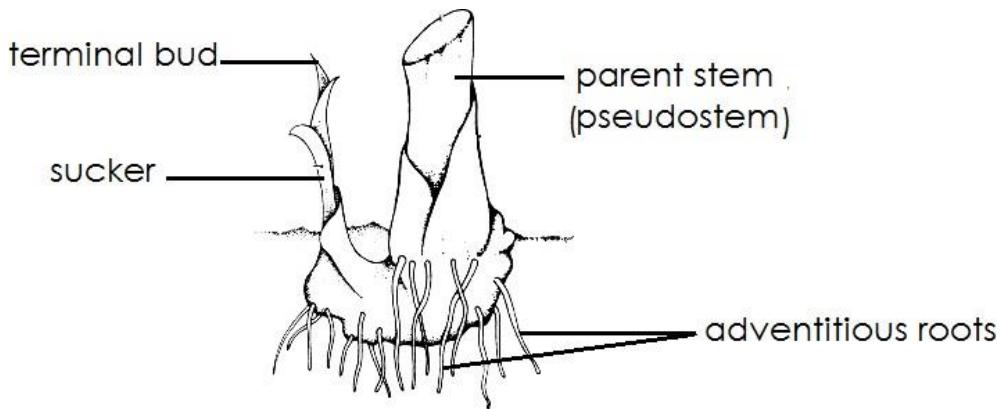


Qn. Besides using suckers, how else can pineapple be propagated?

- By planting the crown

Qn. In the space provided below, draw a well-labeled diagram showing a banana plant with its

sucker.



Qn. Give a reason why leaves are cut off from a banana plant before planting.

- To reduce water loss from the plant.

Qn. Why are the adventitious roots removed from a banana sucker before planting?

- To avoid nematodes from spreading in-case they existed in parent plant.

(vi) Use of stem tubers

Qn. What are stem tubers?

- Stem tubers are crops that store their food in the swollen underground stem.

Qn. Mention any two examples of plants propagated using stem tubers.

- i. Irish potatoes
- ii. White yams



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

(b) Artificial vegetative propagation

Qn. What is artificial propagation?

- Artificial vegetative propagation is method where a farmer use stems to obtain newplants.

Qn. List down the five forms of artificial vegetative propagation.

- i. Stem cutting
- ii. Grafting
- iii. Layering

- iv. Marcotting
- v. Budding

(i) Propagation from stem cuttings

- Stem are cut into short pieces with two or three nodes and axillary buds to grow.

Qn. List down any four examples of plants propagated by means of stem cuttings.

- i. Sugar canes
- ii. Cassava
- iii. Sweet potatoes
- iv. Rose flowers

Qn. In space provided below, draw a diagram showing stem cutting (cassava stem cutting).



(ii) Propagation by grafting

- In this method, a shoot with a bud of one plant is joined to another plants with a waterproof binding tape.

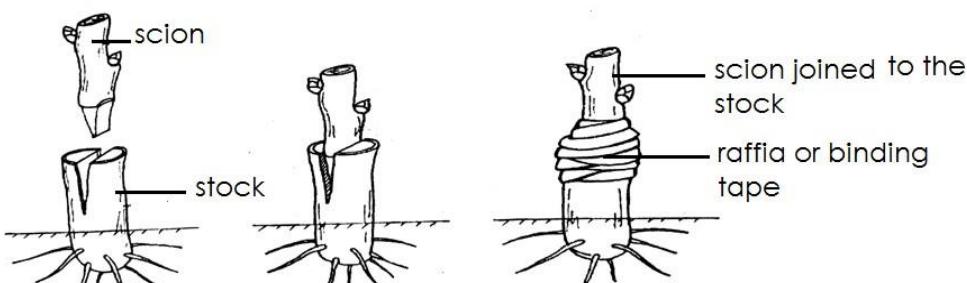
Note

The bud which is used is called a scion and the plant to which the bud is joined is called stock.

Qn. What name is given to:-

- a) a bud used in grafting propagation? - It is called a scion.
- b) a plant on which a bud/scion is joined during grafting propagation? - It is called a stock.

Qn. In the space provided below, draw a well-labeled diagram showing propagation by grafting



Qn. Give any five examples of plants propagated by grafting.

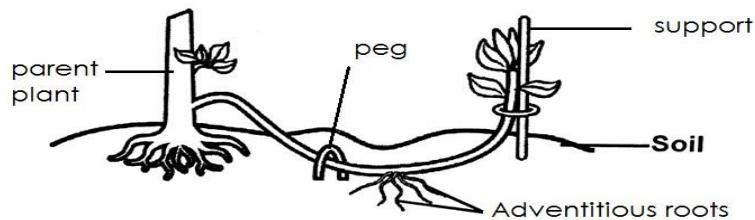
- i. Oranges
- ii. Lemon
- iii. Cocoa
- iv. Avocado
- v. Mangoes

(ii) Propagation by layering

- In this method a branch from a parent plant is bent into the soil and a slit is made at one of the nodes and covered in soil.
- After some times, adventitious roots grow from the part covered in the soil.

- It is then cut off from the parent plant to become independent.

Qn. In the space provided below, draw a well-labeled diagram showing propagation of layering.



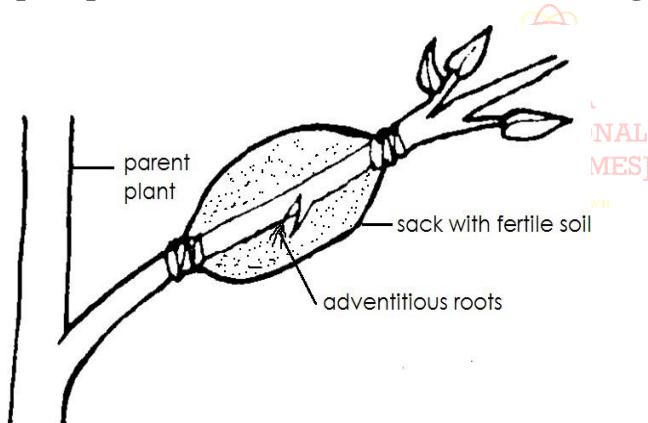
Qn. Identify any one example of a plant propagated by layering

- Roses

(ii) Propagation by marcotting

- In this method, one healthy branch of a plant is used.
- A cut is made on that branch carefully to remove the bark.
- Fertile soil is put in a piece of sack and placed around the part of the branch where the bark has been removed.

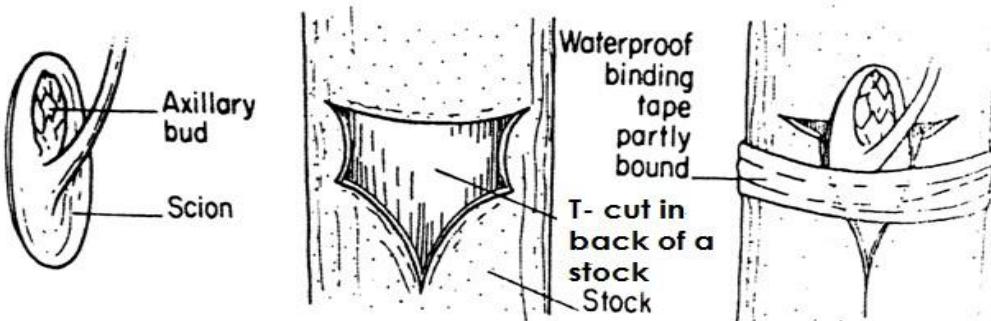
Qn. In the space provided below, draw a well-labeled diagram showing propagation by marcotting.



(iv) Propagation by budding

- In this method, a bud of one plant is made to grow on another plant.
- The plant used should be of the same kind.

Qn. In the space provided below, draw a well-labeled diagram showing propagation by budding.



Qn. Give any four examples of plants propagated by budding.

- i. Oranges
- ii. Lemons
- iii. Apples
- iv. Tangerine

Qn. Mention any five advantages of vegetative propagation.

- i. Only one plant is needed to produce the off spring.
- ii. The new plant gets food from the parent plant.
- iii. Growth of the new plant is rapid.
- iv. No pollinating agent is needed.
- v. It enables plants to maintain their genetic characteristics.

Qn. Write down any four disadvantages of vegetative propagation.

- i. Colonization of new areas will not happen.
- ii. The disease can be transmitted from the parent plant to offspring.
- iii. Many plants may be destroyed by disaster e.g. fire
- iv. No new varieties are produced in the plants.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
		MAIN EDUCATIONAL SERVICES [MES] Way up is down	

LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Topics 6 ANIMAL HUSBANDRY

Qn. What is animal husbandry?

- Animal husbandry is the keeping of livestock.

Qn. What is livestock?

- Livestock are farm animals.

Qn. List down any five examples of livestock.

- i. Cattle
- ii. Goats
- iii. Sheep
- iv. Pigs
- v. Rabbits

Cattle keeping

Qn. What is cattle keeping?

- Cattle keeping is the rearing of cattle.

Qn. Mention any six examples of cattle.

- | | |
|------------|-------------|
| i. Cows | v. Bullocks |
| ii. Calves | vi. Heifers |
| iii. Bulls | |
| iv. Oxen | |

Terms used in cattle keeping

Qn. Give the meaning of each of the following terms as used in cattle keeping.

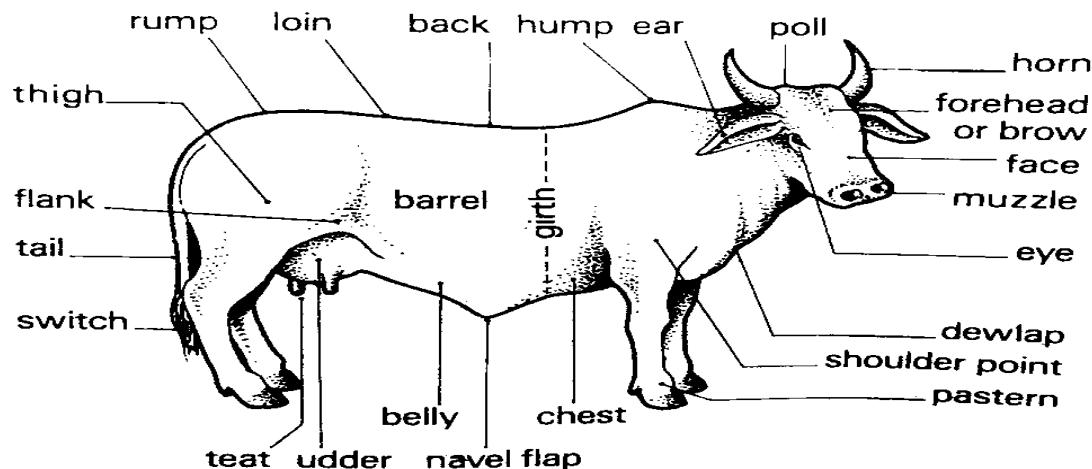
- i. **A calf** is a young one of cow.
- ii. **A bull** is mature male cattle.
- iii. **A cow** is mature female cattle.
- iv. **A heifer** is a young female cow which has not yet given birth.
- v. **A bullock** is young male cattle.
- vi. **Oxen** are castrated bulls reared for doing work.
- vii. **Steers** are castrated bulls reared for meat production.

Qn. Suggest any nine importance of keeping cattle (Reason why people keep cattle)

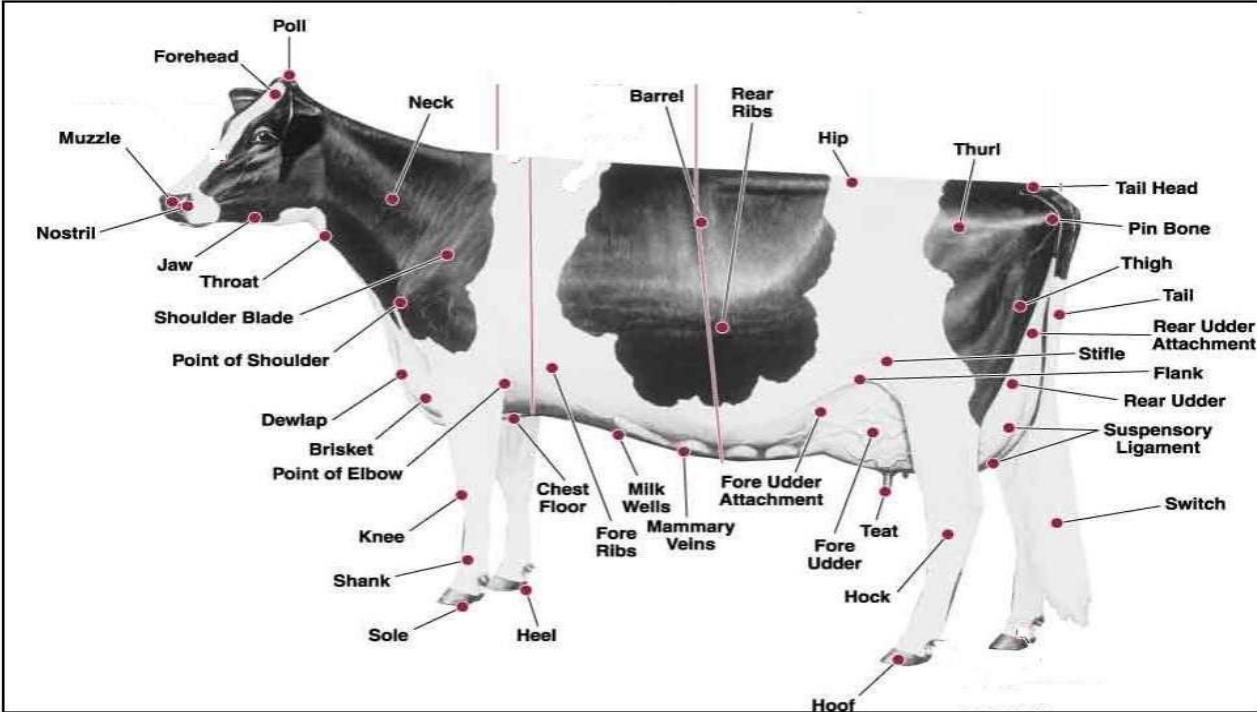
- i. For milk
- ii. For meat production
- iii. Cow dung is used as manure.
- iv. Cow dung is used for production of biogas.
- v. Cattle provide hides for making leather products.
- vi. Oxen provide energy resources for ploughing and transport.
- vii. Hooves and horns are used to make buttons, glue and necklaces.
- viii. Keeping cattle is source of employment.
- ix. Keeping cattle is a source of income.

Qn. In the space provided below, draw a well-labeled diagram of external features of a cow.

(a) Simplified external parts of a cow



(b) Detailed external parts of a cow.



Qn. Give the functions of different parts of a cow.

(i) Eyes

- For seeing

(ii) Ears

- For hearing
- For body balance
- For beating insects around the head.

(iii) Muzzle

- The muzzle is the protruding part of the nose.

Note:

- The muzzle is cold and moist when the cow is healthy and warm when the cow is sick.

(iv) Hooves

- Hooves protect the feet from external damage.

(v) Udder

- The udder stores milk produced by mammary glands.

(vi) Teats

- The teats let out milk from the udder.

(vii) Switch

- The switch helps to chase away insects from animals.

(viii) Horns

- For protection



MAINA
EDUCATIONAL
SERVICES [MES]

Wav up is down

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
-----------------	----------	----------	-------------

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LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Breeds of cattle

Qn. What is a breed of cattle?

- A breed of cattle is a family of cattle with specific characteristics.

Qn. How is breed of cattle determined?

- Size of an animal.
- Production rate of the cattle.
- Ability of resist diseases.
- Colour of animals.
- Body shape / body conformation of cattle.

Qn. Identify three main breeds of cattle you know.

- Local breed of cattle.
- Exotic breeds of cattle.
- Hybrids / cross breed.



Local breeds or indigenous breeds.

Qn. What are local breeds/indigenous breeds?

- Local breeds are breeds that have been kept in Uganda for a long time.

Qn. List down any seven examples of local breeds of cattle.

- | | |
|-------------------|------------------------------|
| i. Zebu cattle | v. Nsagala cattle |
| ii. Ankole cattle | vi. Boran cattle |
| iii. Nsoga cattle | vii. Small East African Zebu |
| iv. Nganda cattle | |

Qn. Mention any seven characteristics of local breeds of cattle.

- Local breeds produce less quantity of meat and milk.
- Local breeds require less attention and care.
- Local breeds can survive on poor pasture.
- Local breeds can withstand harsh weather conditions.
- Local breeds grow and mature slowly.
- Local breeds have few reproductive problems.
- Local breeds are more resistant to diseases.

Qn. Identify any five advantages of keeping local breeds of cattle.

- Local breeds need less care and attention.
- Local breeds have few reproductive problems.

- iii. Local breeds can survive on poor pasture.
- iv. Local breeds are resistant to disease.
- v. Local breeds can withstand harsh weather condition.

Qn. Identify any four disadvantage of keeping local breeds of cattle.

- i. Local breeds produce less quantities of meat.
- ii. Local breeds are small in size.
- iii. Local breeds produce less milk.
- iv. Local breeds grow and mature slowly.

Qn. How can the quality of local breeds be improved upon?

- i. By crossbreeding
- ii. By upgrading /selective breeding
- iii. By proper feeding

Exotic breeds of cattle.

Qn. What are exotic breeds?

- Exotic breeds are breeds that were imported to Uganda from outside countries.

Qn. Give any twelve examples of exotic breeds of cattle.

- | | |
|--------------------|------------------------|
| i. Santa gertrudis | vii. Aberdeen angus |
| ii. Hereford | viii. American Brahman |
| iii. Jersey cattle | ix. Charolais |
| iv. Brown Swiss | x. Jamaican hope |
| v. Friesian cattle | xi. Sahiwal |
| vi. Ayrshire | xii. Red poll |



MAINA
EDUCATIONAL
SERVICES (MES)

Qn. Mention any six characteristics of exotic breeds of cattle.

- i. Exotic breeds produce high quantity of meat and milk.
- ii. Exotic breeds have many reproductive problems.
- iii. Exotic breeds have a lot of care and attention.
- iv. Exotic breeds cannot withstand harsh weather conditions.
- v. Exotic breeds cannot survive on poor pasture.
- vi. Exotic breeds are easily attacked by diseases.

Qn. Give any three advantages of keeping exotic breeds of cattle.

- i. Exotic breeds produce high quantity of milk.
- ii. Exotic breeds grow and mature faster.
- iii. They are easy to market.

Qn. Write down any five disadvantages of keeping exotic breeds.

- i. Exotic breeds are easily attacked by diseases.
- ii. Exotic breeds have a lot of reproductive problems.
- iii. Exotic breed need a lot of care and attention.
- iv. Exotic breed cannot withstand harsh weather condition.
- v. Exotic breed are expensive to maintain.

Cross breeds

Qn. What is a cross breed?

- Cross breed is a breed of cattle obtained by mating an exotic breed together with a localbreed.

Note:

- A cross breed is can also be called a hybrid.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

WEEK SEVEN

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

TYPES OF CATTLE

Qn. What is a type of cattle?

- A type of cattle is a class of cattle kept for a specific purpose.

There are four types of cattle namely:-

- i. Dairy cattle
- ii. Dual purpose cattle
- iii. Beef cattle
- iv. Draught cattle



Way up is down

DAIRY CATTLE

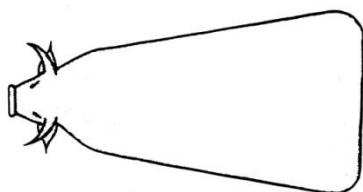
Qn. What are dairy cattle?

- Dairy cattle are types of cattle kept for milk.

Qn. Mention any six characteristics of dairy cattle.

- i. Dairy cattle have triangular body shapes.
- ii. Dairy cattle have a higher rate of milk production.
- iii. Their hind quarters are wide and they have big udders.
- iv. Dairy cattle have small heads and neck.
- v. Dairy cattle have four medium teats.
- vi. Dairy cattle have plenty of space between their hind legs.

Qn. In the space provided below, draw a body shape of a dairy cattle.



Qn. Give any five examples of milk breeds/dairy breeds of cattle.

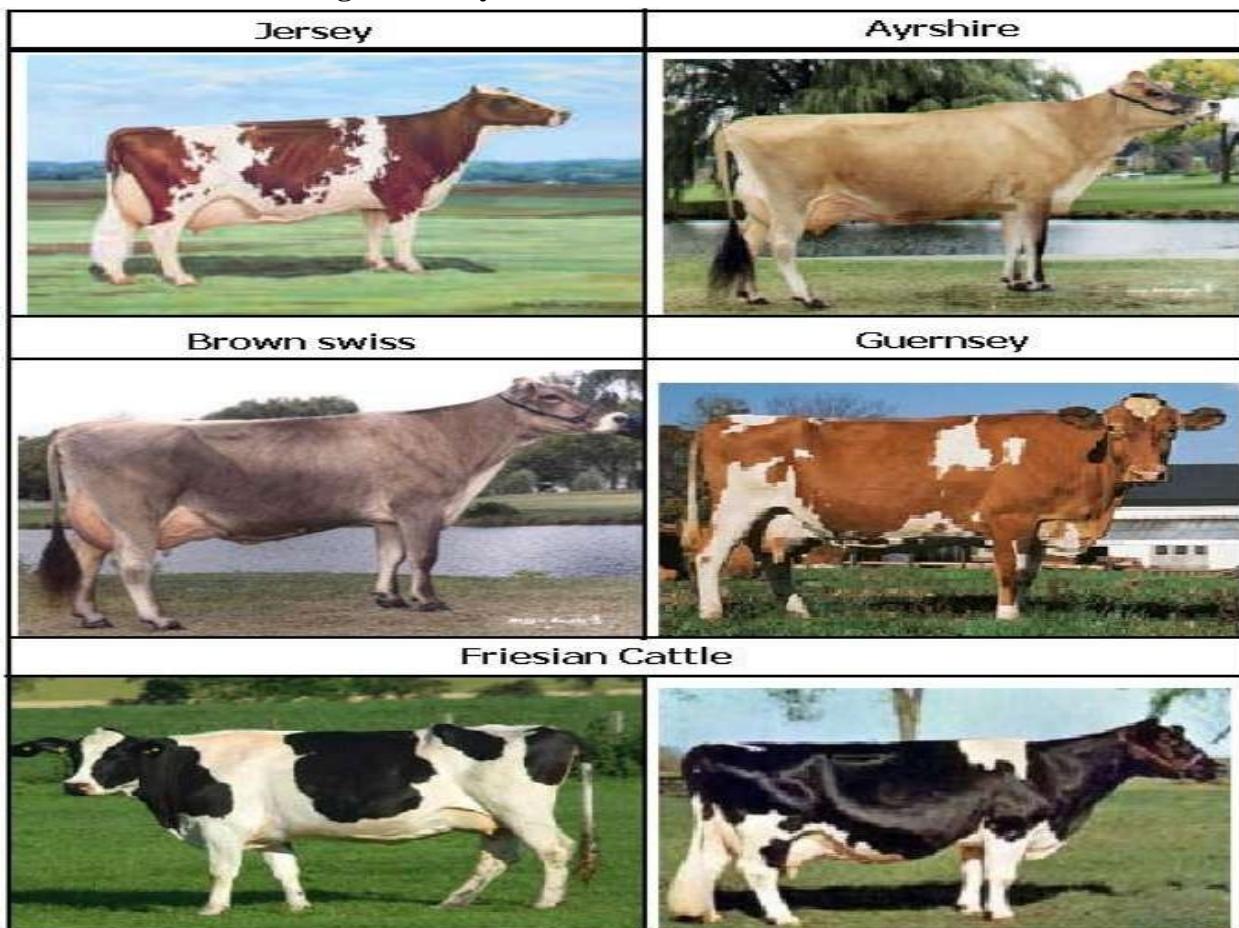
- i. Friesian
- ii. Guernsey

- iii. Jersey
- iv. Ayrshire
- v. Jamaican hope
- vi. Brown swiss.

Note:

- Friesians are the best milk producers.

Below are some of the images of dairy cattle.



Beef cattle

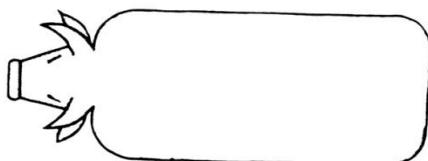
Qn. What are beef cattle?

- Beef cattle are cattle kept for meat or beef production.

Qn. Mention any four characteristics of beef cattle.

- i. Beef cattle produce high quantity of meat.
- ii. Beef cattle have rectangular block shapes.
- iii. Beef cattle have short legs.
- iv. Beef cattle have broad long backs.

Qn. In the space provided below, draw a body shape of breed of cattle.



Qn. List down any seven examples of breeds of cattle.

- | | |
|----------------------|---------------------------|
| i. Aberdeen angus | v. Hereford |
| ii. Charolasis | vi. Santa gertrudis |
| iii. Galloway | vii. American beef master |
| iv. American Brahman | |

Dual purpose cattle

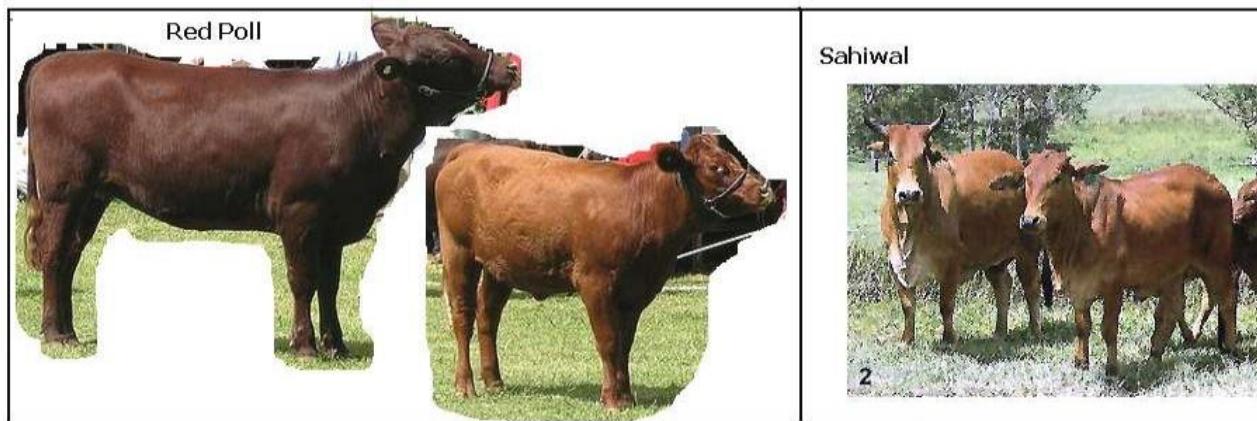
Qn. What are dual purpose cattle?

- Dual purpose cattle are cattle kept for both beef and milk production.

Qn. Give any six examples of dual purpose cattle.

- | | |
|-------------------------|-----------------------------|
| i. Red poll | iv. Zebu cattle |
| ii. Sahiwal | v. Ankole cattle |
| iii. Milking short horn | vi. Small East African Zebu |

Below are some of the images of dual purpose cattle.



Draught cattle / work type cattle.

Qn. What are draught cattle?

- Draught cattle are cattle kept for labour.

Qn. List down any two examples of work done by draught cattle.

- i. Pulling carts
- ii. Ploughing gardens

Qn. Give any one examples of work cattle.

- Oxen

Breeding in cattle

Qn. What is breeding?

- Breeding is the maintaining of inherited characteristics among cattle.

Qn. Mention any eight examples of inherited characteristics in cattle.

- i. Colour of the animal.
- ii. Production rate of the animal.
- iii. Growth rate of the animal.
- iv. Ability to live longer.
- v. Type of the animal.
- vi. Milking ability of the animal.

- vii. Size of the animal.
- viii. Resistance to diseases.

Qn. List down the five types of breeding.

- i. Cross breeding
- ii. Inbreeding
- iii. Line breeding
- iv. Up grading
- v. Out breeding

Crossbreeding.

Qn. What is crossbreeding?

- Crossbreeding is the mating of unrelated breeds of cattle.

Note:

- The product got after cross breeding is a hybrid / cross breed.

Qn. Suggest any three advantages of cross breeding.

- i. Cross breeding helps to improve the quality of local breeds.
- ii. The offspring may grow fast and healthy.
- iii. The offspring may have better performance than that of the parents.

Qn. Give any one disadvantages of crossbreeding.

- Animals might lose some characteristics.

Inbreeding

Qn. What is inbreeding?



- In breeding is mating of very closely related animals like brothers and sisters, fathers and daughters.

Qn. Give any one importance of inbreeding.

- In breeding is used by expert breeders to maintain and strengthen good characteristic among animals.

Qn. Mention any three disadvantages of inbreeding.

- i. Inbreeding may lead to production of poor quality animals if not done properly.
- ii. The offspring produced may be of low resistance to diseases.
- iii. The offspring may grow slowly.

Out breeding

Qn. What is outbreeding?

- Out breeding is the mating of same animals but from different flocks.

Qn. How is out breeding important?

- Out breeding helps to restore qualities in cattle that may be disappearing from the flock.

Up grading

Qn. What is up grading?

- Up grading is the mating of a poor breeds with the animal of a superior quality.
- Line breeding is the mating of closely related animals like cousins.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
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LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Reproduction in cattle.

Qn. What is reproduction?

- Reproduction is a process by which organisms multiply in number by giving rise to young ones.

Note:

- Cattle undergo sexual reproduction.

Qn. What is sexual reproduction?

- Sexual reproduction is the type of reproduction that involves reproductive cells.

Qn. How do cattle reproduce?

- By giving birth to live young ones.

Qn. How is reproductive important in cattle?

- It helps cattle to increase in number.

Heat period in cattle (Oestrus)

Qn. What is heat period?

- Heat period is the time a cow is ready to mate with a bull.



MAINA
EDUCATIONAL
SERVICES (MES)

Wav up is down

Qn. Give any six signs of heat period in cattle.

- The cow stands still when being mounted.
- The vulva swells and turns red.
- Loss of appetite to graze.
- The cow urinates frequently.
- The cow makes a lot of noise.
- The cow mounts other cattle.

Service / insemination as used in cattle.

Qn. What is insemination?

- Insemination is the act of depositing sperms inside a cow's vagina.

Qn. Give the two types of insemination.

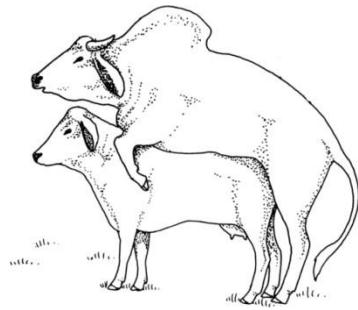
- Artificial insemination
- Natural insemination

Natural insemination.

Qn. What is natural insemination?

- Natural insemination is the type of insemination where a bull deposits sperms inside a cow's vagina during mating.

Qn. In the space provided below, draw a diagram showing natural insemination



Qn. Identify and define the methods of natural insemination.

(i) Hand mating

- Hand mating is a method of mating where a bull is kept separately from cows and it is brought when the cow is on heat.

(ii) Pasture mating

- Pasture mating is a method where a bull is kept together with cows.

Qn. Mention any four advantages of natural insemination.

- i. It is cheap to manage.
- ii. Both male and female animals are not denied desire for sex.
- iii. Natural insemination does not bother a farmer to look for a trained inseminator.
- iv. It is easy for a bull to detect the cow on heat.

Qn. Suggest any four disadvantages of natural insemination.

- i. Natural insemination encourages inbreeding.
- ii. It may be expensive to transport a bull if not around.
- iii. Small cows may be injured by big bulls.
- iv. Natural insemination leads to easy spread of venereal diseases.

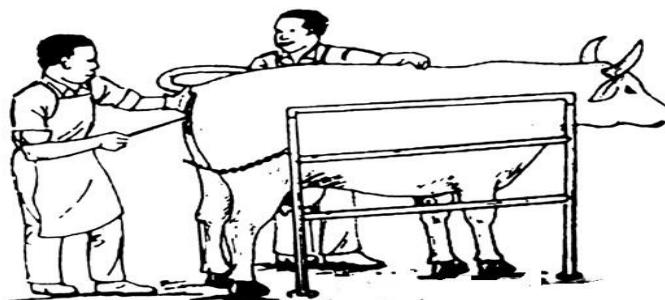
Artificial insemination

Qn. What is artificial insemination?

Way up is down

- Artificial insemination is the act of depositing sperms into cow's vagina using a syringe.

Qn. In the space provided below, draw a diagram showing artificial insemination.



Qn. Write down any seven advantages of artificial insemination.

- i. Artificial insemination controls inbreeding in cattle.
- ii. Artificial insemination controls easy spread of venereal diseases.
- iii. Artificial insemination prevents injuries on small cows by heavy bulls.
- iv. A farmer can only keep cows instead of rearing bulls.
- v. Semen from dead bulls can be used to inseminate all cows.
- vi. Semen can easily be transported.

vii. Artificial insemination enables a farmer to use semen from good breeds of cattle.

Qn. Suggest any four disadvantages of artificial insemination.

- i. It is expensive to maintain proper storage of sperms.
- ii. It requires a trained and experienced person to carry it out.
- iii. It may be very difficult for a farmer to identify a cow on heat.
- iv. Animals are denied their natural feeling of having sex.

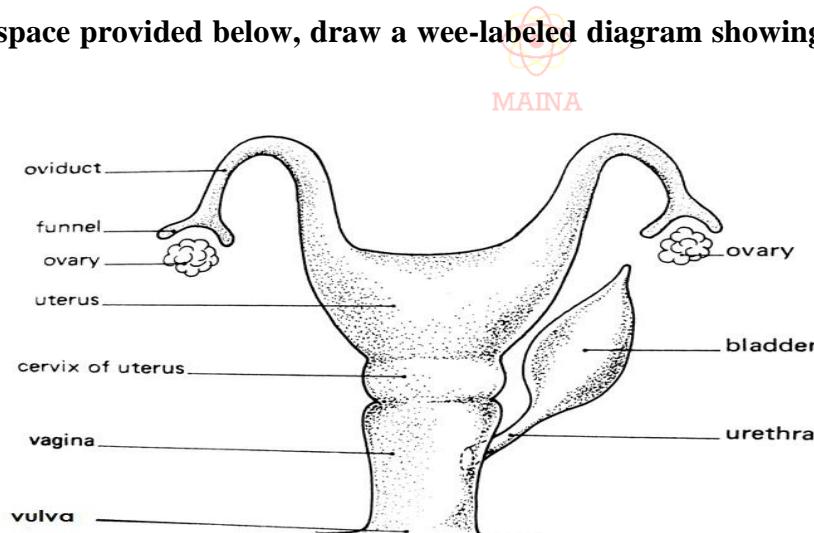
GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. In the space provided below, draw a well-labeled diagram showing the reproductive system of a cow.



Qn. Give the Functions of the parts of the reproductive system of a cow.

(i) Vulva

- The vulva receives the penis and guides it to the vagina.

(ii) Vagina

- i. It is where semen is deposited.
- ii. It acts as a birth canal during delivering.

(iii) Ovary

- i. It produces the female reproductive cells ova.
- ii. It produces ovarian hormones called **oestrogen**.

- iii. Oestrogen controls sexual cycle and the course of pregnancy.
- iv. It is where conception takes place.

Qn. What is conception?

- Conception is the process by which an egg is fertilized to form a young one.

Qn. Where does conception take place?

-In the ovary

Qn. What is the function of the oestrogen hormones in female animals?

- Oestrogen controls sexual cycle and the course of pregnancy.

Qn. What name is given to ovarian hormone being produced by an ovary in female mammals like cows?

- It produces ovarian hormones called **oestrogen**.

(iv) Cervix

- It closes the lower end of the uterus during pregnancy.

(v) Uterus

- i. It is where implantation takes place.
- ii. It is where the foetus develops from.

Qn. What is implantation?

- Implantation is the attachment of the foetus to the walls of the uterus.

(vii) Urinary bladder

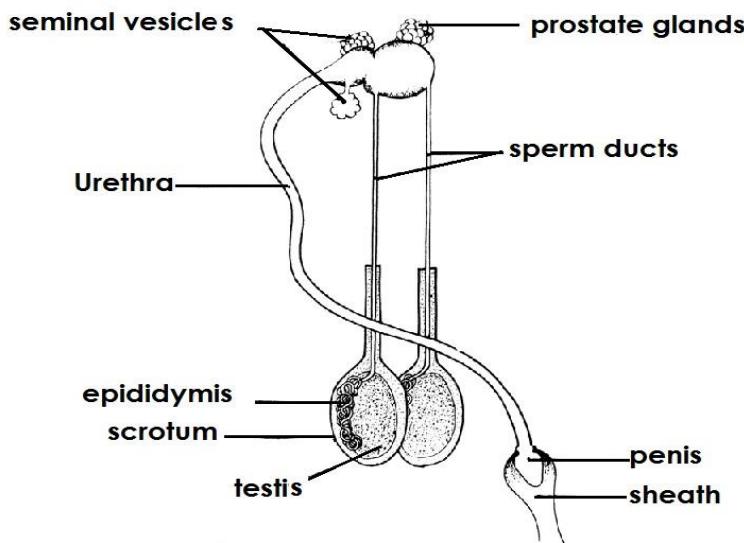
- It stores urine for a short time.



(viii) Urethra

- It acts as a passage of urine from the urinary bladder.

Qn. In the space provided below, draw a diagram showing the reproductive system of a bull.



Qn. Give the functions of each part of the reproductive system of a bull.

(i) Testes

- i. Produces sperm.
- ii. Produces testosterone hormone.

Qn. What name is given to the male reproductive cells?

- Sperms are the male reproductive cells.

Qn. Give any two functions of the testosterone hormones to a bull/male animal.

- i. Testosterone is responsible for increasing sexual desire.
 - ii. Testosterone is responsible for developing the physical and sexual features of male organisms.
- (ii) **Sperm duct**
- The sperm duct carries sperms from the testis to the urethra.
- (iii) **Penis**
- The penis directs sperms into the cow's vagina.
- (v) **Epididymis**
- It stores the sperms.
- (vi) **Sheath**
- Protects the penis from harm by covering it.
- (vii) **Scrotum**
- i. It protects the testes.
 - ii. Regulates the temperature around testes.
- (viii) **Prostate glands and seminal vesicles.**
- They provide semen which helps sperms to move.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
		 MAINA EDUCATIONAL SERVICES [MES]	

Wav up is down

LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Fertilization in cattle

Qn. What is the fertilization?

- Fertilization is the union of male and female gametes to form a zygote.

(b) What name is given to the following in animals?

- (i) **Male gametes?** -Sperm
- (ii) **Female gametes?** -Ova

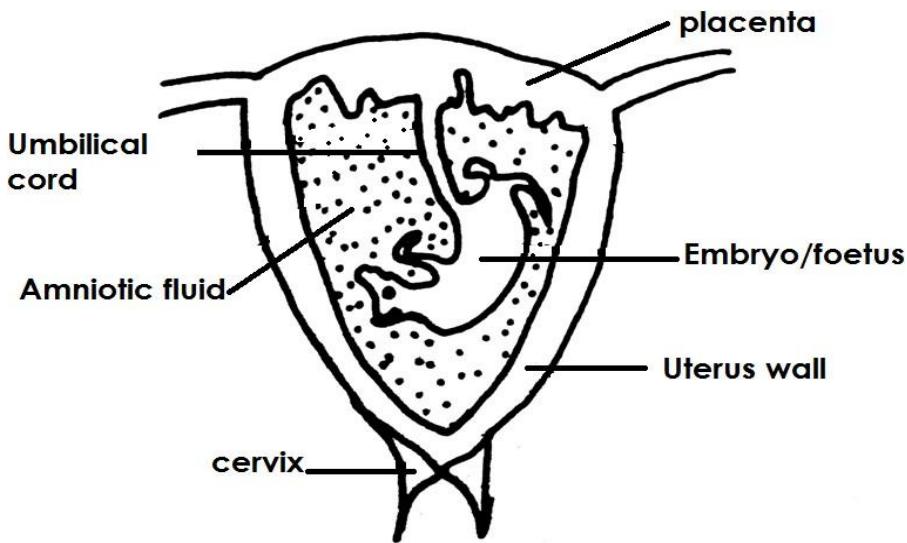
Note:

- The immediate result of fertilization in cattle is a zygote
- After fertilization has taken place, we say that the cow has conceived or conception has taken place.

(c) What is a zygote?

- A zygote is a fertilized egg.

Qn. In space provided below, draw a diagram showing a developing foetus in the womb.



Qn. Give the functions of each part.

(i) Umbilical cord

- i. It connects the embryo to the placenta.
- ii. It acts as a passage of oxygen and food to the embryo.

(ii) Placenta

- i. It attaches the embryo to the uterus.
- ii. It stores food and oxygen until they are taken by the embryo.
- iii. It stored waste materials from the embryo or foetus.

(iii) Amnion

- It stores amniotic fluid.

(iv) Amniotic fluid

- It protects the foetus from harm or injury.

Gestation period (pregnancy in cattle)

Qn. (a) what is gestation period?

- Gestation period is the period from fertilization to birth.

(b) State the gestation period of a cow.

- 9 months and 10 days (280 days)

Qn. Identify the gestation period of the following animals:-

Animal	Gestation period
Rabbits (doe)	1 month (30 days)
Goat (nanny)	5 months (150 days)
Sheep (ewe)	5 months
Pig (sow)	3 months 3 weeks , 3 days (114 days)
Dog (bitch)	2 months and 3 days (63 days)

(c) What is an in calf cow?

- An in calf cow is a cow that is pregnant.

(d) Mention any five Signs of pregnancy.

- i. The cow does not go on heat after twenty one days of insemination.

- ii. The cervix closes after pregnancy.
- iii. Mucus discharge from the vagina.
- iv. The udder enlarges.
- v. There is reduction in milk production in case of lactating cows.

Qn. Give the meaning of each of the following terms.

(i) A lactating period

- A lactating cow is a cow that produces milk after giving birth.

(ii) Lactation period

- Lactation period is a period when the cow provides milk to the young ones.

(iii) Drying off

- Drying off is when no milking is done in a cow.

Note:

- During pregnancy (2months) before giving birth, the cows are subjected to a drying off period.
- During drying off the cow is fed on protein rich foods and this is called steaming up.

Qn. What is steaming up?

- Steaming up is the feeding of an in calf cow on foods rich in proteins.

Qn. Mention any six advantages of steaming up.

- i. Steaming up enables the embryo to grow healthy.
- ii. Steaming up controls low birth weight in cows.
- iii. Steaming up prevents still birth in cattle.
- iv. Steaming up builds up the calf body in preparation for calving.
- v. Steaming up increases milk production in cows.
- vi. Steaming up increases the period of lactation.

Calving / parturition

SERVICES [MES]

Way up is down

Qn. What is calving?

- Calving is the act of giving birth to a calf by a cow.

Qn. Give any seven signs of calving in cattle.

- i. Mucus discharge from the vagina.
- ii. Loss of appetite.
- iii. The udder swells and is filled up with milk.
- iv. The in calf cow isolates itself from others.
- v. The in calf cow is restless and keeps on changing positions.
- vi. The cow lies down most of the time.
- vii. The vulva becomes swollen and reddish.

Colostrum

Qn. What is colostrum?

- Colostrum is the first milk produced by the cow after calving.

Qn. Mention any four advantages of colostrum.

- i. Colostrum boosts the immunity of the calf.
- ii. Colostrum helps to open up the digestive system of the calf.
- iii. Colostrum improves on the calf's eye sight because it is rich in vitamin A.
- iv. Colostrum contains proteins that build up the body of the calf.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Milking in cattle**Qn. What is milking?**

- Milking is the removal of milk from the cow's udder.

(b) What is milk let down?

- Milk let down is the flow of milk from cow's udder.

Qn. Identify the two types of milking you know.

- i. Hand milking
- ii. Machine milking

Hand milking**Qn. What is hand milking?**

- Hand milking is the removal of milk from the cow's udder by squeezing the teats by using hands.

**Qn. In the space provided below, draw a diagram to illustrate hand milking.****(b) Write down any two the advantages of hand milking.**

- i. Hand milking is cheap.
- ii. Hand milking requires less labour.

Qn. Write down any two disadvantages of hand milking.

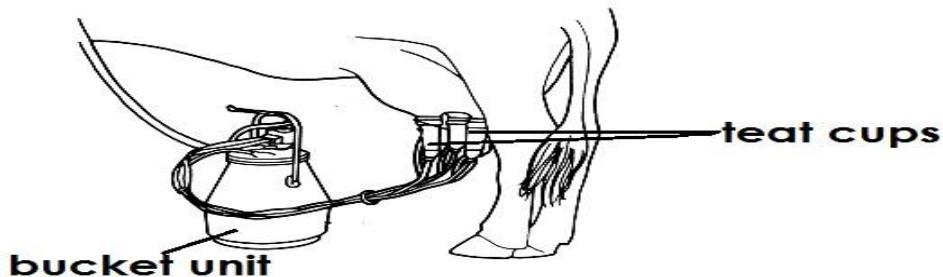
- i. Hand milking is time consuming.
- ii. Hand milking is tiring.

Machine milking

Qn. What is machine milking?

- Machine milking is the removal of milk from the teats using machines.

Qn. In the space provided below, draw a diagram to illustrate machine milking.



Qn. Write down any one advantage of machine milking.

- Machine milking saves time.

Qn. Write down any three disadvantages of machine milking.

- i. It is expensive.
- ii. Machine milking requires skilled labour.
- iii. Machine milking damages the udder when one uses faulty machines.

Qn. Write down four steps of obtaining clean milk.

- i. Assemble the milking equipment and wash them with clean water and soap.
- ii. Put the cow in a clean milking place and tie the hind legs.
- iii. Wash the udder and the teats with warm water.
- iv. Wash your hands with clean warm water and soap to remove dirt and germs.

Questions in relation to above steps.

- (a) Why should the milking equipment be washed with clean water and soap?
 - To kill germs
- (b) Give a reason why the cow is given some feeds during milking?
 - To make the cow busy and relaxed.
- (c) Why are the teats and udder of a cow washed with warm water before milking?
 - To stimulate milk let down.
 - To remove dirt.
- (d) Why are the teats smeared with Vaseline or cream during milking?
 - To prevent the teats from cracking.

Strip cup and Lactometer

(i) A strip cup

Qn. What is the use of a strip cup?

- A strip cup is used to detect mastitis in milk.

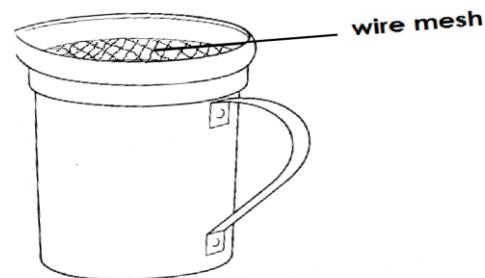
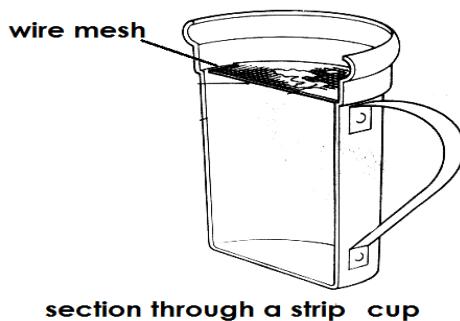
Qn. How can a farmer detect the presence of mastitis in milk?

- Using a strip cup

Qn. How can a farmer detect the presence of mastitis in milk using a strip cup?

- By seeing blood stains on the wire mesh or a strip cup.

Qn. In the space provided below, draw the structure of a strip cup.



(ii) Lactometer

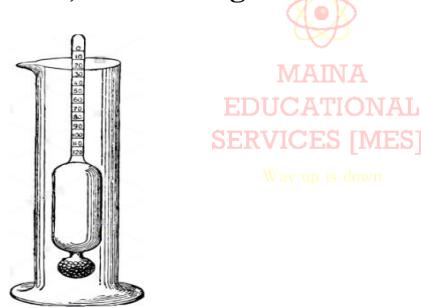
Qn. Identify the major three uses of a lactometer to the livestock farmer?

- i. A lactometer is an instrument used to measure the amount of water in milk.
- ii. A lactometer is also used to detect whether fats have been removed from milk.
- iii. A lactometer measures the density of milk.

Qn. Briefly, explain how a lactometer works?

- If a lactometer is dipped in milk where water has been added or fats have been removed, it will sink deeper in milk

Qn. In the space provided below, draw a diagram of a lactometer.



Preserving milk

Qn. What is milk preservation?

- Milk preservation is the keeping of milk for a long time without going bad.

Qn. Why should milk be preserved?

- For future use.

Qn. Mention any four methods of preserving milk.

- i. Refrigeration
- ii. Sterilization
- iii. Pasteurization
- iv. Boiling

(i) Refrigeration

Qn. What is refrigeration?

- Refrigeration is the method of preserving milk by putting it in a refrigerator.

Qn. How does refrigeration prevent milk from going bad?

- Low temperature in a refrigerator prevents multiplication of bacteria.

(ii) Sterilization

Qn. What is sterilization?

- Sterilization is the method of preserving milk where bacteria are killed by maximum boiling followed by covering milk on cooling.

(iii) Pasteurization

Qn. What is pasteurization?

- Pasteurization is a method of preserving milk that involves strong heating and sealing milk before bacteria enter.

Qn. Identify any two major contributions/role played by a French microbiologist called Louis Pasteur.

- Pasteurization was discovered by a French microbiological called Louis Pasteur
- Louis Pasteur discovered that milk goes bad because of bacteria.

Qn. Mention any six products of milk/products got from milk.

- | | |
|-------------|------------|
| i. Yoghurt | v. Ghee |
| ii. Cheese | vi. Casein |
| iii. Butter | |
| iv. Whey | |

Qn. suggest any five examples of processed milk

- Fortified milk
- Skimmed milk
- Powdered milk (Dried milk)
- Sterilized milk
- Pasteurized milk



Way up is down

(i) Fortified milk

Qn. What is fortified milk?

- Fortified milk is milk made more nutritious by adding proteins, vitamins A and D.

(ii) Pasteurized milk

Qn. What is pasteurized milk?

- Pasteurized milk is milk that has been maximumly heated and sealed before germs enter.

(iii) Skimmed milk

Qn. What is skimmed milk?

- Skimmed milk is milk got after removing fats from milk.

Qn. What is skimming?

- Skimming is the process of removing fats from milk is called skimming.

(iv) Powdered milk

Qn. What is powdered milk?

- Powdered milk is milk that has been processed into powder form.

(v) Sterilized milk

Qn. What is sterilized milk?

- Sterilized milk is milk got after being boiled to kill bacteria, cooled and covered.

(vi) Condensed milk

Qn. What is condensed milk?

- Condensed milk is milk that has been evaporated and sweetened with sugar.

Keeping milk records

Qn. What are milk records?

- Milk records are written information about milk production on a farm.

Qn. Suggest any four importance of keeping milk records.

- i. It enables farmers to know how much milk is produced per cow.
- ii. Milk records enable a farmer to know profits and losses made.
- iii. Milk records enable the farmer to know the animals which need to be treated.
- iv. Milk records enable a farmer to select cows suffering from mastitis and treat them.

Qn. Apart from milk products from cattle, list any five others non-milk products from cattle.

- | | |
|------------|-------------------|
| i. Hides | iv. Blood |
| ii. Bones | v. Dung and urine |
| iii. Horns | |

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD



WEEK EIGHT

LESSON ONE

**MAINA
EDUCATIONAL
SERVICES [MES]**

DATE	CLASS	SUBJECT	NO. OF PUPILS <small>(is down)</small>	TIME			TEACHER'S NAME
				BOYS	GIRLS	TOTAL	
				From	To		

Management practices in cattle

Qn. Mention any eleven practices done on a livestock farm.

- | | | |
|---------------------------|--------------------|---------------------------|
| i. Dehorning | v. Deworming | x. Dusting |
| ii. Cattle identification | vi. Deticking | xi. Removal of extra teat |
| iii. Castration | vii. Hoof trimming | |
| iv. Vaccination | viii. Spraying | |
| | ix. Dipping | |

(a) Castration

Qn. What is castration?

- Castration is the removal of testes from a male animal.

Qn. Mention the three methods of castration.

- i. Closed castration (Use of a burdizzo)
- ii. Open castration(surgical operation)
- iii. Use of a loop.

(i) Closed castration

Qn. What is closed castration?

- Closed castration is the crushing of testes and sperm ducts using a burdizzo.

Qn. In space provided below, draw a diagram of a burdizzo



(ii) Open castration

Qn. What is open castration?

- Open castration is the removal of testes from a male animal by cutting a slit on the scrotum using a shark knife.

(iii) Use of a loop

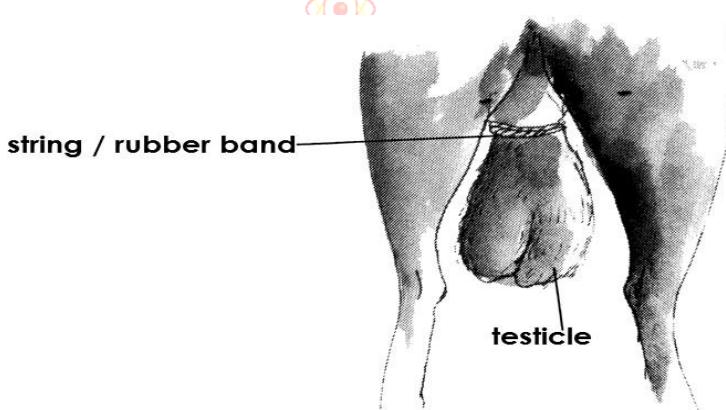
Qn. Explain briefly how one can use a loop method during castration.

- This is a method where an elastic rubber band (loop) is used to tie and squeeze the sperm duct.

Note:

- In use of a loop, the sperm ducts and testes shrink and die.

Qn. In space provide below, draw a diagram showing a use of a loop



Qn. Write down any six advantages of castration.

- Castration prevents unwanted pregnancies in cattle.
- Castration prevents random mating in cattle.
- Castration makes animals humble and easy to handle.
- Castration prevents spread of venereal diseases in cattle.
- Castration enables animals to grow faster and after.
- Castration prevents poor breeds of cattle from breeding.

Qn. Mention any four disadvantages of castration.

- Animals are denied their natural feeling of having sex.
- Animals may lose a lot of blood.
- The wounds of the animal may become septic and cause more infections.
- The animal feels pain.

(b) Deworming

Qn. What is deworming?

- Deworming is the giving of animals medicine or drugs in order to kill internal parasites.

Qn. Identify the two methods of deworming.

- i. Dozing
- ii. Drenching

Qn. (a) What is dozing?

- Dozing is the giving of animals solid medicine in order to kill internal parasites. (endoparasites)

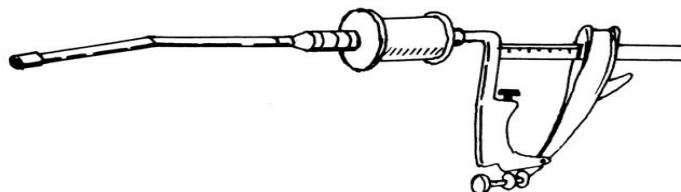
(b) What is drenching ?

- Drenching is the giving of animals liquid medicine in order to kill internal parasites.

Qn. Which tool or equipment is used during drenching process?

- Drenching is done using a drenching gun or drenching bottle.

Qn. In space provided below, draw a diagram showing a drenching gun.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD
		MEDIA EDUCATIONAL SERVICES [MES] <small>Way up is down</small>	

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

(c) Dehorning

Qn. What is dehorning?

- Dehorning is the removal of horns from an animal's head.

Qn. Mention the three methods of dehorning in livestock farming.

- i. Use of chemical
- ii. Use of spoon dehorner
- iii. Use of dehorning iron

Qn. What is disbudding?

- Disbudding is the removal of horn buds from the head of an animal.

(i) Use of chemicals

Qn. Briefly, explain how chemicals are used to dehorn animals.

- In this method the horn bud is rubbed using caustic soda until it bleeds.

(ii) Use of spoon dehorner

Qn. Briefly, explain how a spoon dehorner is used to dehorn animals.

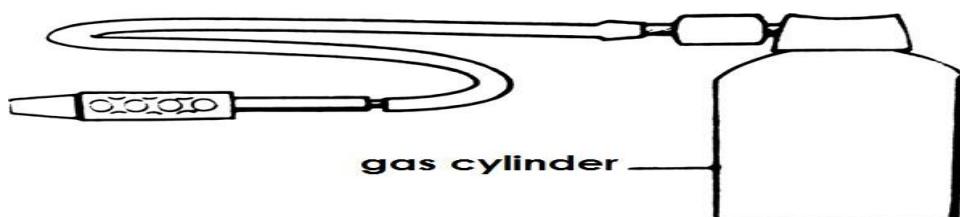
- In this method, a cylindrical tool (spoon dehorner) is used to scoop out the horn bud from the calf's head.

(iii) Using a dehorning iron

Qn. Briefly, explain how a dehorning iron is used to dehorn animals.

- In this method a hot iron is pressed on a horn bud until it bleeds.

Qn. In the space provided below, draw a diagram of a dehorning iron.



Qn. Mention any four advantages of dehorning.

- Dehorning creates space in the kraal.
- Dehorning makes animals humble and easy to manage.
- Dehorning reduced injuries among animals.
- Many animals can be kept in small space.

Qn. Mention any four disadvantages of dehorning.

- The animal is denied a right to defend itself in case of danger.
- The hot iron may enter deep and damage the animal brain.
- The animal may feel a lot of pain.
- The animal may lose a lot of blood if not done properly.

(d) Dusting

Qn. What is dusting?

- Dusting is the smearing of chemicals on the animal's body in order to remove external parasites.

(e) Deticking

Qn. What is Deticking?

- Deticking is the removal of ticks from the animal's body using hands.

(f) Vaccination

Qn. What is vaccination?

- Vaccination is the introduction of vaccines into the animal's body to prevent it from getting diseases.

(g) Removal of extra teats

- This practice is done in order to remove extra teats from the cow's udder.

(h) Hoof trimming

Qn. What is hoof trimming?

- Hoof trimming is the cutting of animals' hooves short.

Qn. Give any two advantages of hoof trimming.

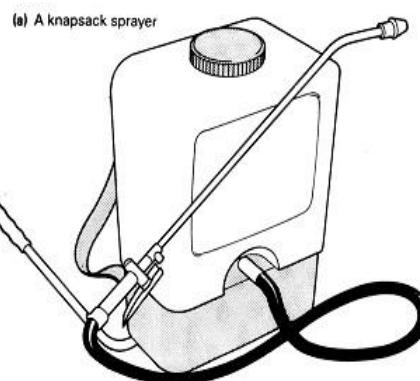
- i. It helps to control foot rot disease.
- ii. It eases movement of animals.

(i) Spraying

Qn. What is spraying?

- Spraying is the removal of ecto parasites from the body of the animals by sprinkling acaricides.

Qn. In the space provided below, draw a diagram showing a knap sprayer.



Qn. How is the above equipment useful on a cattle farm?

- It is used for spraying animals.

(i) Identification of cattle

Qn. What is cattle identification?

- Cattle identification is the way of identifying cattle where labels or marks are used.

Qn. List down any six identification methods used in cattle.

- i. Ear tagging
- ii. Ear notching
- iii. Use of number of laces
- iv. Ear tattooing
- v. Branding
- vi. Tail bobbing



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GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

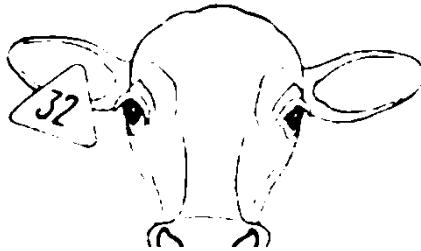
LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

(i) Ear tagging

Qn. What is ear tagging?

- This is a method of identifying cattle where tags having numbers are fixed in the ear of the animal using an application.



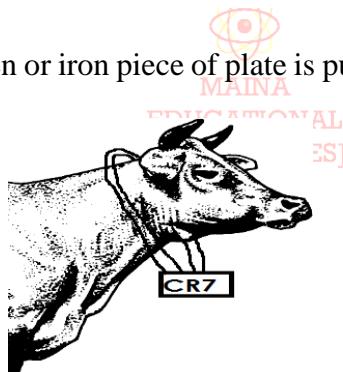
(ii) Ear notching

- This is when the animal's ear is cut with marks at the edge.



(iii) Number laces

- This is where a wooden or iron piece of plate is put on the animal's head.



(iv) Ear tattooing

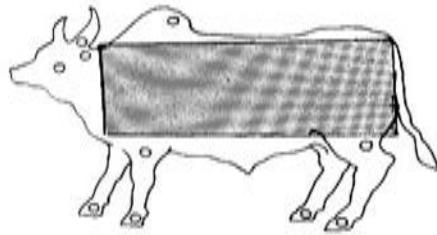
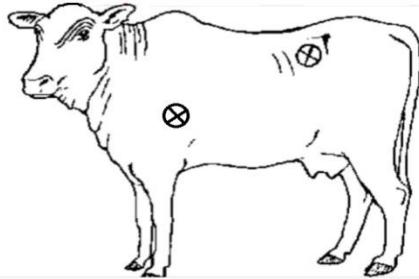
- This is done by making permanent marks up using pliers carrying a letter or number that will identify the animal.



Branding

Qn. What is branding?

This is where a hot iron marked with a symbol for identification is used.



Note:

- Only certain parts of an animal should be branded.
- This is because branding marks can spoil the quality of the hide after the animal is slaughtered.

Qn. Give one reason why unnecessary branding is dangerous to an animal.

- Unnecessary branding marks spoil the quality of the hide after animal slaughtering.

(v) Tail bobbing

Qn. What is tail bobbing?

- Tail bobbing is the trimming of the animal switch.

(k) Dipping cattle

Qn. (a) What is cattle dipping?

- Cattle dipping is the immersing of an animal in acaricides.

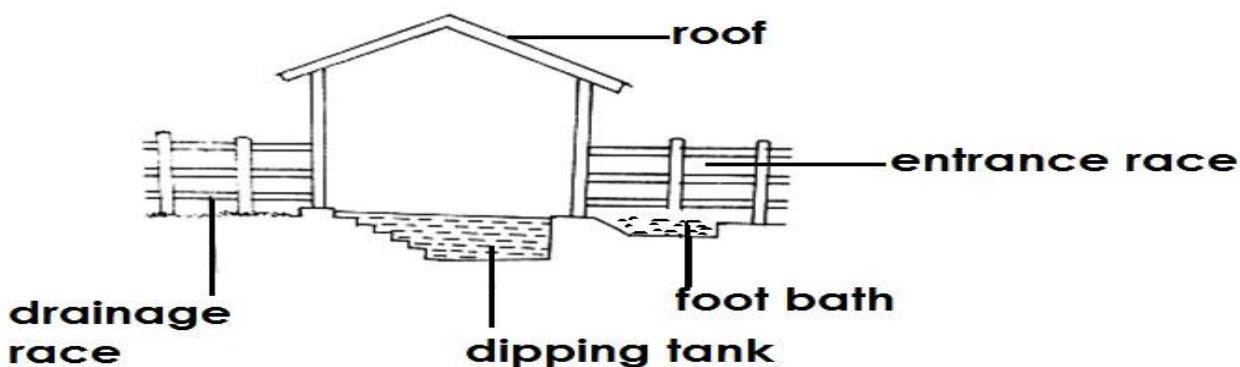
(b) What are acaricides?

- Acaricides are chemicals used to kill external parasites.

(c) Name the structure on a cattle farm where dipping is done from.

- Dip tank

Qn. In space provided below, draw a diagram showing a structure of a dip tank.



Qn. What is a dip tank?

- A dip tank is a farm structure designed to immerse animals in order to kill external parasites.

Qn. Identify the components of a dip tank and their functions.

(i) Roof

- It is made of iron sheets to prevent evaporation of the dip wash.
- The roof prevents dilution of acaricides by rain.

(iii) Collecting yard

- It is where animals are put or collected before dipping.

Note:

- The collecting yard should have a water trough from which animals drink water before being dipped.
- The floor of the collecting yard should be built with quarry stones to remove mud from animals hooves.

(ii) Foot bath

- Clean animal feet not to make the dip wash dirty.

(ii) Entrance race

- It is used to allow animals into the dip tank.

(iii) Dip tank

- It is where animals are immersed.
- It contains acaricides which kill ecto parasites.

(iv) Drainage race

- Allow chemical flow back into the tank.

Qn. Give the meaning of each the following terms as used in cattle management

(a) Hand dressing

- Hand dressing is a way of killing ticks where strong acaricides are used with a brush to treat areas not well treated in spraying.

(b) Dip washing

- Dip washing is a liquid containing chemicals that kill ticks in dip tank.

Qn. Write down any three factors to consider when constructing a cattle dip.

- i. The cattle dip should be near a grazing area so that the animals do not walk long distances.
- ii. The cattle dip should be constructed on a strong firm ground.
- iii. The cattle dip should be constructed in a well-drained place to control flooding.

Qn. How can cattle management at the cattle dip be maintained?

- i. Provide animals with water before dipping them so that they are not tempted to drink acaricides.
- ii. Dip animals in the morning or evening.
- iii. First make 10 – 15 animals to run through the dip so that they can mix water with acaricides.
- iv. Animals should be arranged in the single file when entering the dip tank.
- v. Do not dip sick, injured, calves and pregnant animals.
- vi. Dip animals according to their ages.
- vii. Dip all animals in one day to prevent further spread of parasites.
- viii. Keep records of all animals dipped.

Qn. Identify any five different farm structures found on livestock farm.

- i. Cattle crush
- ii. Spray race
- iii. Calf pen
- iv. Milking parlour /shed
- v. Cattle crush

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

(i) A cattle crush

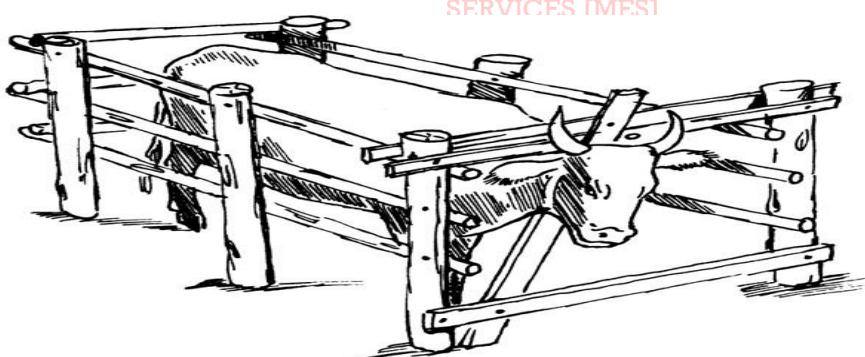
Qn. What is a cattle crush?

- A cattle crush is a structure used for restraining animals when carrying out certain cattle practices.

Qn. List any ten examples of activities that can be carried out in a cattle crush.

- | | | |
|------------------|-----------------------------|---------------------------|
| i. Branding | v. Ear notching | viii. Pregnancy diagnosis |
| ii. Dosing | vi. Artificial insemination | ix. Drenching |
| iii. Ear tagging | vii. Dehorning | x. Castration |
| iv. Vaccination | | |
| x. | | |

Qn. In the space below, draw a structure of a cattle crush.



(ii) A spray race

- A spray race is a farm structure used for tick control.

Qn. How does a spray race work?

- A spray race works by showering acaricides on animals body.

(iii) Milking parlour

- Milking parlour is place where milking is done.

Qn. Write down any three components of a milking parlour

- Feeding trough
- Water trough
- Night trough

(iv) Calf pen

- A calf pen is a structure for housing calves.

Qn. Identify any three features of a good calf pen.

- A good calf pen should be clean.
- A good calf pen should enable the calf to see the mother calf and other animals.
- A good calf pen should be well ventilated.

Qn. State any two different ways of caring for a calf pen.

- Scrubbing the floor.
- Repairing damaged parts of the calf pen.

Qn. Name the two different types of calf pen

- Permanent calf pen
- Movable calf pen

(i) Permanent calf pen

Qn. What is a permanent calf pen?

- A permanent calf pen is a pen that cannot be moved from one place to another.

(ii) Movable calf pen

Qn. What is a movable calf pen?

- A movable calf pen is a pen that can be moved from one place to another.

Note:

- Movable calf pens are commonly used in paddock grazing.

Pastures

Qn. What is pasture?



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SERVICES [MES]

Way up is down

- Pasture is open grassland where animals graze.

Qn. Give the two types of pasture.

- Natural pasture
- Artificial pasture /prepared pasture

(a) Natural pasture

Qn. What is natural pasture?

- Natural pasture is grass that grows on its own and eaten by animals in its raw form.

Qn. Give any six examples of natural pasture.

- | | |
|-------------------|------------------|
| i. Elephant grass | iv. Rhodes grass |
| ii. Couch grass | v. Spear grass |
| iii. Alfalfa | vi. Nandi grass |

(b) Prepared / artificial pasture

Qn. What is prepared pasture?

- Prepared pasture is pasture made from fodder crops.

Qn. What are fodder crops?

- Fodder crops are crops grown for feeding animals.

Qn. Write down any six examples of fodder crops

- | | |
|------------|--------------------|
| i. Sorghum | iv. Sweet potatoes |
| ii. Millet | v. Maize |
| iii. Oats | vi. Barley |

Qn. Write down the two different examples of prepared pasture.

- Hay

ii. Silage

Qn. Briefly, define the following terms:-

- a. **Hay** is grass that has been dried for feeding farm animals.
- b. **Silage** is grass that has been stored without being dried and it used to feed animals.

Qn. State any three importance of pasture.

- i. Pasture is used as food for animals.
- ii. Some pasture is used as thatching material.
- iii. Some pasture like cloves and legumes are used to improve soil fertility.

Qn. Give any five types of cattle feeds.

- i. Concentrates
- ii. Additives
- iii. Supplements / Roughages
- iv. Succulent feeds
- v. Foliages

(i) Concentrates

Qn. What are concentrates?

- Concentrates are feeds with high value nutrients and they have less moisture.
- Concentrates are given to animals to fatten.

Qn. Give any six examples of concentrate feeds.

- i. Bone meal (source of calcium)
- ii. Cotton seed cake (source of proteins and fats)
- iii. Maize bran (source of carbohydrates) 
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EDUCATIONAL
SERVICES [MES]
- iv. Rock salt (source of sodium)
- v. Blood meal (source of iron)
- vi. Legumes

Wav up is down

(ii) Roughages

Qn. What are roughages?

- Roughages are fibrous feeds with iron food values.

Qn. Mention the importance of roughages in the diet.

- Roughages help in easing digestion of food.

Qn. Give any three examples of roughages supplements.

- i. Hay
- ii. Young grass
- iii. Dry maize stalks

(iii) Succulent feeds

Qn. What are succulent feeds?

- Succulent feeds are feeds with high moisture content and low fibre.

Qn. Mention any three examples of succulent feeds.

- i. Sweet potato vines
- ii. Banana peelings
- iii. Grass

(iv) Additives

Qn. What are additives?

- These are drugs, flavours, hormones added to animal feeds.

(v) Foliages

Qn. What are foliages?

- These are feed that have been preserved and given to animals.

Qn. State any three importance of feeding animals.

- i. Feeding animals increases milk production.
- ii. Feeding animals boosts animals' immunity.
- iii. Feeding enables animals to fatten.

Qn. Give one reason why a cow is given a block of salt to lick during milking.

- Cows are given a block of salt to lick to stimulate milk production.

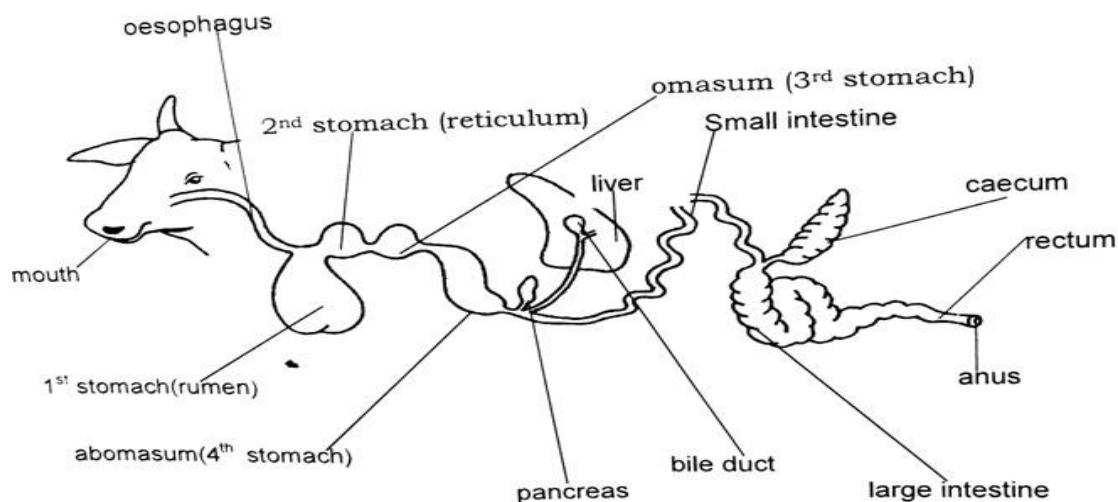
GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. in the space provided below, draw a digestive system of cattle.



Qn. Give the functions of the parts of the digestive system of cattle

(i) Mouth

- It is where food is chewed and mixed with saliva.

(ii) Rumen

- It is where food is stored temporarily before it is taken back to the mouth for rumination or further chewing.

Note:

- The rumen is the first stomach of ruminants.

(iii) Reticulum

- It separates chewed food from unchewed food.
- It retains and stores foreign material like stones.

Note:

- Reticulum is the second stomach of ruminants.

(iv) Omasum

- It grinds / crushes food into small soluble particles.
- It is where absorption of water takes place.

Note:

- Omasum is the third stomach of ruminants.

(v) Abomasum

- It is where digestion of food by enzymes starts from.

Note:

- Abomasum is fourth stomach of ruminants and acts as the true stomach.

GRAZING CATTLE

Qn. What is grazing?

- Grazing is proper use of pasture by livestock.
- Or
- Grazing is getting animals to eat grass or pasture.

**MAIN
SERVICES [MES]**

Qn. What is a pasture land?

- Pasture land is open grassland where animals can be freely grazed.

System or methods of grazing cattle

Qn. State any six the different systems /methods of grazing cattle.

- Zero grazing
- Tethering
- Paddocking / paddock grazing
- Strip grazing
- Herding / free range grazing
- Tethering grazing

Qn. What is tethering grazing?

- Tethering is a method of grazing where animals are tied on a peg using a rope.

Qn. State any three advantages of tethering grazing.

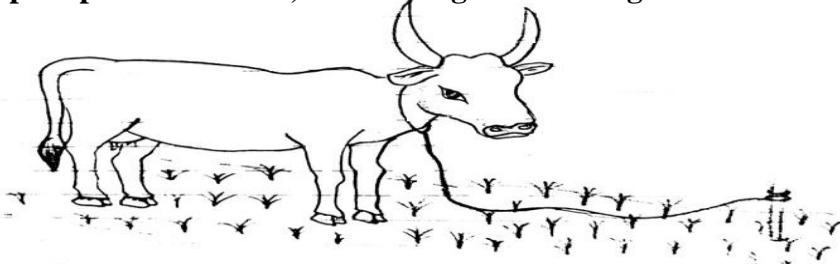
- Tethering is cheap.
- Animals get the best pasture.
- Animals do not destroy farmers' crops.

Qn. State any seven disadvantages of tethering grazing.

- Few animals are kept.
- Animals can be easily stolen.
- Animals can be strangled by the ropes.

- iv. Animals can be killed by wild animals.
- v. Animals may be restricted to only one type of pasture.
- vi. The rope can damage the animal's hides.
- vii. Animals may not get enough pasture to eat if not monitored.

Qn. In space provided below, draw a diagram showing a tethered animal.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD



WEEK NINE

LESSON ONE

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DATE	CLASS	SUBJECT	NO. OF PUPILS <small>IS DOWN</small>	TIME			TEACHER'S NAME
				BOYS	GIRLS	TOTAL	

Paddocking / Paddock grazing

Qn. What is paddocking grazing ?

- Paddocking is a method of grazing where the grazing area is divided into small plots called paddocks.

Qn. Write down any seven advantages of paddocking.

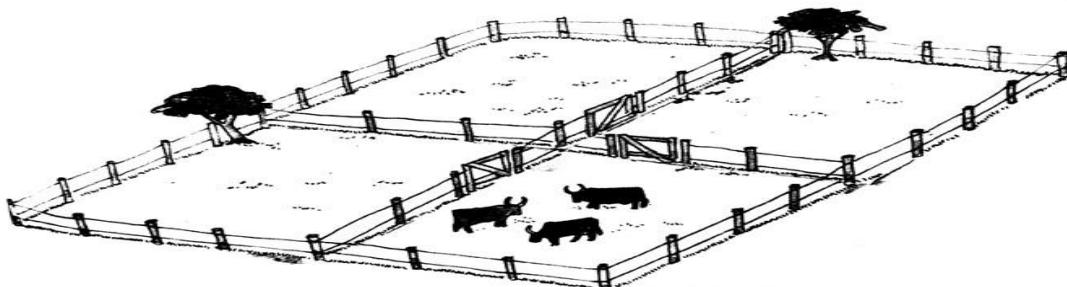
- i. Paddocking controls overgrazing.
- ii. Paddocking allows proper use of pasture.
- iii. Paddocking gives time for pasture to grow.
- iv. Paddocking enables manure to be evenly distributed on the farm.
- v. Paddocking controls the spread of diseases on a farm.
- vi. Paddocking restricts animals from destroying farmers' crops.
- vii. Paddocking controls the spread of pests.

Qn. State the disadvantages of paddocking grazing

- i. Paddocking requires a large piece of land.
- ii. Paddocking is expensive.

- iii. Animals can be injured by barbed wires.

Qn. In the space provided below, draw a diagram showing paddocking grazing



Note:

- Paddocking is commonly practiced in rural areas.

Qn. Why is paddocking commonly practiced in rural areas?

- There is enough land in rural areas.

Qn. Mention any two ways how paddock grazing helps to control tick borne diseases.

- i. Paddocking breaks the life cycle of ticks.
- ii. Paddocking starves ticks to death.

Strip grazing

Qn. What is strip grazing?

- Strip grazing is the method of grazing where the land is divided into strips using temporary wire carrying electricity.

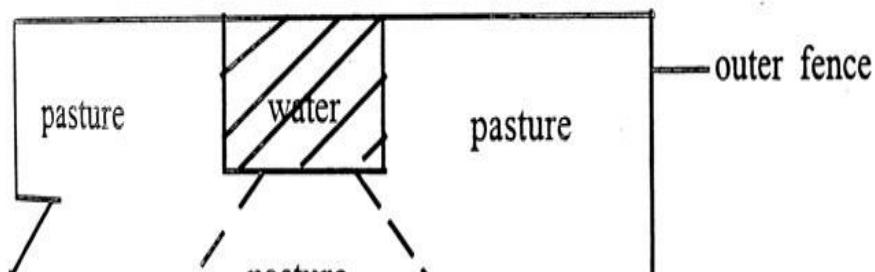
Qn. State any five advantages of strip grazing.

- i. Strip grazing allows proper use of pasture.
- ii. Manure is evenly distributed.
- iii. Strip grazing helps in control of parasites.
- iv. Strip grazing helps in the control of diseases among animals.
- v. Labour is reduced on farm.

Qn. State any three disadvantages of strip grazing.

- i. Few animals are kept.
- ii. It is expensive to maintain.
- iii. Animals may be shocked by electricity.

Qn. In the space provided below, draw a diagram showing strip grazing.



Note:

- Tethering , paddocking and strip grazing are all methods of rotational grazing.

Zero grazing

Qn. What is zero grazing?

- Zero grazing is where cattle are feed indoors without going out to graze.

Qn. State any four advantages of zero grazing.

- Animals are easy to control and monitor.
- Animal dung can easily be collected.
- Diseases can easily be controlled.
- It requires a small piece of land.

Qn. State any four disadvantages of zero grazing.

- Animals lack enough exercises.
- It is expensive to manage.
- It is tiring to look for grass.
- Few animals are kept.

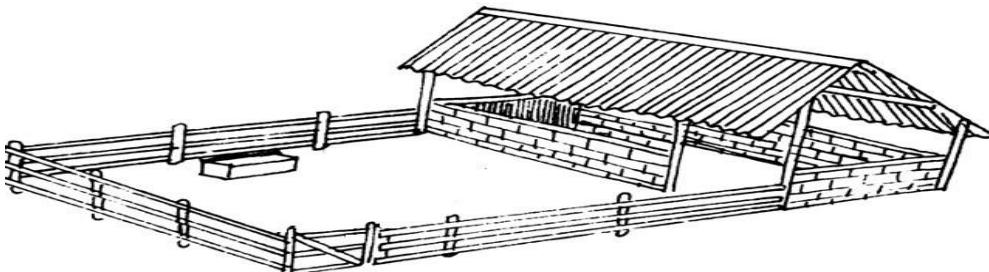
Qn. Why are there less chances of animals contracting diseases in zero grazing?

- Animals do not move out of the shed to mix up with other animals.

Qn. Why is zero grazing commonly practiced in urban areas?

- There is limited land in urban areas.

Qn. In the space provided below, draw a diagram showing zero grazing.



Hherding / free range grazing

Qn. What is herding?

- Herding is a method of grazing where animals are left to move freely and graze on open grassland.

Note:

- In this method the animals are looked after by the herdsman.

Qn. State any four advantages of herding.

- Animals get enough exercise.
- Animals feed on a variety of pasture.
- Herding is cheap.
- Herdsman guides animals to good pasture and water.

Qn. State any seven disadvantages of herding.

- Diseases can easily spread from one herd to another.
- Animals may destroy farmers' crops.
- It may lead to overgrazing in-case of limited land for grazing.
- Pasture is wasted as animals may step on it while grazing.
- Animals can get lost.

- vi. It requires a big piece of land.
- vii. Animals get tired due to walking long distances.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Parasites in cattle.

Qn. What is parasite?

- A parasite is an organism that depends on other organisms for survival without killing them.

Note:

- An organism on which a parasite depends is called a host

Qn. Identify any two different ways in which parasites depend on hosts.

- i. By obtaining food from hosts.
- ii. By getting shelter from the host.


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SERVICES [MES]
Way up is down

Types of parasites

Qn. Mention the two types of parasites.

- i. External parasites / ecto parasites
- ii. Internal parasites / endo parasites

(a) External parasites / ecto parasites

Qn. What are external parasites?

- External parasites are parasites that live outside the animal's body.

Qn. Give any four examples of external parasites.

- i. Ticks
- ii. Mites
- iii. Tsetse flies
- iv. Fleas

Qn. State any four effects ecto parasites on cattle.

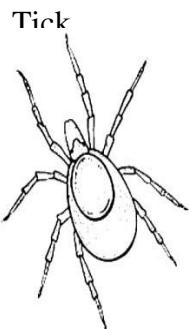
- i. Ecto parasites suck blood from animals' body.
- ii. Ecto parasites damage the hides of cattle.
- iii. Ecto parasites spread diseases in cattle.
- iv. Ecto parasites make the animals uncomfortable.

Qn. Identify any seven ways of controlling external parasite in cattle.

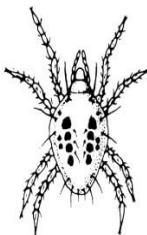
- i. Spraying cattle using acaricides.

- ii. Dipping cattle in acaricides.
- iii. Deticking
- iv. Dusting
- v. Practicing rotational grazing
- vi. Trapping tsetse flies using tsetse fly traps.
- vii. Double fencing

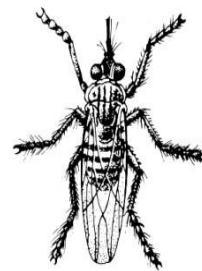
Qn. In the space provided below, draw illustrations of external parasites.



A mite



A tsetse fly



Endo parasites / internal parasites

Qn. What are internal parasites?

- Internal parasites are parasites that live inside animal's body.

Note:

- Internal parasites live in the intestines and liver of animals.

Qn. Give any four examples of internal parasites.

- i. Tape worms
- ii. Liver flukes
- iii. Hook worms
- iv. Thread worms

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Wav up is down

Qn. State any five ways of controlling internal parasites.

- i. By drenching
- ii. By dozing
- iii. Feeding animals on well drained pasture.
- iv. Treating liver flukes by killing water snail using molluscides.
- v. Cattle diseases

Qn. Identify any five causes of diseases in cattle.

- i. Poor feeding
- ii. Eating contaminated feeds.
- iii. Poor sanitation in the animal houses.
- iv. Physical injuries.
- v. Crowding of animals

Qn. State any five signs of a sick animal.

- i. Loss of body weight.
- ii. The animal has dull and rough fur.
- iii. The animal coughs and sneezes.
- iv. Difficulty in breathing.

v. Diarrhoea.

Qn. State any five signs of a healthy animal.

- i. The animals muzzle is wet / moist.
- ii. The animal gains weight.
- iii. The animal's hair is smooth and shiny.
- iv. The animal's ears are alert and warm.
- v. The animal has good appetite.

Groups of cattle diseases

Qn. Identify the three groups of cattle diseases.

-Cattle diseases are grouped according to the germs that cause them i.e

- i. **Bacteria** - causes bacterial diseases.
- ii. **Virus** - causes viral diseases.
- iii. **Protozoa** - cause protozoan diseases

1. Bacterial diseases

Qn. What are bacterial diseases?

- These are diseases caused by bacteria.

Qn. Mention any eight examples of bacterial diseases that affect cattle.

- | | | |
|---------------|-------------------|-------------------|
| i. Mastitis | iv. Tuberculosis | vii. Calf scour |
| ii. Pneumonia | v. Anthrax | viii. Brucellosis |
| iii. Foot rot | vi. Black quarter | |

(a) Mastitis

Qn. Which part of the female animal does mastitis disease affect?

- Mastitis affects the udder of cattle.



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Qn. How does mastitis spread?

- Mastitis spreads through body contact with an infected animal.

Note:

- Humans get infected with mastitis when they drink milk with mastitis bacteria.

Qn. Mention any four signs and symptoms of mastitis in cattle.

- i. Swollen and painful udder.
- ii. Blood stains in milk.
- iii. The cow refuses to be milked.
- iv. The affected teats may become dead and produce no milk.

Qn. Give any four different ways of controlling mastitis in cattle.

- i. Treat the infected animal with antibiotics.
- ii. Use a strip cup to detect the presence of mastitis in milk.
- iii. Vaccinate animals regularly.
- iv. Ensure good hygiene for the animals.

(b) Anthrax

Qn. Write down any two ways how anthrax spreads?

- i. Through contaminated feeds.
- ii. Through contact with an infected animal.

Qn. What name is given to the bacterium that causes anthrax?

- Anthrax is caused by a bacterium called anthracis.

Qn. Identify any seven signs and symptoms of anthracis

- i. Sudden death
- ii. Blood stained dung
- iii. High temperature
- iv. Loss of appetite
- v. Dark watery blood from body openings
- vi. Reduction in milk production
- vii. Shivering

Qn. State any four ways of controlling and preventing anthrax.

- i. Vaccinate the animals regularly.
- ii. Burn or bury the dead animal.
- iii. Do not eat meat of dead animals.
- iv. Separate / isolate the infected animals.

(c) Foot rot

Qn. Which part of the female animal does foot rot disease affect?

- Foot rot attacks hooves of animals.

Qn. Give any three signs and symptoms of root rot

- i. Limping in animals.
- ii. Lameness in animals.
- iii. The animals' hooves may rot, swell and contain pus.

Qn. State the different ways of controlling and preventing foot rot.

- Treat animals with antibiotics.
- Carry out hoof trimming.
- Observe proper sanitation in animal houses.

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SERVICES [MES]

(d) Pneumonia

Qn. Which part of the female animal does pneumonia disease affect?

- It is an infectious disease that affects the lungs of animals.

Qn. Identify any four examples of livestock that are affected by pneumonia disease.

- It affects cattle, sheep, pig and rabbits.

Qn. Mention any four signs and symptoms of pneumonia.

- i. Difficulty in breathing
- ii. Coughing
- iii. Nasal discharge
- iv. Loss of appetite

Qn. How is pneumonia spread?

- Through breathing in air contaminated with bacteria.

Qn. Give any four ways of preventing and controlling of pneumonia.

- i. Isolating infected animals from healthy ones.
- ii. Carry out proper ventilation.
- iii. Good hygiene.
- iv. Treat with antibiotics.

(e) Black quarter

Qn. Write down any five signs and symptoms of black quarter.

- i. High fever
- ii. Shivering
- iii. Loss of appetite
- iv. Dullness
- v. Swollen and painful muscles

Qn. Mention any two ways of preventing or controlling black quarter.

- i. Treat early cases with antibiotics.
- ii. If the animal is dead, dispose off the carcasses by complete burning.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME	TEACHER'S NAME
			BOYS	GIRLS	TOTAL		

(f) Tuberculosis

- It is an infectious disease caused by mycobacterium.
- It affects respiratory system of a cattle, goats, and sheep.

Qn. How is tuberculosis spread?

- i. Through contaminated air.
- ii. Through milk from an infected cow.

Qn. Suggest any four signs and symptoms of tuberculosis.

- i. Loss of appetite
- ii. Coughing
- iii. Loss of weighting
- iv. Decrease in milk production

Qn. Mention any four ways how one can prevent and control tuberculosis.

- i. Vaccination
- ii. Cull and slaughter the sick animals.
- iii. Treat early cases with antibiotics.
- iv. Kill infected animals.

(g) Brucellosis (Contagious abortion)

- It is a contagious bacterial disease.
- It affects the reproductive system of a cow.
- Humans get infected if they eat meat or drink milk from the infected cows.
- It is a venereal disease that affects cattle.

Qn. How is brucellosis spread?

- Through mating and contact with infected animals.

Qn. Mention any four signs and symptoms of brucellosis.

- Abortion in pregnant cows.
- Brownish vaginal discharge.
- Infertility
- Swollen testicles.

Qn. Write down any four ways of preventing and controlling brucellosis.

- Routine vaccination
- Disposal of aborted dead foetus.
- Use artificial insemination
- Cull all infected animal.

2. Viral diseases

Examples of diseases caused by virus in cattle

- Rinderpest

Qn. How is rinderpest?

-Body contact with an infected animals.

Qn. Mention any five signs and symptoms of rinderpest disease.

- High fever
- Severe diarrhoea with blood stains
- Sunken
- Shedding tears
- Sores on the mouth and vagina



Qn. Write any four ways how one can prevent and control rinderpest disease.

- Vaccinate the animals
- Isolate animals
- Slaughter all infected animals
- Apply quarantine

Way up is down

(b) Foot and mouth disease

- It is a highly infectious disease
- It is mainly attacks pigs , cattle , sheep

Note:

- It attacks the mouth membrane and feet of an animal.

Qn. How is foot and mouth disease spread?

- Through contact with an infected animal.
- Through sharing containers with an infected animal.

Qn. Identify any seven signs and symptoms of foot and mouths disease.

- Blisters on the hooves and muzzle (mouth)
- Wounds on the feet
- Lameness
- Loss of appetite
- Reduction in milk production
- High fever
- Dullness

Qn. Mention any four ways of preventing and controlling foot and mouth disease.

- i. Vaccine regularly
- ii. Apply a quarantine
- iii. Isolate animals
- iv. Slaughter all infected animals

Qn. What is quarantine?

- Quarantine is the restriction of animal movement and their products from one place to another in case of a disease outbreak.

Qn. How is quarantine an important practice in cattle management?

- Quarantine prevents the spread of disease among cattle.

3. Protozoan diseases

- These are diseases caused by protozoa to cattle.

Note:

- Most protozoan diseases are spread by ticks and tsetse flies.
- Diseases spread by ticks are called tick borne.

Qn. List any five examples of cattle diseases caused by protozoa

- i. Nagana (trypanosomiasis)
- ii. Red water
- iii. Heart water
- iv. East Coast Fever
- v. Anaplasmosis



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WAVES UP DOWN

Nagana (Trypanosomiasis)

- Nagana is caused by a protozoan called trypanosoma.
- Nagana is spread by a tsetse fly through bites.

Note:

- Nagana is the only protozoan disease that is not spread by a tick.

Qn. Write down any four signs and symptoms of trypanasomiasis.

- i. Dullness
- ii. Loss of appetite
- iii. Loss of weight
- iv. High temperature

Qn. Mention any three ways of preventing and controlling Nagana disease.

- i. Isolate sick animals
- ii. Control tsetse flies
- iii. Use tsetse flies trap to kill tsetse flies.

(b) Heart water

- It is a protozoan disease spread by brown ticks.

Qn. Identify any four signs and symptoms of heart water.

- i. Loss of appetite
- ii. High fever
- iii. Animals move in circles
- iv. Restlessness

Qn. Mention any three ways of preventing and controlling heart water.

- i. Spraying using acaricides
- ii. Dipping animals in acaricides
- iii. Practicing rotational grazing

(c) East Coast Fever

- It is a protozoan disease spread by brown ticks.

Qn. Outline any six signs and symptoms of East Coast Fever disease.

- i. Loss of appetite
- ii. Loss of weight
- iii. High temperature
- iv. Weakness
- v. Nasal discharge
- vi. Diarrhoea

Qn. Mention any two ways of preventing and controlling of East Coast Fever.

- i. Dipping animals in acaricides.
- ii. Spraying animals with acaricides.

(a) Red water

- It is a protozoan disease spread by a red stick.

Qn. Outline any four signs and symptoms of red water disease.

- i. Reddish urine
- ii. High temperature
- iii. Loss of appetite
- iv. Dullness



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SERVICES [MES]

Qn. Identify any two ways of preventing and controlling red water.

- i. Dipping animals in acaricides to kill ticks. up is down
- ii. Spraying animals using acaricides.

Anaplasmosis (Gall sickness)

- It is spread through bites of ticks.

Qn. Write down any four signs and symptoms of anaplasmosis.

- i. Anaemia
- ii. Constipation
- iii. Blood in urine or faeces
- iv. Loss of weight

Qn. Outline any three ways of preventing and controlling anaplasmosis.

- i. Dipping cattle in acaricides.
- ii. Spraying cattle using acaricides.
- iii. Cattle products and their uses

Qn. Suggest the importance of the following livestock products:-

(i) Milk

- i. Milk is sold by people to get money.
- ii. Milk is a source of food to people.

(ii) Beef

- i. Beef is sold to get money.
- ii. Beef is a source of food.

(iii) Horns

- i. Horns are used to make buttons, ear rings and handle for knives.
- ii. Horns are used to make shapes, for decoration.
- iii. Horns are used as musical instruments.

(iv) Hooves

- i. They are used to make glue.
- ii. They are used to make buttons.

(v) Blood

- i. Blood is eaten as food.
- ii. Blood meal is a source of iron to animals.

(vi) Urine and dung

- i. They are used to generate biogas.
- ii. They are used as farmyard manure.
- iii. Cow dung is mixed with sand and ash and used for plastering walls on buildings.
- iv. They promote good growth of pasture in paddocks.

(vii) Bones

- Bones are used to make bones meal for farm animals(animal feeds)

(viii) Hides

- Hides are used for making leather bags, shoes, wallets, belts and watch straps.

Qn. Identify any two ways of preserving hides.

i. Wet salting

ii. Suspension drying



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SERVICES (MES)

- Wet salting is the use of salt in order to dry hides.

Qn. How does salt preserve hides?

- Salt absorbs the moisture content in hides.

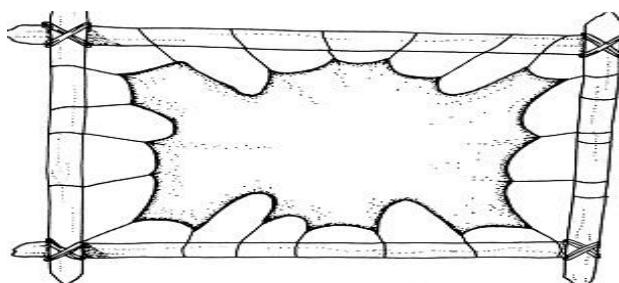
Qn. What suspension drying?

- Suspension drying is the use of heat from the sun to dry hides under the shade.

Qn. What is tanning?

- Tanning is the process of turning hides into leather.

Qn. In space provided below, draw a diagram showing suspension drying of hides.



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

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LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME	TEACHER'S NAME
			BOYS	GIRLS	TOTAL		

Starting a livestock farm.

Qn. Mention the requirements needed to start a livestock farm.

- | | |
|-----------------|---------------|
| i. Land | iv. Market |
| ii. Labour | v. Capital |
| iii. Management | vi. Transport |

Qn. How are the following factors important on a livestock farm?

(i) Land

- It is the place on which the farm is started.
- It is where farm structures are constructed or built.
- It is where feeds or pasture is grown.



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SERVICES [MES]
Way up is down

Qn. State any four ways of acquiring land

- i. By buying
- ii. By inheriting
- iii. From donations
- iv. By hiring land

(ii) Capital

- Capital is the money used to buy the things needed to start a farm.
- Capital is used to buy land.
- Capital is used to buy animals to be reared.
- Capital is used to construct farm structures.
- Capital is used to prepare pasture.
- Capital is used to pay workers and experts on the farm.
- Capital is used to buy acaricides and necessary equipment.

Qn. State any three ways of acquiring capital.

- i. Through donation
- ii. Through getting loans.
- iii. Through getting salaries.

(iv) Labour

- Labour are people who carryout activities on a farm.

Qn. Give two types of labour.

- i. Skilled labour
- ii. Unskilled labour

Qn. State two ways of acquiring labour.

- i. By hiring people
- ii. By employing people

(iv) Market

- Market is the demand for cattle or their products.
- Demand is the desire and ability of people to pay for the products.

(v) Management

- Management involves people who help farmers to organize, plan and guide other workers.

Keeping farm records

Qn. What are farm records?

- Farm records are written information on various activities carried out on the farm.

Qn. Identify any seven types of records kept on a cattle farm.

- | | |
|--------------------------------------|----------------------|
| i. Health records | v. Labour records |
| ii. Feeding records | vi. Breeding records |
| iii. Production records | vii. Milking records |
| iv. Marketing records/ sales records | |

Qn. Briefly, explain the importance of each type of farm records.

(a) Production of records

- These show yields of various farm produce.
- They involve how many animals have been produced and how many have died.

(b) Health records

- These show the type of disease and parasites affecting the cattle.
- These also show treatment that has been given to cattle.

(c) Field records

- Show the number of animals kept on the farm.
- Show different farm activities carried out on the farm.

(d) Marketing records

- Show the amount of money collected after selling the products.
- Show the products sold on the farm.

(e) Labour records

- These show number of workers.
- They also show their work.

Qn. Write down any six importance of farm records.

- i. Farm records help a farmer to plan for the farm.
- ii. Farm records help a farmer to be taxed fairly.
- iii. Farm records help a farmer to get loans from the bank.
- iv. Farm records help a farmer to know whether he or she is making profit or loss.
- v. Farm records help a farmer to know income and expenditure.
- vi. Farm records help a farmer to know birth and death rates.

Qn. Mention any nine problems facing cattle farmers in Uganda.

- i. Animal diseases.
- ii. Lack of enough capital.
- iii. Shortage of labour.
- iv. Cattle parasites.

- v. Lack of enough land.
- vi. Shortage of water and pasture.
- vii. Lack of ready market.
- viii. Prolonged drought.
- ix. Practices that harm cattle.

Qn. Mention any four practice that harm animals at home.

- i. Castration
- ii. Dehorning
- iii. Ear tagging
- iv. Branding

Qn. State any three practices that harm cattle in transit.

- i. Poor posture
- ii. Overloading cattle
- iii. Making animals walk long distances

Qn. State any four practices that harm cattle in the field.

- i. Beating animals
- ii. Improper disposal of polythene bags.
- iii. Piercing animals to get blood from them.
- iv. Giving animals less food.

Qn. Mention any one practice that harms cattle in abattoirs.

- Electrification

Qn. What is an abattoir?

- An abattoir is a house in which animals are slaughtered.

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Way up is down

FENCING IN CATTLE

Qn. What is fencing?

- A fence is a barrier of live or dead material dividing land.

Qn. Mention the two types of fences.

- i. Live fences
- ii. Dead fences

Qn. Mention any four examples of live fences.

- i. Cypress trees
- ii. Pine trees
- iii. Sisal
- iv. Bamboo trees

Qn. What is a live fence?

- A live fence is a barrier made from growing plants that are planted along boundaries of land.

Qn. What is a dead fence?

- A dead fence is a barrier made of nonliving materials.

Qn. List any four examples of dead fences.

- i. Barbed wire fences.
- ii. Wall fences
- iii. Wood fences
- iv. Plain wire fences

Qn. Identify the examples of materials used to make dead fences.

- i. Cement
- ii. Barbed wire
- iii. Bricks
- iv. Wire mesh
- v. Treated poles
- vi. Blocks

Qn. State any five importance of fencing in cattle.

- i. Fencing prevents animals from going astray to destroy crops.
- ii. Fencing promotes proper use of pasture.
- iii. Fencing helps to isolate sick animals from healthy ones.
- iv. Live fences act as wind breaks.
- v. Fencing makes farm management and planning easier.

Qn. Give any two disadvantages of fencing.

- Fencing is expensive.
- Barbed wires can cause injury to cattle.
- Caring for cattle

Qn. Mention any four ways of caring for cattle.

- i. Feeding cattle
- ii. Watering cattle
- iii. Housing cattle
- iv. Housing cattle



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SERVICES [MES]

Way up is down

Qn. What name is given to a house of cattle?

- Byre

Qn. State any three importance of a house to cattle.

- i. It protects animals from bad weather.
- ii. It protects cattle from thieves.
- iii. It protects cattle from wild animals.

Qn. Mention any three qualities of a good house or shed for cattle.

- i. It should be well ventilated.
- ii. It should have a strong floor made of concrete.
- iii. It should have a slanting floor to enable urine to drain out easily.

Qn. State the importance of a roof on a cattle shed.

- A roof protects the animals from rain and heat.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Topic 7: RESOURCES IN OUR ENVIRONMENT**Qn. What is a resource?**

- A resource is anything people use to meet their needs.
- Or
- A resource is a component of the environment people use to satisfy their needs.

Qn. What is an energy resource?

- An energy resource is anything that provides useful energy to people.

Qn. Write down the two types of resources.

- (i) Renewable resources
- (ii) Non – renewable resources

RENEWABLE RESOURCES**Qn. What are renewable resources?**

- Renewable resources are resources that can be replaced naturally once used up.
- Renewable resources are also referred to as inexhaustible resources.

Qn. Mention any six examples of renewable resources.

- | | | |
|-----------------|--|-----------|
| i. Plants | MAINA
EDUCATIONAL
SERVICES [MES] | iv. Water |
| ii. Animals | | v. Soil |
| iii. Air / wind | | vi. Sun |

a) Plant as resources

Way up is down

Qn. Why are plants regarded as renewable resources?

- Plants can be replaced naturally once used up.

Qn. How can plants be replaced naturally once used up?

- Through reproduction

Qn. Mention any ten ways how plants are used as resources in the environment.

- i. Plants are used as food.
- ii. Plants provide wood for building, furniture and cooking.
- iii. Plants are used as herbal medicine.
- iv. Plants provide timber for construction.
- v. Plants help in rain formation.
- vi. Plant remains can be used in the production of biogas.
- vii. Plants provide fibre to people.
- viii. Plants provide shade to animals and people.
- ix. Barks of some trees are used to make bark cloth.
- x. Plants help to purify /clean air.

Qn. How do plants purify air?

- i. By absorbing carbon gases from the atmosphere.
- ii. By releasing oxygen into the atmosphere.

Qn. How do plants help in rain formation?

- Through transpiration

Qn. How are plants used as energy resources?

- Plants help in rain formation.
- Plants provide wood fuel to people
- Plants remains can be used in the production of biogas.

Fibres**Qn. What is a fibre?**

- A fibre is a thread like material.

Qn. Write down the two types of fibres.

- Natural fibres
- Artificial fibres

Qn. What are natural fibres?

- Natural fibres are thread like materials got from plants and animals.

Qn. Mention any five examples of natural fibres got from plants.

- Banana fibres
- Sisal
- Cotton
- Linen
- Raffia

Qn. Write down any four examples of natural fibres got from animals

- Silk
- Mohair
- Wool
- Fur

**Qn. What are artificial fibres?**

- Artificial fibres are thread like material made by people.

Qn. Mention any six examples of artificial fibres.

- | | |
|--------------|-------------|
| i. Polyester | iv. Plastic |
| ii. Rayon | v. Rubber |
| iii. Nylon | vi. Jute |

Qn. State the function of each of the following plant fibres.**(i) Cotton**

- For making clothes
- For making cotton wool.

(ii) Sisal

- For making sacks
- For making ropes

(iii) Jute

- For making carpets
- For making window blinds
- For making gunny bags

(iv) Banana fibres

- i. For making mats
- ii. For making ropes.
- iii. For making dolls
- iv. For making balls

(v) Linen

- i. For making clothes
- ii. For making curtains
- iii. For making sewing threads

(vi) Raffia

- i. For making huts
- ii. For making mats
- iii. For weaving baskets
- iv. For making rugs

Qn. State any five functions of each of the animal fibres.

- i. For making clothes
- ii. For making blankets
- iii. For making carpets
- iv. For making bed sheets
- v. For making suits, sweaters, jackets etc

Note:

- Wool is got from sheep.

(ii) Mohair

- i. For making wigs worn by judges
- ii. For making gloves.
- iii. For making clothes.
- iv. For making sweaters.
- v. For making carpets.
- vi. For making socks.
- vii. For making coats.



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SERVICES [MES]

Wav up is down

Note:

- Mohair is got from Angora goats.

(iii) Silk

- i. For making clothes.
- ii. For making sleeping bags.
- iii. For making comforters.

Note:

- Silk is got from silk worms.

(iv) Fur

- i. For making clothes.
- ii. For making hoods.
- iii. For making scarves.
- iv. For making hats.

Wood fuel

Qn. What is wood fuel?

- Wood fuel is the fuel got from plants.

Qn. Mention the examples/ forms of wood fuel.

- Fire wood
- Charcoal
- Wood shavings
- Saw dust
- Briquettes

Qn. How is charcoal obtained?

- By burning wood under limited supply of oxygen.

Qn. What is formed when charcoal is burnt under excess supply of oxygen?

- Ash

Qn. State any three uses of charcoal.

- Charcoal is used for cooking.
- Charcoal is used in iron boxes when iron clothes.
- Charcoal is used in bakeries to provide heat.

Qn. State any four dangers of charcoal burning to the environment.

- Leads air pollution.
- Leads to low rain formation.
- Leads to deforestation.
- Leads to global warming.

Qn. State any eight ways of harvesting plant resources.

- | | | |
|--------------------------------|--|--------------------|
| i. By uprooting | MAINA
EDUCATIONAL
SERVICES [MES] | v. By hand picking |
| ii. By felling trees with axes | Way up is down | vi. By coppicing |
| iii. By digging out | | vii. By pollarding |
| iv. By plucking | | viii. By lopping |

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

WEEK TEN

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Conservation of plant resources.

Qn. What is plant conservation?

- Plant conservation is the protection and preservation of plant resources.

Qn. How are plants conserved in the environment?

- i. By practicing agro forestry.
- ii. By practicing afforestation.
- iii. By practicing re-afforestation.
- iv. By discovering deforestation.
- v. By using energy saving stoves.
- vi. By using other alternative sources of energy for cooking and lighting.

Qn. Apart from wood fuel mention any other alternative sources of energy used for cooking and lightning.

- i. Solar energy / electricity.
- ii. Biogas
- iii. Natural gas

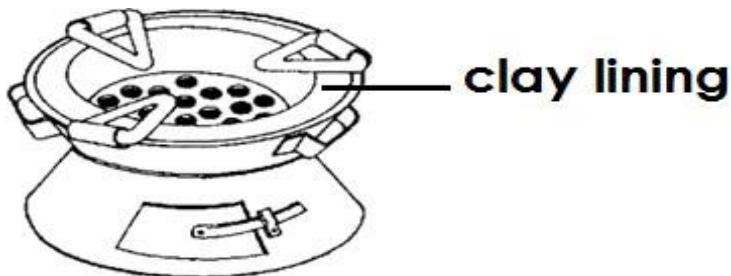
Qn. How does clay made charcoal stove conserve plants in the environment?

- It reduces deforestation (cutting down of trees for charcoal)

Qn. How does the clay made charcoal stove help to conserve charcoal/ wood fuel?

- i. It uses less charcoal.
- ii. It retains heat for a long time.

Qn. In the space provided below, draw a diagram showing clay made charcoal stove.



Qn. Name the fuel used in the above stove.

- Charcoal

Qn. What is the importance of the clay lining on the above stove?

- The clay lining retains / keeps heat for a long time.

Qn. Give any two reasons why plants should be conserved in the environment?

- i. For future
- ii. To prevent extinction of some plant species.

(b) Animals as resources.

Qn. Why are animals regarded as renewable resources?

- Animals can be replaced naturally once used up.

Qn. How are animals replaced naturally in the environment?

- Through reproduction

Qn. State any eleven uses of animals as resources.

- i. Animals provide food to people.
- ii. Animals provide skins to people.
- iii. Animals provide hides to people.
- iv. Animals like dogs guard our homes.

- v. Animals like camels, donkeys, horses are used for transport.
- vi. Animals like bees provide honey and bee wax.
- vii. Animal droppings and dung are used in the production of biogas.
- viii. Some animals are used to plough gardens.
- ix. Some animals provided fibre to people.
- x. Animal droppings can be used as manure.
- xi. Some animals help in seed dispersal.

Qn. How are animals used as energy resources?

- i. Animal droppings are used in the production of biogas.
- ii. Some animals are used for transport.
- iii. Some animals are used for ploughing.

Qn. State any five different ways of harvesting animal resources.

- i. By milking
- ii. By shearing
- iii. By slaughtering
- iv. By hunting
- v. By fishing

Qn. State any eleven ways of conserving animal resources.

- i. By keeping or gazetting animals in game parks and game reserves.
- ii. By proper feeding of animals.
- iii. By treating animals when they fall sick.
- iv. By deworming animals to control internal parasites.
- v. By spraying animals using acaricides.
- vi. By protecting animals against poaching.
- vii. By cleaning animal shelters.
- viii. By cleaning animal feeding troughs.
- ix. By giving animals enough food and water.
- x. By avoiding over fishing.
- xi. By vaccinating animals.

Qn. Give any two reasons why animals should be conserved?

- i. To prevent extinction of some animal species.
- ii. For future use.

(c) The sun as a resource

- The sun is the main / major natural source of energy in the environment.

Qn. Why is the sun regarded as the main source of energy in the environment?

- Most of the heat and light energy comes from the sun.

Qn. How is the sun used as a resource in the environment?

- i. Heat from the sun helps in rain formation.
- ii. Heat from the sun helps to dry harvested crops.
- iii. Heat from the sun kills parasites in our beddings.
- iv. Heat from the sun enables the skin to make vitamin D.
- v. Sun light help plants to make their own food.
- vi. Heat from the sun helps to preserve food.

- vii. Heat from the sun helps to dry people's wet clothes.
- viii. The sun provides light to people for seeing.

Qn. How does heat from the sun help to dry people's wet clothes?

- Heat causes evaporation of water from the cloth.

Qn. How does heat from the sun help in rain formation?

- i. It causes evaporation of water in the water bodies.
- ii. It causes transpiration in plants.

Qn. How does heat from the sun dries harvested crops?

- i. Heat causes evaporation of water from the seeds.
- ii. Heat drains water from the harvested seeds.

Qn. How does heat from the sun preserve food?

- i. Heat kills germs in food.
- ii. Heat drains moisture from food.
- iii. Heat dehydrates moisture from food.

Qn. List any four devices that use heat and light from sun (solar energy).

- i. Solar drier or grain drier
- ii. Solar water heater
- iii. Solar panel
- iv. Solar cooker

(i) Solar drier

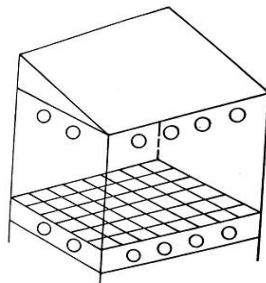
Qn. How is solar drier useful?

- For drying grains

Qn. In space provided below, draw a diagram showing a solar drier



Way up is down



Qn. Why is the inside of the solar drier painted black?

- To absorb heat from the sun

Qn. State the importance of the holes found at the bottom of a solar drier.

- To let in fresh air.

Qn. State the importance of the holes found on top of the solar drier.

- To let out warm air

Qn. State any two functions of the transparent polythene sheet or paper placed on the top of the solar drier.

- i. To allow light and heat from the sun to enter the drier.
- ii. To allow solar energy into the drier.

(ii) Solar water heater

Qn. How is a solar water heater useful?

- For heating water

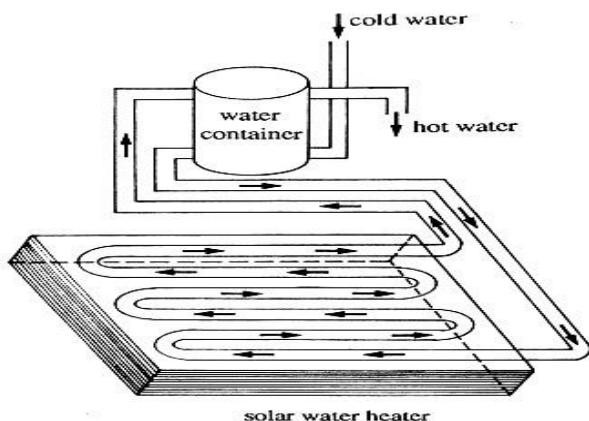
GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS	TIME	TEACHER'S NAME
			BOYS GIRLS TOTAL	From To	

Qn. In space provided below, draw a diagram showing a solar water heater



Qn. Why are the boxes of a solar water heater painted black?

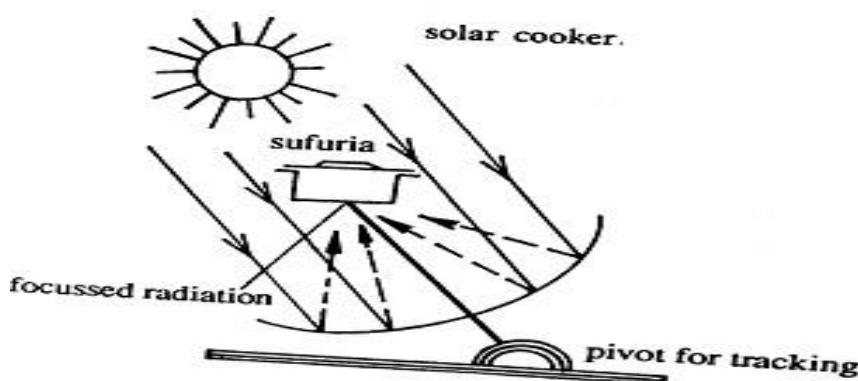
- To absorb heat from the sun.

(iii) Solar cooker

Qn. How is a solar cooker useful?

- For cooking food

Qn. In the space provided below, draw a diagram showing a solar cooker.

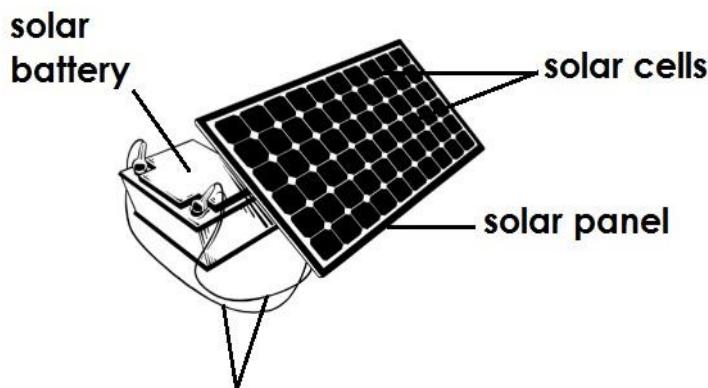


(iv) Solar panel

Qn. How is a solar panel useful?

- For trapping solar energy from the sun.

Qn. In space provided below, draw a diagram showing a solar panel.



Qn. State the function of each of the following components found on a solar panel.

(i) Solar cells

- They convert / change solar energy into solar electricity.

(ii) Solar battery

- It stores solar electricity.



(iii) Solar panel

- For trapping solar energy from the sun.

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Qn. Why the solar panel is painted black? MAINA EDUCATIONAL SERVICES [MES]

- To absorb heat from the sun.

Way up is down

Qn. Why solar panels are always placed on roof of houses?

- To enable them trap heat from the sun easily.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME	TEACHER'S NAME
			BOYS	GIRLS	TOTAL		
						From	
						To	

(d) Soil as a resource

Qn. Why is soil regarded as a renewable resource?

- Soil can be replaced naturally once used up.

Qn. How can soil be replaced naturally once used up?

- i. Through decomposition of organic matter.
- ii. Through weathering of rocks.

Qn. State any eight uses of soil or a resource.

- i. Loam soil is used for growing crops.
- ii. Sand soil is used for making glasses.
- iii. Sand soil is used to make blocks.
- iv. Clay soil is used to make bricks.
- v. Clay soil is used for modeling.
- vi. Clay soil is used for making pots.
- vii. Soil is used for building houses.
- viii. Soil is a habitat for some animals.

Qn. How is soil harvested?

- By digging out

Qn. State any twelve different ways of conserving soil as a resource.

- i. By mulching.
- ii. By growing cover crops to control soil erosion.
- iii. By practicing crop rotation.
- iv. By bush fallowing
- v. By applying manure.
- vi. By avoiding bush burning.
- vii. A void over cultivation.
- viii. A void deforestation.
- ix. Discouraging over stocking.
- x. By planting trees to act as wind breaks.
- xi. A void dumping polythene bags on soil.
- xii. By using the 5R's in waste management.



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Qn. Write the 5R's in full as used in waste management

- i. Recycle
- ii. Reuse
- iii. Reject/Refuse
- iv. Reduce
- v. Return

(e) Water as a resource

Qn. Why is water regarded as a renewable resource?

- Water can be replaced naturally once used up.

Qn. How is water replaced naturally once used up in the environment?

- Through the water cycle or rain cycle .

Qn. How is water used as a resource?

- i. Water is used for cooking food.
- ii. Water is used for washing clothes.
- iii. Water is used for irrigation.
- iv. Water is used for cooling car engines.

- v. Water is used in making beverages.
- vi. Water is used in producing hydroelectricity.
- vii. Water helps in seed dispersal.
- viii. Water tides are used to generate tidal electricity.
- ix. Water from hot springs is used to generate geothermal electricity.

Qn. How water is used as energy resources?

- i. Waterfalls are used to generate hydroelectricity.
- ii. Water tides are used to generate tidal electricity.
- iii. Water from hot springs is used to generate geothermal electricity.

Qn. State any five different ways of harvesting water as a resource.

- i. Rain water is harvested using water tanks, basins , buckets , big drums etc
- ii. Rain water is harvested using pits.
- iii. Ground water is harvested using bore holes/ water pumps.
- iv. Ground water is harvested using a wind lass / winch.
- v. Underground water is fetched using jerry cans.

Qn. State any five different ways of conserving water as a resource.

- i. By protecting of wetlands(discouraging swamp drainage)
- ii. By planting trees
- iii. By protecting wells and springs.
- iv. By discouraging disposal of sewage in water sources.
- v. A void disposing rubbish in water sources.

Qn. How does planting of trees conserve water? MAINA
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- Trees help in rain formation
- (f) **Air as a resource**

Way up is down

Qn. Why is air regarded as renewable resource?

- Air can be replaced naturally once used up.

Qn. State any eight different ways of using air as a resources.

- i. Carbon dioxide is used in preservation of soft drinks.
- ii. Carbon dioxide is used to preserve ... food.
- iii. Carbon dioxide is used to put out fire using fire extinguishers.
- iv. Carbon dioxide helps plants to make their own food.
- v. Oxygen is used for respiration.
- vi. Oxygen is used in the process of food germination.
- vii. Nitrogen is used to preserve semen.
- viii. Nitrogen enables leguminous plants to make their proteins.

Qn. Give any four uses of wind as resource.

- i. Wind helps to drive wind mills.
- ii. Wind helps to dry wet clothes.
- iii. Wind is used in winnowing.
- iv. Wind helps to sail boats and dhows.

Qn. How does carbon d oxide help to preserve soft drinks and canned or tinned food?

- Carbon dioxide prevents the multiplication of bacteria.

A wind mill

Qn. What is a wind mill?

- This is a device used to turn turbines which drive generators and produce electricity.

Qn. Which type of electricity is produced by wind mills?

- Mechanical electricity

Qn. State any three importance of a wind mill.

- i. It is used to pump water from underground.
- ii. It is used to generate electricity.
- iii. It is used to grind grains.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

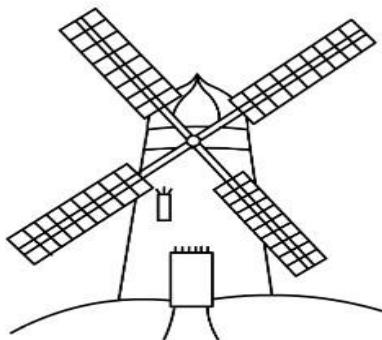
LESSON FOUR

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. In the space provided below, draw a structure of a wind mill.

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SERVICES [MES]

Way up is down

**Qn. How can air be conserved in the environment?**

- i. Discouraging bush burning.
- ii. Discouraging deforestation.
- iii. A void tobacco smoking.
- iv. By treating fumes from industries before releasing them in the atmosphere.
- v. By planting trees.

Qn. What is conservation of resources?

- Conservation is the protection and preservation of resources in the environment.

Qn. Give any two reasons why resources should be conserved.

- i. For future use.
- ii. To prevent extinction of some resources in the environment.

Qn. Mention the two examples of living renewable resources in the environment.

- i. Plants
- ii. Animals

Qn. Write down any four examples of non – living renewable resources in the environment.

- i. Water
- ii. Air / wind
- iii. Sun
- iv. Soil

NON – RENEWABLE RESOURCES

Qn. What are non- renewable resources?

- Non-renewable resources are resources that cannot be naturally replaced once used up.

Note:

- Non- renewable resources are also referred to as exhaustible resources.

Qn. Mention any three examples of non- renewable resources.

- i. Fossil fuels
- ii. Rocks
- iii. Minerals

(a) Fossil fuels as non-renewable resources.

Qn. What are fossil fuels?

- Fossil fuels are fuels got from the remains of plants and animals that died a million years ago.

Qn. What is a fuel?

- A fuel is anything burnt to produce heat.

Qn. Write down the two examples of fossil fuels.

- i. Petroleum
- ii. Coal

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Way up is down

Qn. Why are fossils regarded as non- renewable resources?

- Fossil fuel cannot be replaced naturally once used up.

(a) Coal

Qn. What is coal?

- Coal is a solid fossil fuel that was formed from plant remains that died a million years ago.

Qn. State any four uses of coal as a resource.

- i. Coal is burnt to produce thermal electricity.
- ii. Coal is used to make tar for surfacing roads.
- iii. Coal is burnt to produce heat for warming our houses.
- iv. Coal is used to make dyes, fertilizers and perfumes.

Qn. What is thermal electricity?

- Thermal electricity is the type of electricity got when coal is burnt.

Qn. How is the use of thermal electricity dangerous to the environment?

- Burning of coal leads to air pollution.

(b) Petroleum or crude oil

Qn. What petroleum?

- Petroleum is a dark thick mixture that was formed from remains of animals that got buried underground a million years ago.

Qn. Mention any nine different products of petroleum.

- | | |
|-------------------------------|------------------------|
| i. Kerosene or paraffin | vi. Natural gas |
| ii. Diesel | vii. Naphtha |
| iii. Petrol | viii. Bitumen |
| iv. Jet fuel or Aviation fuel | ix. Lubricating fluids |
| v. Petroleum jelly | |

Qn. Write down the different uses of petroleum as a resource

- i. Jet fuel is used to run engines of air crafts.
- ii. Petrol is used for running engines of vehicles.
- iii. Diesel is used for running car engines and other vehicles.
- iv. Natural gas is used for lighting, heating and cooking at home.
- v. Kerosene is used for lighting and cooking at home.
- vi. Bitumen is used for surfacing roads.
- vii. Naphtha is used for making chemicals e.g. paints , drugs etc.

Qn. How are products of petroleum separated from each other?

- By fractional distillation

(c) Rocks as non – renewable resources.

Qn. What is rock?

- A rocks is a hard solid material that is formed under the earth's crust (ground) .

Qn. Why are rocks regarded as non – renewable resources?

- Rocks cannot be replaced naturally once used up.

Qn. State any six different uses of rocks as resources.

- i. Rocks are used in constructing houses.
- ii. Rocks are used in construction of roads.
- iii. Rocks are used to decorate buildings.
- iv. Rocks act as habitats for some wild animals.
- v. Rocks e.g. limestone is used to make cement.
- vi. Rocks help in soil formation through the process of weathering.

Qn. What is weathering of rocks?

- Weathering is the breaking down of rocks into small particles to form soil.

Qn. How is weathering important in the environment?

- Weather helps in soil formation.

Qn. Mention the two types of weathering.

- (i) Chemical weathering
- (ii) Physical weathering

Qn. What is chemical weathering?

- Chemical weathering is the process by which rocks are broken down as a result of chemical reactions.

Qn. What is physical weathering?

- Physical weathering is the breaking down of rocks by use of force.

Qn. Write down any six different agents of weathering.

- i. Temperature
- ii. Burrowing of animals

- iii. Animal movements
- iv. Water
- v. Expanding plant roots
- vi. Water

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

(d) Minerals as resources

Qn. What is a mineral?

- A mineral is a natural useful solid or liquid material obtained from the ground.

Note:

- Minerals are extracted from **ores**.

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Qn. What is an ore?

- An ore is a natural solid material from which a mineral is extracted.

Qn. Mention any fifteen examples of minerals you know.

- | | | |
|-------------|---------------|----------------|
| i. Iron | vii. Aluminum | xii. Zinc |
| ii. Uranium | viii. Lead | xiii. Silver |
| iii. Gold | ix. Wolfram | xiv. Limestone |
| iv. Salt | x. Cobalt | xv. Tin |
| v. Copper | xi. Diamond | |
| vi. Steel | | |

Qn. Write down the uses of each of the following minerals as resources.

(a) Iron

- i. It is used for making axes.
- ii. It is used for making iron bars.
- iii. It is used for making nails.
- iv. It is used for making hoes.

(b) Gold

- i. It is used for making earrings.
- ii. It is used for making watches.
- iii. It is used for making trophies.
- iv. It is used for making necklaces.

(c) Copper

- i. - It is used for making electrical wires.
- ii. - It is used for making bullets.
- iii. - It is used for making coins.
- iv. - It is used in making freezers and refrigerators.

(d) Aluminum

- i. It is used for making tins.
- ii. It is used for making aeroplane bodies.
- iii. It is used for making roofing sheets.
- iv. It is used for making saucepans and kettles.

(e) Wolfram

- i. Tungsten metal is extracted from wolfram.
- ii. Tungsten is used to make filaments for electric bulbs.

(f) Mercury

- i. It is used in thermometers as a temperature indicator.
- ii. It is used to make some insecticides.
- iii. It is used to make materials used to fill dental caries (holes in teeth).

(g) Lime stone

- i. It is used for making cement.

(h) Uranium

- i. It is used to make nuclear electricity.
- ii. It is used to make atomic bombs.



Qn. State any one way of harvesting minerals as resources.

- i. Using heavy machinery to extract them from the ground.

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Way up is down

Alloys

Qn. What is an alloy?

- ii. An alloy is a mixture of two or more metals.

Qn. Identify any nine examples of alloys, combinations and their uses.

- | | | |
|----------------------|---------------------|----------------------|
| i. Brass | iv. Gold | vii. Manganese steel |
| ii. Bronze | v. Solder | viii. Nickel steel |
| iii. Dentist amalgam | vi. Stainless steel | ix. Cobalt steel |

Alloy	Combination	Uses
Brass	Copper + Zinc	<ul style="list-style-type: none"> i. For making ornaments ii. For making bullet cases
Solder	Lead + tin	-For joining metals
Bronze	Copper + tin	<ul style="list-style-type: none"> i. For making coins ii. For making medals
Stainless steel	Steel + chromium	-For making cutlery
Nickel steel	Nickel + steel	-For making permanent magnets
Dentist amalgam	Mercury + copper	- Dental filling of the teeth
Manganese steel	Manganese + steel	- For making helmets

Qn. Give any four reasons for making alloys.

- i. To make metals harder.
- ii. To make the metal more resistant to friction.

- iii. To increase the electrical resistivity of a metal.
- iv. To lower melting point of metals.

Qn. State any seven different ways of conserving non-renewable resources in the environment.

- i. By recycling metal scraps.
- ii. By making alloys to make metals harder.
- iii. By painting metals to control rusting.
- iv. By using mineral resources sparingly.
- v. By using other alternative sources of energy to produce heat and light.
- vi. Walking short distance instead of using cars.
- vii. By repairing vehicles in poor mechanical conditions.

Qn. What is environment?

- Environment is all things that surround people.

Qn. Mention any nine components of the environment.

- | | |
|--------------|------------------------------------|
| i. Water | vi. Bacteria |
| ii. Air/Wind | vii. Animal structures e.g. houses |
| iii. Plants | viii. Fungi |
| iv. Animals | ix. Rocks |
| v. Soil | |

Qn. Mention the two types of environment.

- i. Biological environment / Biotic environment
- ii. Physical environment / Abiotic environment

Biological environment / biotic environment

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Qn. What is biotic environment?

- Biotic environment is the type of environment that consists of living things.

Qn. Identify any four components of the biological environment.

- i. Plants
- ii. Animals
- iii. Fungi
- iv. Bacteria

Physical environment /abiotic environment

Qn. What is abiotic environment?

- Abiotic environment is the type of environment that consists of non-living things.

Qn. Mention any five components of the abiotic environment.

- i. Air/wind
- ii. Water
- iii. Soil
- iv. Rocks
- v. Animal structures

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

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WEEK ELEVEN

LESSON ONE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Environmental degradation

Qn. What is environmental degradation?

- Environmental degradation is the lowering of the quality of the environment.

OR

- Environmental degradation is the lowering the quality of the environment making it less attractive and productive.

Qn. State any six forms or types of environmental degradation.

- Soil degradation
- De-vegetation
- Wetland degradation/swamp drainage
- Pollution
- Deforestation
- Silting



Qn. State any eleven different ways through which the environment can be degraded.

- By deforestation
- By over stocking
- Through bush burning
- By carrying out swamp drainage
- By over grazing
- By over cultivation
- By draining wetlands
- By industrialization
- By dumping wastes from industries into water.
- By urinating, defecating or bathing in water
- By pollution

Qn. What is pollution?

- Pollution is the release of harmful substances into the environment.
- Or
- Pollution is the addition of harmful substances into the environment.

Qn. State the four types of pollution.

- Air pollution
- Land or soil pollution

- iii. Water pollution
- iv. Sound pollution

(a) Air pollution

Qn. What is air pollution?

- Air pollution is the release/addition of harmful and dangerous gases into the air.

Qn. State any four ways through which air can be polluted.

- i. By fumes from factories and industries.
- ii. By exhaust fumes from cars, trains and other engines.
- iii. By tobacco smoke from smokers.
- iv. By heat and smoke from burning bushes and forests.

Qn. State any six ways of controlling air pollution.

- i. Discouraging bush burning.
- ii. Carry out proper disposal of faeces and urine.
- iii. Carry out proper disposal of rubbish.
- iv. Avoid tobacco smoking
- v. Treat fumes from industries before releasing them into the environment.
- vi. Use other alternative sources of energy which do not produce smoke.

Qn. Water pollution?

Qn. What is water pollution?

- Water pollution is the addition of harmful wastes into water.

Qn. What name is given to the harmful materials that pollute water?

- Water pollutants.

Qn. State any six ways through water is polluted.

- i. Dumping wastes from farms and industries into water sources.
- ii. Urinating in water sources.
- iii. Bathing in water sources.
- iv. Defecating in water sources.
- v. Washing in or near water sources.
- vi. Dumping house hold refuses into water sources.

Qn. State any six ways of controlling water pollution.

- i. Discourage dumping of polythene papers into water sources.
- ii. Avoid urinating in water sources.
- iii. Avoid defecating in water sources.
- iv. Avoid bathing in water sources.
- v. Avoid washing clothes in water sources.
- vi. Discourage animals from drinking in water sources.

(b) Soil pollution

Qn. What is soil pollution?

- Soil pollution is the release of harmful substances into soil.

Qn. What name is given to harmful substances that pollute the soil?

- Soil pollutants.

Qn. State any six examples of soil pollutants.

- i. Polythene paper

- ii. Agro chemicals
- iii. Broken glasses
- iv. Plastics
- v. Broken bottles
- vi. Metal scraps

Qn. State any six ways through which soil can be polluted.

- i. Dumping polythene papers in the soil.
- ii. Dumping of metal scraps in the soil.
- iii. Dumping of broken bottles on soil.
- iv. Excessive use of agro chemicals.
- v. Dumping plastics in the soil.
- vi. Poor disposal of wastes.

Qn. How do polythene papers and plastics affect the soil?

- i. They prevent water from entering the soil.
- ii. They prevent air from entering into the soil.

Qn. State any seven ways of controlling soil pollution.

- i. Avoid dumping polythene papers into the soil.
- ii. Avoid dumping plastics into the soil.
- iii. Avoid excessive use of agro chemicals.
- iv. Carryout proper disposal of wastes.
- v. Avoid dumping broken glasses into soil.
- vi. Avoid dumping broken bottles into soil.
- vii. Avoid dumping metal scraps into soil.

(c) Sound pollution



Way up is down

Qn. What is sound pollution?

- Sound pollution is when there is too much sound or noise in the environment.

Qn. State any six ways through which sound is polluted.

- i. Noise from war weapons
- ii. Noise from birds e.g. weaver birds
- iii. Blaring music in markets and from people who sell tapes.
- iv. Noise from cinema halls.
- v. Noise from churches.
- vi. Noise from factories.

Qn. State any three ways of controlling sound pollution.

- i. Minimizing noise from cinema halls.
- ii. Covering the inside walls of cinema halls with soft boards.
- iii. Covering the inside walls of cinema halls with thick curtains.

Silting

Qn. What is silting?

- Silting is the deposition of silt into the water bodies.

Qn. State the two causes of silting.

- i. Soil erosion
- ii. Cultivating near river banks

Qn. State the effects of silting.

- It leads to death of aquatic animals.
- Silting makes water bodies shallow.
- Silting causes contamination of water.

Qn. State the ways of controlling silting.

- Avoid cultivating near river banks.
- Planting trees near river banks to control soil erosion.

GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON TWO

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	



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Swamp drainage**Qn. What is swamp drainage?**

- Swamp drainage is the act of removing or channeling water away from the wetland.

Qn. State any four reasons why people drain wetlands.

- To get land for farming.
- To construct roads.
- To get land for industrialization.
- To get land for constructing play grounds.

Qn. Give any four uses of wetlands.

- Wetlands help to filter water.
- Wetlands control floods.
- Wetlands act as fishing grounds.
- Wetlands help in rain formation.

Bio degradable and non- bio degradable materials.**(a) Bio degradable materials****Qn. What are biodegradable materials?**

- Biodegradable materials are materials that decompose/rot in the soil.

Qn. Suggest any four examples of biodegradable materials.

- Plant remains
- Animal remains
- Paper
- Wood

(b) Non – biodegradable materials

Qn. What are non- biodegradable materials?

- Non-biodegradable materials are materials that cannot decompose in the soil.

Qn. Outline any seven examples of non-biodegradable materials.

- | | |
|--------------------|---------------------|
| i. Rubber | v. Broken bottles |
| ii. Polythene bags | vi. Old car tyres |
| iii. Metal scraps | vii. Broken glasses |
| iv. Plastics | |

Qn. State any four effects of non-biodegradable materials to the soil.

- They lead to soil exhaustion.
- They lead to low crop yields.
- They lead to death of organisms in the soil.
- They prevent air and water from entering the soil.

Qn. Mention any seven natural causes of environmental degradation.

- | | |
|----------------------|--------------------------------|
| i. Volcanic eruption | v. Earth quakes |
| ii. Floods | vi. Elnino rains (heavy rains) |
| iii. Lightning | vii. Strong winds |
| iv. Landslides | |

Qn. State any nine human causes of environmental degradation.

- | | |
|-------------------------|----------------------|
| i. Deforestation | vi. Over cultivating |
| ii. Uncontrolled mining | vii. Swamp drainage |
| iii. Bush burning | viii. Mon cropping |
| iv. Over grazing | ix. Charcoal burning |
| v. Over stocking | |



GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON THREE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

TOPIC 8 : THE RESPIRATORY SYSTEM

Qn. What is the respiratory system?

-The respiratory system is a group of organs which work together to carryout respiration.

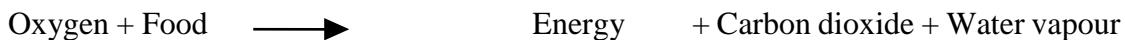
Qn. What is respiration?

- Respiration is the process by which the body uses digested food and oxygen to produce energy carbon dioxide and water vapour.

Or

- Respiration is the oxidation of food in the body to provide energy, carbon dioxide and water vapour.

Qn. Create an illustration or formula on how respiration takes place and its products.



Qn. State the two raw materials for respiration.

- Oxygen
- Digested food

Qn. State the three products of respiration.

- Energy
- Carbon dioxide
- Water vapour

Qn. Mention the useful product of respiration.

- Energy

Qn. Mention the waste products or by products of respiration.

- Carbon dioxide
- Water vapour

Qn. State the role of oxygen during respiration.

- Oxygen burns down food to release energy, carbon dioxide and water vapour.

Or

- Oxygen oxidizes food to release or produce energy.

Qn. Where in the body does respiration take place?

- Body cells

Qn. State any two importance of respiration to the body.

- Respiration enables the body to get energy.
- Respiration enables the body to get rid of / release carbon dioxide and water vapour.

Qn. State the two types of respiration.

- Aerobic respiration
- Anaerobic respiration

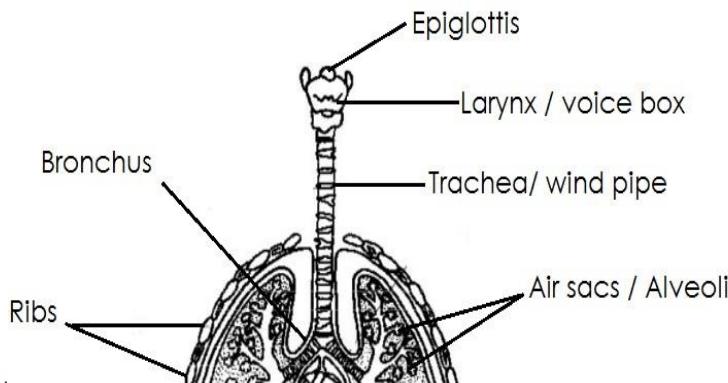
Qn. What is aerobic respiration?

- Aerobic respiration is the type of respiration that takes place in the presence of oxygen.

Qn. What is anaerobic respiration?

- Anaerobic respiration is the type of respiration that takes place in the absence of oxygen.

Qn. In the space provided below, draw a well-labeled diagram showing the respiratory system.



Qn. Give the functions of each part of the respiratory systems.

(i) **Lungs**

- Lungs are used for breathing (gaseous exchange)

Note:

- The lungs are located in the chest cavity.
- The lungs are red coloured.

Qn. Why are the lungs red coloured?

- The lungs are red coloured because they contain a large number of blood capillaries.

Qn. Which part of the human skeleton protects the lungs?

- The ribcage

Qn. In which membrane are the lungs enclosed?

- Pleural membrane

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Qn. State the function of the pleural membrane.

- It produces / secretes pleural fluid. Way up is down

ICES [MES]

Qn. State the function of the pleural fluid to the respiratory system.

- The pleural fluid reduces friction between the ribs and the lungs.

Qn. Why are the lungs spongy?

- They have numerous air spaces within them.

Qn. Give two reasons why the lungs are called respiratory organs?

- i. They carryout respiration
- ii. They allow oxygen in the body for the process of respiration.

(ii) **Nose**

- The nose acts as a passage of air into the lungs.

Note:

- The nose contains tiny hair called cilia.
- The nose contains mucus.

Qn. State any three importance of mucus found in the nose.

- i. Mucus warms air found in the nose.
- ii. Mucus traps dust and other foreign bodies.
- iii. Mucus moistens air before it enters the nose.

Qn. State any two importance of tiny hair found in the nose.

- i. Trap dust particles.
- ii. To trap bacteria.

Qn. What happens to air when it passes through the nose?

- i. Air is warmed
- ii. Air is filtered or cleaned or purified
- iii. Air is moistened.

Qn. Why is it not advisable to breathe through the mouth?

- i. The air in the mouth is not warmed.
- ii. The air in the mouth is not filtered.
- iii. The air in the mouth is not moistened.

Qn. Why is air warmed in the nose?

- To prevent it from chilling the lungs.

(iii) Epiglottis

- The epiglottis prevents food from entering the trachea during swallowing.

Qn. What happens when food enters the trachea?

- It leads to choking

Qn. How does the epiglottis prevent food from entering the trachea?

- The epiglottis closes the trachea during swallowing of food.

(iv) Larynx (Voice box)

- This contains vocal cords that vibrate to produce sound.

(v) Trachea (wind pipe)

- i. It acts as a passage of air to the lungs.
- ii. It directs air to the lungs.



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OPTIONAL

Note:

- The trachea is made up of rings of cartilage.

OPTIONAL

Qn. Why is the trachea made up of rings of cartilage? [MES]

- i. To prevent it from closing.
- ii. To keep it open all the time.

Way up is down

Qn. Why should the trachea be kept open all the time?

- To prevent it from collapsing which can lead to suffocation.

Qn. State the importance cilia found in the trachea.

- Trap dust in the trachea.

(vi) Bronchi

- These are two air passages into which air flows from the trachea.

(vii) Bronchioles

- They deliver air to the air sacs (alveoli)

(viii) Air sacs (Alveoli)

- These are tiny air spaces / bags found in the lungs.

Qn. How are alveoli useful in the lungs?

- They help in gaseous exchange.

Qn. What is gaseous exchange?

- Gaseous exchange is the releasing of carbon dioxide from blood and the gaining of oxygen.

Qn. How are the air sacs adapted to gases exchanges?

- i. They are many in number.
- ii. They are surrounded by a great network of blood capillaries.

iii. They are thin walled.

Qn. Why are the air sacs many in number?

- i. To increase the surface area for gaseous exchange to take place.
- ii. To provide a wider surface area for gaseous exchange to take place.

Qn. Why the air sacs are thin walled?

- To allow easy diffusion of gases.

Qn. Why are the air sacs surrounded by a network of blood capillaries?

- To supply them with oxygen and digested food.

Qn. How does gaseous exchange occur?

- When blood reaches the air sacs, carbon dioxide diffuses out of the lungs and oxygen is diffused into the blood.

Qn. State the process by which gaseous exchange takes place in the air sacs.

- Diffusion process.

GENERAL EVALUATION

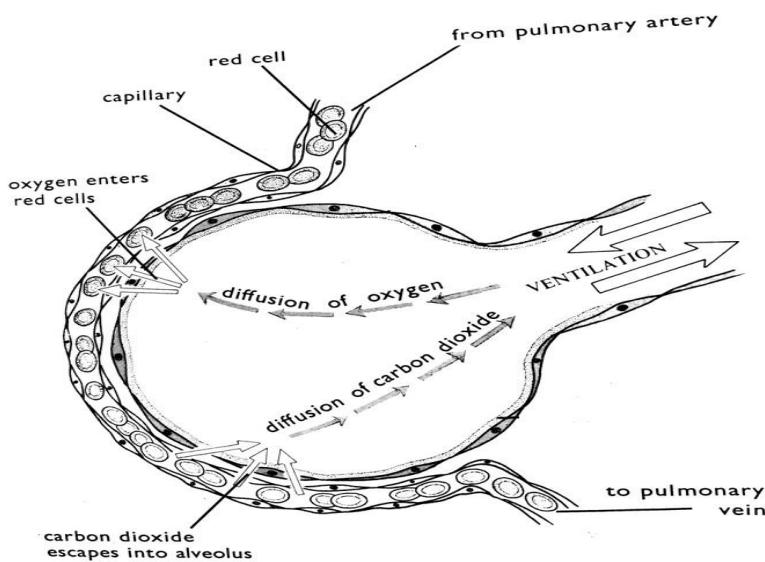
SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FOUR

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DATE	CLASS	SUBJECT	NO. OF PUPILS [MES]	TIME			TEACHER'S NAME
				BOYS	GIRLS	TOTAL	
				From	To		

Qn. In the space provided below, draw a diagram showing gaseous exchange in the alveoli.



(ix) Ribs

- Ribs protect lungs from damage.

(x) Intercostal muscles

- These are muscles of the lungs.
- Intercostal muscles hold the ribs in position.

(xi) Diaphragm

- It separates the abdominal cavity from the chest cavity.
- It helps in breathing.

Breathing

Qn. what is breathing?

- Breathing is the taking in and out of air.

Qn. Why do animals breathe in?

- Animals breathe in to get enough oxygen for carrying out respiration.

Qn. State the two types of breathing.

- Inhalation / inspiration / breathing in
- Exhalation / expiration / breathing out.

Qn. State any two differences between air we breathe in and that we breathe out.

- The air we breathe in contains more oxygen while the air we breathe out contains more carbon dioxide.
- The air we breathe in has more density while the air we breathe has less density.

Qn. State any two importance of breathing to animals.

- Breathing in provides oxygen to body cells.
- Breathing out enables the body to expel carbon dioxide from the body.

Qn. Give the meaning of each of the following terms:-[MES]

(i) Inspiration

Way up is down

- Inspiration is the act of taking air into the lungs.

(ii) Expiration

- Expiration is the act of taking air out of the lungs.

Qn. State what happens to the following during breathing in/ inspiration.

(i) Lungs

- The lungs expand.
- The lungs increase in volume.

(ii) Chest cavity

- The volume of the chest cavity increases.

(iii) Ribs

- The ribs move upward and outwards.

(iv) Intercostal muscles

- They contract

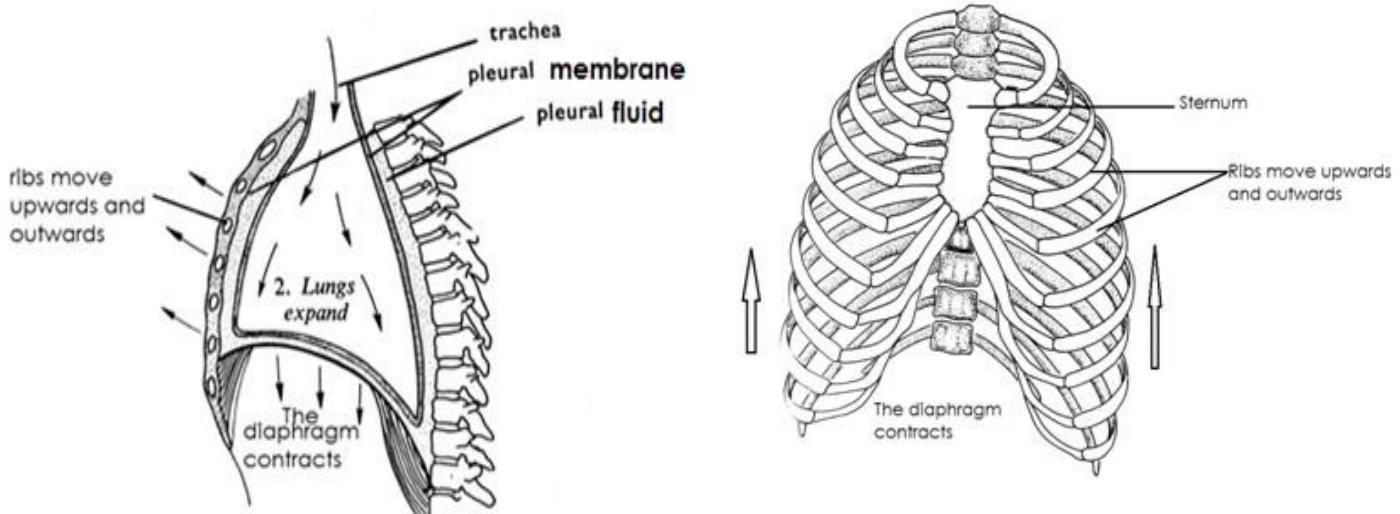
(V) Diaphragm

- The diaphragm contracts and flattens.

Qn. Why do lungs expand during breathing in?

- To create space for the incoming air.
- In order to receive the incoming air.

Qn. In the space provided below, draw a diagram showing breathing in or inspiration



Qn. State what happens to the following during:-

- (i) **Lungs**
 - i. The lungs return to their original size.
 - ii. The volume of the lungs decreases.
- (ii) **Chest cavity**
 - The volume of the chest cavity decreases.
- (iii) **Ribs**
 - Ribs move downwards and inwards.
- (iv) **Intercostal muscles**
 - Intercostal muscles relax.
- (v) **Diaphragm**
 - The diaphragm relaxes and forms a dome shape.

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SERVICES [MES]

Way up is down

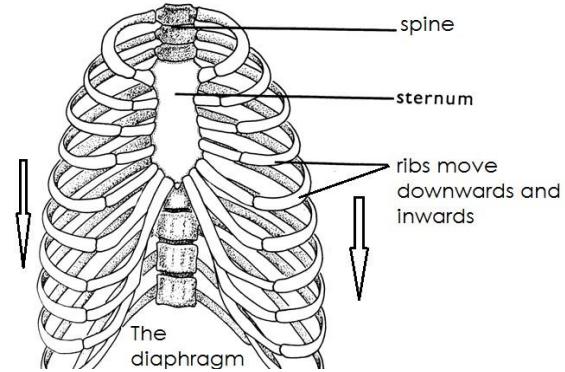
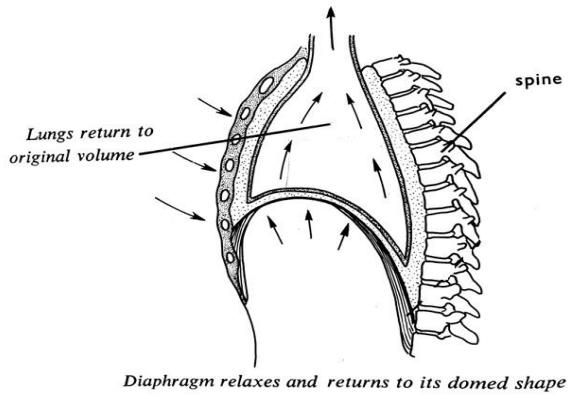
GENERAL EVALUATION

SELF EVALUATION	STRENGTH	WEAKNESS	WAY FORWARD

LESSON FIVE

DATE	CLASS	SUBJECT	NO. OF PUPILS			TIME		TEACHER'S NAME
			BOYS	GIRLS	TOTAL	From	To	

Qn. In the space provided below, draw a diagrams showing breathing out or expiration.



Qn. What is the importance of diaphragm

- The diaphragm contracts and relaxes

Qn. Why do we breathe out?

- To take out or expel carbon dioxide

Qn. State the four parts involved in breathing.

- Nose
- Air sacs
- Trachea
- Diaphragm

Rate of breathing

-The rate of breathing of a normal person is about 16 times per minute.

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Wav up is down

- The rate of breathing can change due to various conditions as follows:-

- When one is in the state of fear.
- Too much excitement.
- After performing a vigorous activity.

Qn. Why do we breathe faster after doing a vigorous activity like running?

- To allow more oxygen into the body for carrying out respiration.

Qn. Below is the summary of air component inhaled and exhaled.

Gas	Inspired	Expired
Oxygen	21%	16%
Carbon dioxide	0.03%	4%
Nitrogen	78%	78%
Water vapour	less	More
Rare gases	0.97%	0.97%

Qn. Why is the percentage of oxygen in the air we breathe in more than that we breathe out ?

- More oxygen is used in the process of respiration.

Qn. Why is the percentage of carbon d oxide inhaled less than that exhaled?

- More carbon dioxide is produced during the process of respiration.

Qn. Why does the percentage of nitrogen in the air we breathe in and air we breathe out remain the same?

same?

-There is no body reaction that needs the presence of nitrogen.

Qn. Why is there less inspired water vapour than expired water vapour?

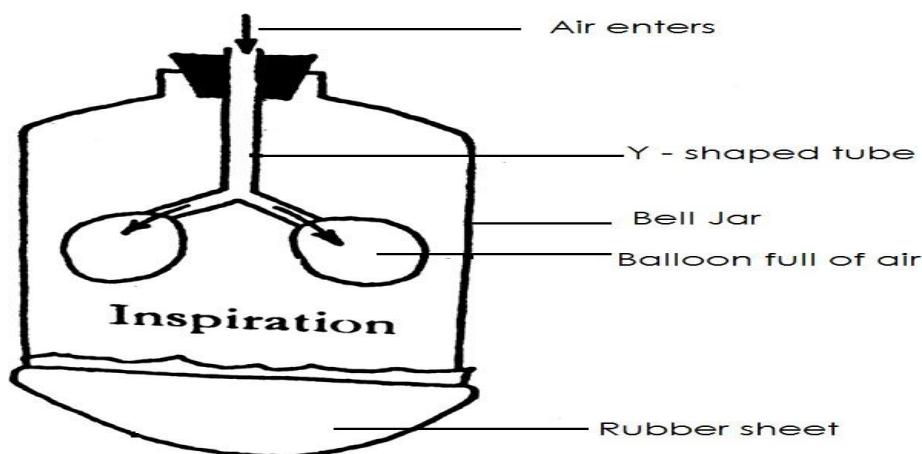
- More water vapour is produced during the process of respiration.

Qn. Make An experiment to demonstrate breathing in human beings.

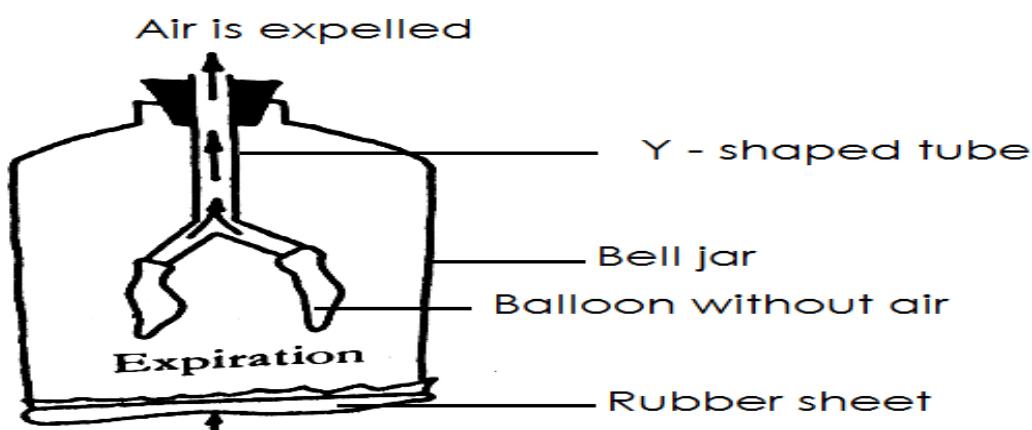
Materials to be used.

- i. Y – Shaped tube.
- ii. Bell jar.
- iii. Two balloons.
- iv. Polythene bag/ rubber sheet
- v. A string

(i) Set up of the experiment during breathing in (inspiration).



(ii) Set up during breathing out (expiration).



Qn. What do the following represent in the above model set up?

(i) Bell jar?

- It represents the ribcage.

(ii) Y – tube

- It represents the trachea and bronchi.

(iii) Balloons

- They represent the lungs.

(iv) Rubber sheet

- It represents the diaphragm.

Qn. How can you allow air into the balloon?

- By pulling the rubber sheet downwards.

Qn. What will happen to balloons when the rubber sheet is pulled downwards?

- The volume of the balloons increase.

Qn. How can you remove air from the balloon?

- By pushing the rubber sheet upwards.

Qn. What will happen to the balloons when the rubber sheet is pushed upwards?

- The volume of the balloons will decrease.

Disorders and diseases of the respiratory system.

Qn. What is a disorder?

- A disorder is an illness that may affect the normal functioning of the body.

Qn. List down any seven common disorders of the respiratory system.

- | | |
|--------------|--------------------------------------|
| i. Yawning | v. Nasal congestion |
| ii. Sneezing | vi. Accumulation of mucus in the air |
| iii. Choking | sacs |
| iv. Hiccups | vii. Cough |

Qn. Briefly, explain what hiccups are.

- Hiccups are repeated sounds in the throat caused by the sudden movement of the diaphragm.

Qn. What is choking?

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- Choking is the blocking of the air passage to the lungs.

Qn. Mention any nine diseases of the respiratory system.

- | | |
|--------------------|--------------------|
| i. Bronchitis | vi. Diphtheria |
| ii. Whooping cough | vii. Asthma |
| iii. Emphysema | viii. Tuberculosis |
| iv. Influenza | ix. Pneumonia |
| v. Lung cancer | |

Qn. State the groupings of the respiratory diseases.

The respiratory diseases are grouped as follows:-

- Communicable diseases (diseases caused by germs)
- Non communicable diseases (diseases not caused by germs)
- Inherited communicable diseases (diseases got from the parents to their offspring)

Qn. Suggest any seven examples of communicable diseases of the respiratory system.

- | | |
|--------------------|-------------------|
| i. Tuberculosis | v. Pneumonia |
| ii. Whooping cough | vi. Bronchitis |
| iii. Influenza | vii. Common colds |
| iv. Diphtheria | |

(a) Tuberculosis

- Tuberculosis is caused by bacteria called mycobacterium.

Qn. How does tuberculosis spread?

- Through air.

- ii. Through droplets of an infected person.

Qn. Write down any six signs and symptoms of tuberculosis.

- i. Chronic cough
- ii. Loss of body weight
- iii. Fever
- iv. Difficulty in breathing
- v. Coughing and spitting mucus with blood stains.
- vi. Prolonged back pain.

Qn. State any three ways of preventing and controlling tuberculosis.

- i. Immunizing children using BCG vaccine at birth.
- ii. Isolating food infected persons.
- iii. Drinking boiled milk.

(b) Pneumonia

- Pneumonia is caused by a bacterium called streptococcus pneumonia.

Qn. How does pneumonia spread?

- Through air

Note:

- Pneumonia mainly affects air sacs (alveoli) in the lungs.

Qn. Mention any five signs and symptoms of pneumonia.

- i. Difficulty in breathing.
- ii. Chest pain
- iii. Inflammation of the air sacs.
- iv. High fever
- v. Coughing mucus with blood stains.



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Qn. Why does a person suffering from pneumonia face difficulty in breathing?

- Pneumonia causes inflammation of air sacs and fills them with pus.

Qn. Outline any four ways of preventing and controlling pneumonia.

- i. Immunization using PCV vaccine.
- ii. Isolate sick people from healthy ones.
- iii. Avoid living in places which are overcrowded.
- iv. Wear warm clothes during cold conditions.

(c) Whooping cough (pertussis)

- It is caused by a bacterium.

Qn. How does whooping cough spread?

- Through air

Qn. Suggest any three signs and symptoms of whooping cough.

- i. Runny nose
- ii. Gasp for breath
- iii. Coughing spells that end in vomiting

Qn. state any two ways of preventing and controlling whooping cough.

- i. Immunization of children using DPT vaccine.
- ii. Isolate the infected persons from healthy ones.

(d) Diphtheria

- It is caused by a bacterium.

Qn. How does diphtheria spread?

- Through contaminated air.

Qn. Mention any four signs and symptoms of Diphtheria.

- i. Difficulty in breathing.
- ii. Sore throat.
- iii. Swollen neck.
- iv. Prolonged fever.

Qn. How can one prevent and control of diphtheria.

- i. Immunization of children using DPT vaccine.
- ii. Isolate infected people from healthy ones.

(e) Influenza

- It is caused by a virus.

Qn. How does influenza spread?

- Through air

Qn. Mention any three signs and symptoms of influenza.

- i. Runny nose
- ii. Difficulty in breathing
- iii. Fever

Qn. How can a family prevent and control of influenza.

- i. A void staying in cold places for long time.
- ii. A void living in crowded places.
- iii. A void staying in dusty places.

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(f) Bronchitis

- It is caused by either a bacteria or virus.

Qn. State any three signs and symptoms of influenza.

- i. Difficulty in breathing
- ii. Wheezing sound
- iii. Cough

Qn. How can a P.6 student prevent and control of Bronchitis in their family or at home?

- i. A void smoking.
- ii. A void staying in dusty places.
- iii. A void staying in poorly ventilated houses.

Note:

- Bronchitis is worsened by smoking.

(g) Common colds.

- It is caused by viruses.

Qn. Mention any five signs and symptoms of common colds.

- i. Runny nose
- ii. Sneezing
- iii. Congestion of the lungs
- iv. Headache
- v. Cough

Qn. How can a school Prevent and control of common colds.

- i. Isolate infected persons from healthy ones.
- ii. Living in well ventilated houses.

- iii. A void being near an infected person.

Qn. Identify any four examples of non- communicable diseases of respiratory system.

- i. Pleurisy
- ii. Emphysema
- iii. Larynitis
- iv. Lung cancer

(i) Pleurisy

Qn. Briefly, explain what pleurisy mean.

This is the disease of the lungs caused due to inflammation of the pleuralmembrane.

Qn. How is pleurisy caused?

- It is caused by tobacco smoking.

Qn. How can pleurisy be prevented?

- A void tobacco smoking

(ii) Lung cancer

- It is caused by smoking

Qn. Write down any one sign of lung cancer.

- Abnormal growth of the cells in the lungs.

Qn. How can lung cancer be prevented?

- A void tobacco smoking.

(iii) Emphysema

- It is caused by smoking.

Qn. Write down any two signs of emphysema.  **MAINA**
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Way up is down

- i. Difficult breathing
- ii. Cough

Qn. How can emphysema be prevented?

- A void tobacco smoking

(iv) Larynitis

- It is a disease for the respiratory system that affects the larynx.

Qn. Identify any one hereditary / inherited diseases of the respiratory system.

(i) Asthma

Qn. How is asthma contracted or got?

- It is inherited from parents.

Qn. Write down any one sign of Asthma.

- Difficulty in breathing.

Qn. How can Asthma be prevented and controlled?

- i. A void living in dusty places.
- ii. A void using chemical .fumes and prays which may worsen the condition.

Qn. State the bad habits/ practices that cause damage (affects) the respiratory system.

- i. Tobacco system
- ii. Poor feeding
- iii. Living in dusty places
- iv. Living in overcrowded places
- v. Staying in poorly ventilated houses

Qn. Give any nine different ways / practices / habits that help the respiratory system in a good

working condition.

- i. Having regular physical exercises.
- ii. Feeding on food that makes up a balance diet.
- iii. A void tobacco smoking.
- iv. A void staying in dusty places.
- v. A void living in poorly ventilated houses.
- vi. A void living in overcrowded places.
- vii. Isolate infected person from healthy ones.
- viii. Immunize children against the childhood immunisable diseases.
- ix. Always cover the mouth while coughing and sneezing.

WEEK TWELVE
Revision and exam



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