SET

Science and Elementary Technology

ICT

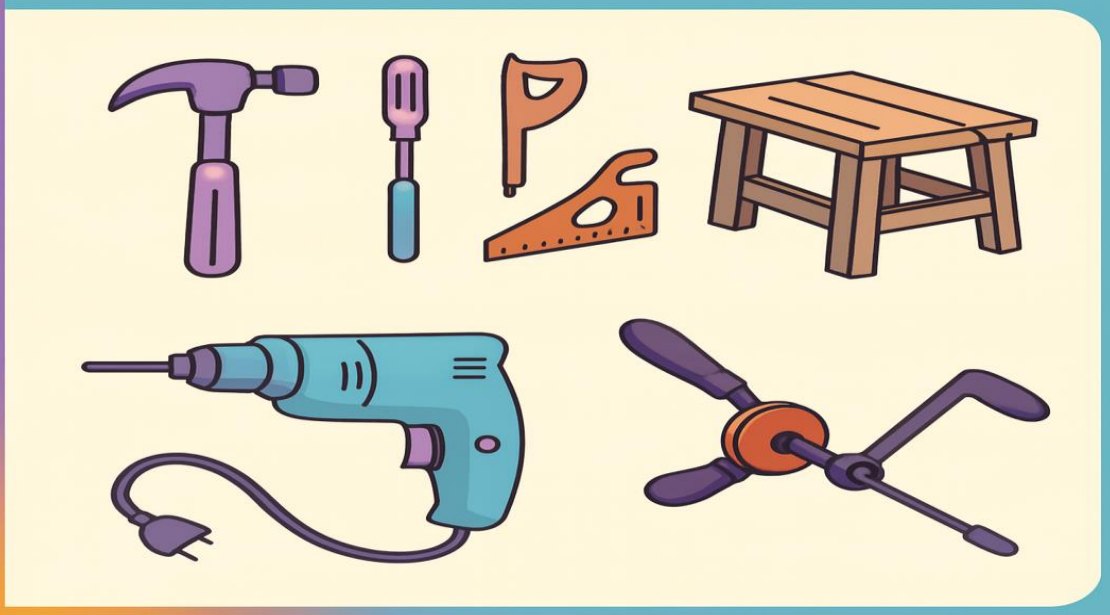
PRIMARY FIVE (PS)

SUMMARY NOTES

AND >100 ACTIVITIES/ EXERCISES AT EACH UNIT

UNIT1

CARPENTRY TOOLS



1.0. INTRODUCTION Carpentry is the skill of making things from wood, like tables, chairs, and doors. People who do this work are called carpenters, and they use special tools to help them shape and join the wood. Carpentry is important because it helps people get jobs and earn money.

2.0. 1.1. Identification of carpentry tools

KEY WORDS:

1. **Carpentry tools:** are the tools used by carpenters.
2. **Carpentry:** is the act of making wooden products.
3. **Carpenter:** is someone (person) who uses tools to make wooden products. **N.B:** A place where carpenters work is called **carpentry workshop.**

1.1 Importance of carpenters in our society

1. They are source money.
2. They provide employment (job). 3. They provide wooden materials.
4. They provide tax for the government.

The common carpentry tools are the following:

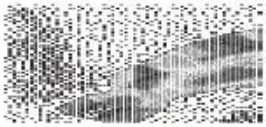
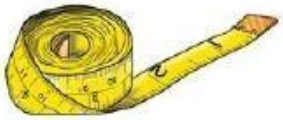
 Hammer	 Workbench	 Mallet
 Plane	 Axe	 Wood chisel
 Brace	 Screw driver	 Spirit level
 Bow saw	 Jointer	 Metre ruler
 Hand saw		 T-square

 Table saw	 Auger bit	 Spokes shave
 Tape measure	 Shaper	

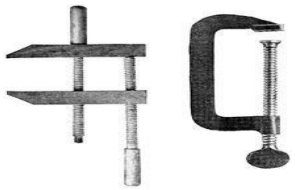
1.2. Use and maintenance of some carpentry tools

a) Supporting tools and their usage

1. **Work bench:** is a wooden bench with a hard surface.

USE: It supports while cutting, chiseling and planning.

2. **Clamp/ Jointer:** is a metal bar with adjustable jaw.



USE: It is used to hold a piece of wood to prevent its movement.

b) Cutting tools and their usage

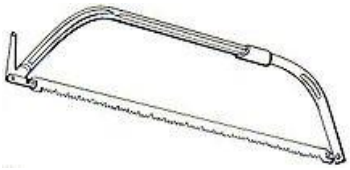
1. **Wood saw:** is made up of a flat iron blade with a wooden handle.

USE: It is used to cut wood.

2. **Axe:** is made up of metal blade and a long wooden handle.

USE: It is used to cut wood and fell trees.

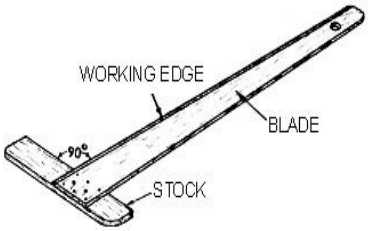
3. **A bow saw:** is a bow-shaped frame saw. It has a long metal blade.



USE: It is used for straight or curved cuts.

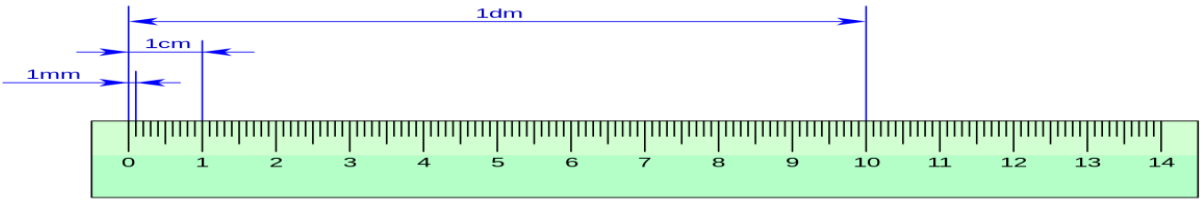
c) Measuring tools and their usage

1. **T-square:** is a T-shaped measuring tool. It is made up of wood or steel.



USE: It is used to measure squareness of a piece of wood.

2. **A meter ruler:** is made up of wood or steel.



USE: It is used to measure length of wood.

d) Smoothening and shaping tools and their usage

1. **A plane:** is made up of wood. It has a sharp metal blade and a wooden frame.

USE: It is used to smoothen rough surface of a wood.

2. **A wood shaper:** has a large motor and a vertical spindle.

USE: It is used to shape a huge amount of wood.

3. **A spoke-shave:** is a planer tool.

USE: It is used to shape wooden rods, for example, wheel spokes and chair legs.

e) Drilling tool and its usage

1. **A brace:** is a drilling tool with a U-shaped grid.

USE: It is used to drill holes in wood.

f) Levelling tool and its usage

1. **A spirit level:** is made up of aluminium, plastic or wood.

USE: It is used to check whether a surface is horizontal or vertical.

g) Driving tools and their usage

1. **A claw hammer:** has a striking a flat face at one end. The other end has a claw.

USE: It is used to drive a nail into or remove it from a wood.

2. **A mallet:** is a hammer-like tool with a head. It is made up of wood.

USE: It is used to drive wooden handled chisel.

3. **A screw driver:** has a metal blade and a wooden or plastic handle.

USE: It is used tighten and loosen a screw.

b. The general maintenance practices of carpentry tools are as follows:

-The tools need to be used for the right purpose. This is called proper use.
-The tools with cutting edges such as chisel, saw, axe and plane need to be regularly sharpened when they become blunt.
-The tools must be cleaned after use by removing dust.
-The tools must be repaired and the broken parts must be replaced to make the tools efficient and safe to work with.
-The tools must be kept in dry place to prevent rust and damages.
-Cleaned to remove dusts and stored safely after use.
-The metallic parts must be oiled to prevent rusting and reduces friction.
-The tools need to be stored properly and safely to avoid damage and injuries, They can be stored in toolbox..

1.3. Dangers of carpentry tools and health and safety measures

a. Dangers of carpentry tools

Most carpentry tools can be dangerous if not used properly. For example:

- Sharp blades (like those on table saws and shapers) can cut fingers or arms of the user if not handled properly.
- Tools like table saws can cause kickback, where wood is thrown back at the user with force. Chisels have sharp cutting edges that can cause injury if mishandled.
- When using a mallet with a chisel, there's a risk of accidentally striking your own arm. During clamping, fingers or hands may get trapped in the clamp.
- Shapers contain multiple sharp blades that can cause cuts or serious injuries if hands come too close.
- Clearing sawdust or debris while machines are still running can lead to injury.

- ❖ Exposure to dust, noise, and flying wood particles can affect eyes, ears, and respiratory health if protective gear is not used.

b. Health and safety measures to take when using carpentry tools

- ➢ Use gloves to protect your hands.
- ➢ Wear safety goggles to protect your eyes from dust and flying wood Use ear protection when working with loud machines.
- ➢ Wear a dust mask to protect your lungs from sawdust Use tools properly: Always use the right tool for the job.
- ➢ Hold tools correctly
- ➢ Keep tools in good condition.
- ➢ Make sure tools are sharp and clean.
- ➢ Do not use broken or damaged tools.
- ➢ Store tools safely after use.
- ➢ Use face mask to protect your nose from the saw dust.
- ➢ Use earmuffs to protect your ears from the loud noise.

GRADE 5 – CARPENTRY TOOLS AND SAFETY END OFUNIT ASSESSMENT

SECTION A: MULTIPLE CHOICE QUESTIONS (50 marks)

Choose the correct answer by circling A, B, C or D.

1. Carpentry is the skill of making things from _____.
   A. metal B. clay C. wood D. glass
2. A person who makes wooden items is called a _____.
   A. carpenter B. farmer C. builder D. driver
3. The place where carpenters work is called a _____.
   A. garage B. carpentry workshop C. classroom D. shop
4. Carpenters help people by providing _____.
   A. metal rods B. wooden materials C. plastic items D. food
5. Carpentry helps people to _____.
   A. waste time B. earn money C. destroy trees D. rest
6. A work bench is used to _____.
   A. cut trees B. support wood when cutting C. measure wood D. polish shoes

7. A clamp is used to _____.
   A. paint walls B. hold wood firmly C. mix paint D. sharpen tools

8. The wood saw is used to _____.
   A. join wood B. measure wood C. cut wood D. smooth wood

9. The axe is made of a metal blade and _____.
   A. rubber handle B. plastic handle C. wooden handle D. iron pipe

10. A bow saw is used to make _____ cuts.
    A. only curved B. straight or curved C. deep D. small

11. A T-square is shaped like the letter _____.
    A. L B. T C. H D. X

12. A meter ruler is used to measure the _____ of wood.
    A. color B. smell C. length D. taste

13. A plane is used to _____ a rough surface.
    A. break B. burn C. smoothen D. join

14. The wood shaper has a _____.
    A. small handle B. large motor C. plastic head D. metal rope

15. A spoke-shave is used to shape _____.
    A. nails B. wood rods C. trees D. windows

16. The brace is used for _____.
    A. cutting B. measuring C. drilling holes D. joining

17. A spirit level checks if a surface is _____.
    A. shiny B. colorful C. horizontal or vertical D. clean

18. The claw hammer is used to _____.
    A. paint B. drive and remove nails C. cut wood D. measure length

19. A mallet is made of _____.
    A. metal B. glass C. wood D. plastic

20. A screwdriver is used to _____.
    A. dig soil B. tighten or loosen screws C. hit nails D. sharpen tools

21. Tools with sharp edges should be _____ regularly.
    A. painted B. broken C. sharpened D. thrown away

22. Tools should be cleaned after use to remove _____.
    A. paint B. dust C. food D. water

23. Broken tools should be _____.
A. kept B. hidden C. repaired D. thrown

24. Tools should be stored in a _____.
A. lunchbox B. cupboard C. toolbox D. bag

25. Metallic parts should be _____ to prevent rust.
A. painted B. washed C. oiled D. broken

26. A blunt saw should be _____.
A. cleaned B. sharpened C. thrown D. hidden

27. Sharp blades can _____ if not handled carefully.
A. shine B. cut fingers C. fly D. sing

28. Table saws can cause _____.
A. kickback B. happiness C. rain D. growth

29. Sawdust can affect the _____.
A. hair B. skin C. eyes and lungs D. teeth

30. Chisels can cause injuries if _____.
A. sharpened B. mishandled C. cleaned D. stored

31. Dust masks protect the _____.
A. eyes B. nose and lungs C. ears D. hands

32. Ear protection helps prevent _____ damage.
A. hand B. eye C. ear D. head

33. Gloves protect the _____.
A. legs B. arms C. hands D. head

34. Goggles protect the _____.
A. ears B. eyes C. nose D. feet

35. Tools must be kept in _____ condition.
A. good B. bad C. dirty D. broken

36. Damaged tools should _____ be used.
A. always B. sometimes C. never D. often

37. The use of right tool for right work is called _____.
A. bad use B. proper use C. wrong use D. tool abuse

38. Cleaning tools helps to remove _____.
A. oil B. rust C. dust D. paint

39. Oiling tools helps to prevent _____.
A. shining B. rusting C. breaking D. bending

40. Carpenters help the government by paying _____.
A. rent B. tax C. wood D. fees

41. Using a mallet with a chisel wrongly may hurt your _____.
A. leg B. back C. arm D. head

42. Flying wood particles can damage your _____.
A. teeth B. eyes C. hair D. skin

43. Kickback means wood is _____.
A. thrown back B. cut down C. painted D. joined

44. Carpentry tools must be stored in a _____ place.
A. wet B. dirty C. dry D. dark

45. A plane has a _____ blade. A. sharp B. round C. blunt D. small

46. The spirit level is made of _____.
A. glass B. aluminium or plastic C. paper D. stone

47. A screwdriver has a blade made of _____.
A. metal B. wood C. rubber D. cloth

48. A clamp is also known as a _____.
A. jointer B. cutter C. saw D. hammer

49. The use of wrong tools may cause _____.
A. fun B. injury C. sleep D. nothing

50. Carpentry is important because it provides _____.
A. jobs B. games C. fruits D. clothes

🧰 SECTION B: OPEN-ENDED QUESTIONS (50 marks)

Answer the following questions clearly in the spaces provided.

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1. What is carpentry?

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2. Who is a carpenter?

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3. Mention three things made by carpenters.

   .....

4. What is the place where carpenters work called?

   .....

5. Give two reasons why carpentry is important.

   .....

   .....

6. Define carpentry tools.

   .....

   .....

7. Write one importance of carpenters to the government.

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   .....

8. What is a work bench used for?

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   .....

9. Describe the use of a clamp.

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   .....

10. What is a wood saw used for?

    .....

11. Mention one use of an axe.

    .....

12. What is a bow saw?

    .....

13. Name one measuring tool used in carpentry.

    .....

    .....

14. What is a T-square used for?

.....

15. Mention the use of a meter ruler.

.....

16. What is a plane used for?

.....

17. Write one use of a wood shaper.

.....

18. What is a spoke-shave used to shape?

.....

.....

19. Describe the use of a brace.

.....

20. What is the use of a spirit level?

.....

21. Mention two driving tools.

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22. Write one use of a claw hammer.

.....

23. What is a mallet made of?

.....

24. What is a screwdriver used for?

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25. Why should tools be sharpened regularly?

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26. What should you do after using carpentry tools?

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27. Why should tools be kept in a dry place?

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28. How can we prevent rust on metallic tools?

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.....

29. What should be done to broken tools?

.....

30. Why is it important to store tools safely?

.....

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31. Write one danger of carpentry tools.

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32. What is meant by kickback?

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33. How can sawdust affect our health?

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34. Mention one part of the body that can be injured by sharp blades.

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35. How can clamps cause injury?

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36. Why should we avoid touching moving blades?

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37. What should you wear to protect your eyes?

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38. How can we protect our ears from noise?

.....

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39. Why should we use gloves?

.....

40. What should we wear to protect our lungs?

.....

41. Write two safety measures in using carpentry tools.

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.....

42. Why should we not use damaged tools?

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43. Write one way of maintaining carpentry tools.

.....

44. Mention one tool used for cutting wood.

.....

45. Mention one tool used for drilling wood.

.....

46. Name one tool used for levelling.

.....

47. Write one tool used for measuring wood.

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48. Mention one tool used for smoothening wood.

.....

49. Give one example of proper tool use.

.....

50. Why should carpenters keep their tools clean and safe?

.....

.....

☑ A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — horizontal format)

1. Carpentry is the skill of _____. A) Making wooden products B) Painting walls C) Cooking food D) Driving cars
2. A person who makes wooden products is called a _____. A) Mason B) Carpenter C) Blacksmith D) Tailor

3. The place where carpenters work is called _____. A) Workshop B) Kitchen C) Laboratory D) Garage
4. Carpenters are important because they _____. A) Provide food B) Provide wooden materials C) Drive cars D) Teach
5. A workbench is mainly used to _____. A) Support wood while working B) Measure length C) Smooth wood D) Cut nails
6. A clamp or jointer is used to _____. A) Hold wood in place B) Cut wood C) Drill holes D) Measure
7. Which tool is used to cut wood? A) Wood saw B) Plane C) Screwdriver D) Spirit level
8. Axe is used for _____. A) Cutting wood and felling trees B) Measuring C) Smoothening D) Driving screws
9. A bow saw is used to make _____. A) Straight or curved cuts B) Holes C) Smooth surfaces D) Horizontal lines
10. T-square is used to _____. A) Measure squareness B) Drill wood C) Cut wood D) Smooth surfaces
11. A meter ruler is used to _____. A) Measure length B) Smooth wood C) Hold wood D) Drive nails
12. A plane is used to _____. A) Smoothen rough surfaces B) Cut wood C) Drill holes D) Measure
13. A wood shaper is used to _____. A) Shape a large amount of wood B) Cut nails C) Measure length D) Hold wood
14. A spoke-shave is used to _____. A) Shape rods like chair legs B) Saw wood C) Drive screws D) Level surfaces
15. A brace is a tool used for _____. A) Drilling holes B) Cutting C) Measuring D) Smoothening
16. Spirit level is used to check _____. A) Horizontal or vertical surfaces B) Length C) Drill holes D) Smooth surfaces
17. Claw hammer is used to _____. A) Drive or remove nails B) Cut wood C) Smooth surfaces D) Measure
18. Mallet is mainly used to _____. A) Drive wooden-handled chisels B) Cut wood C) Drill holes D) Measure

19. Screwdriver is used to _____. A) Tighten or loosen screws B) Measure C) Cut wood D) Smoothen

20. Carpentry tools must be stored in a _____ place. A) Dry B) Wet C) Cold D) Dirty

21. Tools with cutting edges should be _____ regularly. A) Sharpened B) Painted C) Broken D) Ignored

22. Metal parts of tools should be _____ to prevent rust. A) Oiled B) Painted C) Broken D) Stored wet

23. Using a sharp blade improperly may _____. A) Cut fingers B) Improve wood C) Reduce dust D) Measure better

24. Kickback occurs when _____. A) Wood is thrown back from the saw B) Wood is painted C) Nails are driven D) Screws loosen

25. Protective gloves help to _____. A) Protect hands B) Cut wood C) Measure length D) Drive nails

26. Safety goggles are worn to protect _____. A) Eyes B) Hands C) Feet D) Ears

27. Dust mask protects _____. A) Lungs B) Eyes C) Hands D) Legs

28. Ear protection is used to protect _____. A) Ears B) Eyes C) Hands D) Legs

29. Tools must be cleaned after use to _____. A) Remove dust B) Cut better C) Measure accurately D) Shape wood

30. A broken tool must be _____. A) Repaired B) Ignored C) Cut D) Measured

31. Table saw blades can cause _____. A) Cuts B) Smiles C) Shadows D) Heat

32. During clamping, fingers may get _____. A) Trapped B) Sharpened C) Measured D) Painted

33. Face mask protects _____ from sawdust. A) Nose B) Hands C) Feet D) Eyes

34. Earmuffs are used to protect _____. A) Ears B) Eyes C) Hands D) Legs

35. Mallet is made mainly of _____. A) Wood B) Steel C) Plastic D) Rubber

36. A workbench surface is usually _____. A) Hard B) Soft C) Wet D) Smooth only

37. Bow saw frame is _____ shaped. A) Bow B) Square C) Round D) Flat

38. T-square can be made from _____. A) Wood or steel B) Plastic C) Rubber D) Glass

39. Clamps prevent wood from _____. A) Moving B) Breaking C) Measuring D) Heating

40. Chisels are tools with _____ edges. A) Sharp B) Flat C) Rounded D) Soft
41. Plane has a sharp _____. A) Metal blade B) Wooden handle C) Plastic D) Rubber
42. Wood shaper contains a _____. A) Vertical spindle B) Horizontal ruler C) Flat edge D) Nail
43. Carpenter provides _____ for society. A) Jobs and materials B) Food C) Water D) Electricity
44. Tools should be used for _____ purpose. A) Right B) Wrong C) Random D) Multiple
45. Sawdust can cause _____ if inhaled. A) Lung problems B) Eye pain C) Hand pain D) Hearing loss
46. Mallet is used together with _____. A) Chisel B) Saw C) Clamp D) Screwdriver
47. A spirit level can be made of _____. A) Aluminium, plastic or wood B) Only steel C) Only wood D) Rubber
48. Storing tools in a dry place prevents _____. A) Rust B) Painting C) Cutting D) Measuring
49. Wearing safety gear prevents _____. A) Injuries B) Woodworking C) Measuring D) Painting
50. General maintenance of tools improves _____. A) Efficiency and safety B) Weight C) Length D) Color

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☑ B. 30 OPEN QUESTIONS

1. Define carpentry.

   .....

2. Who is a carpenter?

   .....

3. What is a carpentry workshop?

   .....

4. List three importance of carpenters in society.

   .....

5. Define carpentry tools.

   .....

6. Give two examples of supporting tools.

   .....

7. Give two examples of cutting tools.

   .....

8. Name two measuring tools in carpentry.

   .....

9. Name two tools used for smoothening or shaping wood.

   .....

10. Name one drilling tool used in carpentry.

    .....

11. Name one levelling tool.

    .....

12. Give two driving tools used in carpentry.

    .....

13. What is the use of a workbench?

    .....

14. What is the use of a clamp/jointer?

    .....

15. What is the use of a wood saw?

    .....

16. What is the use of a plane?

    .....

17. Give one maintenance practice for carpentry tools.

    .....

18. Why should cutting tools be sharpened regularly?

    .....

19. Why should tools be kept in a dry place?

    .....

20. Mention two dangers of carpentry tools.

    .....

21. How can gloves help when using carpentry tools?

    .....

22. How do safety goggles protect a carpenter?

.....

23. Why is ear protection important?

.....

24. What is the purpose of using a dust mask?

.....

25. What is the risk when clearing sawdust while machines are running?

.....

26. How should tools be stored after use?

.....

27. Why is using the correct tool important?

.....

28. What part of a plane is sharp and metal?

.....

29. Why is a spirit level important in carpentry?

.....

30. Give two examples of health and safety measures when working in carpentry.

.....

☑ C. 20 TRUE OR FALSE QUESTIONS

1. Carpentry is the skill of making things from wood. _____
2. A carpenter can also be called a blacksmith. _____
3. A workbench supports wood while working. _____
4. Clamp prevents wood from moving. _____
5. A wood saw is used to drill holes. _____
6. Axe can be used to fell trees. _____
7. Bow saw is used for straight or curved cuts. _____
8. A T-square is a cutting tool. _____
9. Plane is used to smooth rough surfaces. _____
10. Mallet can be used to drive wooden-handled chisels. _____

11. Cutting tools should be sharpened regularly. _____
12. Tools should be kept in a wet place. _____
13. Oiling metallic parts prevents rust. _____
14. Kickback is a danger when using table saws. _____
15. Dust masks protect lungs from sawdust. _____
16. Gloves protect hands from cuts. _____
17. Safety goggles protect ears. _____
18. Using the wrong tool can cause accidents. _____
19. Broken tools can be used safely. _____
20. Storing tools properly increases safety. _____

☑ D. 10 MATCHING QUESTIONS

Column A	Column B
1. Workbench	A. Supports wood while working
2. Clamp	B. Holds wood in place
3. Wood saw	C. Cuts wood
4. Axe	D. Cuts wood, fells trees
5. Bow saw	E. Makes straight or curved cuts
6. Plane	F. Smoothens rough surfaces
7. Spoke-shave	G. Shapes rods like chair legs
8. Brace	H. Drills holes
9. Spirit level	I. Checks horizontal/vertical surfaces
10. Claw hammer	J. Drives or removes nails

☑ E. 20 CHOOSE FROM BRACKET QUESTIONS

1. Carpentry is the skill of making things from _____ (wood / metal).

2. A person who makes wooden products is called _____ (carpenter / mason).
3. A workbench supports _____ (wood / metal) while working.
4. Clamp prevents _____ (wood / metal) from moving.
5. A wood saw is used to _____ (cut / drill) wood.
6. Axe is used to cut wood and _____ (fell trees / measure).
7. Plane is used to _____ (smooth / drill) wood.
8. Spoke-shave is used to shape _____ (rods / sheets).
9. Brace is used to _____ (drill / cut) holes.
10. Spirit level checks _____ (horizontal or vertical / sharpness) surfaces.
11. Claw hammer drives or _____ (removes / measures) nails.
12. Mallet is used with _____ (chisel / saw).
13. Tools must be stored in a _____ (dry / wet) place.
14. Gloves protect your _____ (hands / eyes).
15. Safety goggles protect your _____ (eyes / hands).
16. Ear protection protects your _____ (ears / nose).
17. Dust mask protects your _____ (lungs / legs).
18. Kickback occurs when _____ (wood is thrown back / saw is sharpened).
19. Cutting tools should be _____ (sharpened / stored wet) regularly.
20. Using correct tools ensures _____ (safety / injury).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Carpentry is the skill of making _____ from wood.
2. A carpenter is someone who _____ wooden products.
3. A workbench is used to _____while working.
4. Clamp prevents _____ while working.
5. Wood saw is used to _____ wood.
6. Plane is used to _____ rough surfaces.

7. Mallet is used to _____ chisels.
8. Cutting tools should be _____ regularly.
9. Tools must be kept in a _____ place to prevent rust.
10. Gloves, goggles, and dust masks are used to protect _____ while working.

2.0. INTRODUCTION

Masonry is the skill of building things using materials like stones, bricks, or tiles. People who do this work are called masons, and they use special tools to make buildings like houses and shelters for animals.

KEY WORDS:

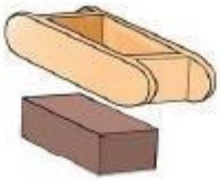
1. **Masonry tools:** are the tools used by masons.
2. **Masonry:** is action of cutting, dressing and laying bricks or stones in buildings.
3. **Mason:** is someone (person) who is skilled in cutting, dressing and laying bricks or stones in buildings. **N.B:** *A* place where masons work is called **construction site.**

2.1 Importance of masons in our society

1. They are source money.
2. They provide employment (job).
3. They provide wooden materials.
4. They provide tax for the government.

2.1. Identification of masonry tools

The masonry tools are the following:

 Trowel	 Plumb line	 Brickframe
 Meter ruler	 Tape measure	 Jointer
 Wheel barrow	 T-square	 Shovel
 Hammer	 Chisel	 Steel float
 Hoe	 Mortar mixer	  Spirit level

2.2. Usage and maintenance of masonry tools

a. Use of masonry tools

Masonry tools are used for constructing structures where each tool serves a specific function in the process of shaping, laying, and finishing masonry work. The following are common masonry tools:

a. Trowel

Fig.2.1. Using a trowel

- Trowel is used for mixing, scooping and applying mortar.

b. Plumb line

Fig. 2.2. Pupils using a plumb line

- A plumb line, also called a plumb bob, is a tool used to check if the walls of a building being built are straight up and down

c. Spirit level

- A spirit level is a tool used to determine whether a surface is perfectly horizontal, like a floor, or perfectly vertical, like a wall.

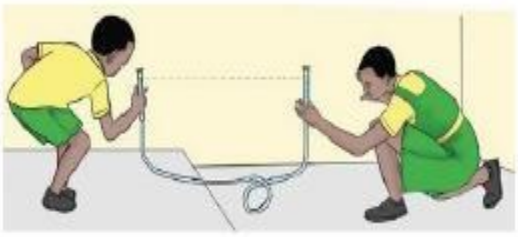


Fig. 2.3. Pupils using a spirit level

d. Float

There are two types of floats. These are:

(a) Steel float	(b) Wooden float
Masonry steel float is used for plastering walls and floors.	Masonry wooden float is used for spreading concrete over floors and walls.

Fig. 2.4. Pupil using a float

Wooden float

Steel float

Fig. 2.5. Types of floats

e. Metre ruler

- A masonry metre ruler is used in building and construction work to measure lengths and levels accurately when working with bricks, blocks, cement, or concrete surfaces.

Fig. 2.6. Pupil using metre ruler

f. Tape measure

- A masonry tape measure is used for measuring length of walls, foundations, and other areas in construction.

Fig. 2.7. Pupil using tape measure

g. Jointer

- A jointer is used to press the mortar in the joint and clean off extra mortar.

Fig. 2.8. Pupil using a jointer

h. Brick frame

- A brick frame produces rectangular-shaped bricks that are used in construction.

Fig. 2.9. Pupil using a brick frame

i. Wheelbarrow

- Wheelbarrow is used for carrying sand, gravel and stones for constructions.

j. T-square

- T-square measures the right angle. It is used to check whether the structure is square or not.

Fig. 2.11. Person using a T-square

Masonry tools need to be stored properly in a tool rack as shown below

Fig. 2.12. Masonry tools stored properly

b. Maintenance of masonry

Fig. 2.10. Person Oiling a wheelbarrow

2.3. Dangers of masonry tools and health and safety measures

a. Dangers of masonry tools

1. Some masonry tools can cut you if handled carelessly.
2. Flying pieces of brick, stone, or concrete can hurt your eyes or skin during chiseling, grinding, or cutting.
3. Breathing in fine dust from concrete or stone can cause serious lung diseases.
4. Using masonry power tools in wet areas can cause electric shock

b. Health and safety measures while using masonry tools

1. Hold and use tools carefully.
2. Keep the tools in a safe place after use.
3. Wear safety goggles, gloves, and protective clothing to protect your eyes and skin.
4. Use a dust mask or respirator and work in well-ventilated areas.
5. Keep power tools dry and away from water to prevent electric shock.

To maintain masonry tools in good condition:

i) Keep each tool in its proper storage place.

ii) Oiling or greasing them to prevent rust.

iii) Replace the worn out parts of tools.

iv) Keeping them on racks or in toolboxes.

v) Cleaning and drying them after use.

vi) Keeping them in clean and dry place.

vii) Painting all metal parts to prevent rust.

HAVE A TIME TO EXERCISE ENOUGH THEN ANSWER THESE QUESTIONS CORRECTLY

☑ MULTIPLE CHOICE QUESTIONS (MCQs) –

Choose the correct answer.

1. Masonry is the skill of building things using _____.
   a) Paper b) Stones and bricks c) Plastic d) Glass
2. A person skilled in masonry is called a _____a) Tailor b) Mason c) Driver d) Doctor
3. Tools used in masonry are called _____.
   a) Sewing tools b) Masonry tools c) Cooking tools d) Writing tools
4. Masons mainly work at a _____a) Construction site b) Hospital c) Classroom d) Market
5. The following is NOT a masonry material: __a) Stones b) Bricks c) Tiles d) Clothes
6. Masonry involves _____.
   a) Cooking food b) Cutting and laying bricks c) Sewing d) Driving
7. One importance of masons is _____

   a) They make houses b) They sing c) They cook d) They sew
8. Masonry provides _____. a) Employment b) Rain c) Food d) Medicine
9. Masons help the government by paying _____a) Songs b) Taxes c) Prayers d) Gifts
10. Masonry tools should be stored in _____.
    a) Toolboxes b) Water c) On the floor d) On the road

11. Masonry tools can _____ when handled carelessly.
    a) Cut you b) Hug you c) Clean themselves d) Talk

12. Flying brick pieces may injure your _____a) Shirt b) Eyes or skin c) Shoes d) Hair

13. Dust from concrete affects the _____.a) Lungs b) Feet c) Hands d) Hair

14. Masonry power tools in wet places can cause _____.
    a) Electric shock b) Happiness c) Hunger d) Sleep

15. Safety goggles protect your _____.a) Hands b) Eyes c) Feet d) Hair

16. Gloves protect the _____.a) Hands b) Eyes c) Hair d) Stomach

17. To protect your lungs, wear a _____.a) Cap b) Dust mask c) Socks d) Belt

18. After use, tools should be _____.a) Thrown away b) Kept well c) Hidden d) Broken

19. To prevent rust, tools should be _____a) Oiled b) Soaked c) Buried d) Broken

20. A mason builds _____a) Shoes b) Houses c) Food d) Clothes

21. Painting metal tool parts prevents _____.a) Rust b) Growth c) Sleep d) Noise

22. After using tools, they should be _____.
    a) Cleaned and dried b) Left dirty c) Hidden d) Soaked

23. Masonry helps a community by _____.
    a) Building shelters b) Making jokes c) Growing crops d) Sewing uniforms

24. Tools should be stored in a _____ place.
    a) Wet b) Dirty c) Clean and dry d) Muddy

25. Protective clothing helps to _____.
    a) Protect the body b) Make you tired c) Make you fast d) Make you heavy

26. Which is NOT a safety measure?
    a) Wearing gloves b) Using a dust mask c) Holding tools carefully d) Using power tools in water

27. Masonry provides _____. a) Employment b) Darkness c) Rain d) Stones only

28. Masons contribute to the government by paying _____a) Fees b) Taxes c) Songs d) Prayers

29. A construction site is where _____ are built.
    a) Cars b) Buildings c) Clothes d) Shoes

30. When chiseling bricks, wear _____a) Earrings b) Safety goggles c) Perfume d) Lipstick

31. Dust from concrete contains _____. a) Fine particles b) Water c) Oil d) Air

32. Worn-out tool parts should be _____a) Replaced b) Ignored c) Painted d) Broken

33. Masons _____ bricks. a) Cut b) Sew c) Eat d) Wash

34. Tools are best stored on _____. a) Racks b) Grass c) Wet floors d) Roofs

35. Painting tools prevents _____. a) Rust b) Sleep c) Hunger d) Cold

36. Masonry is important because it _____.
a) Creates jobs b) Wastes time c) Destroys homes d) Reduces money

37. Masons can build shelters for _____. a) Plants b) Animals c) Clothes d) Shoes

38. Good safety practice means _____.
a) Using tools carefully b) Running fast c) Sleeping d) Singing

39. Masonry tools include _____a) Toys b) Construction tools c) Pens d) Forks

40. A mason works mostly with _____a) Food b) Bricks or stones c) Clothes d) Plastic

---

1. Who is a mason? .....
.....

2. What are masonry tools?
.....

3. Give two materials used in masonry.
.....

4. Where do masons work?
.....

5. Write two importance of masons in the community.
.....
.....

6. Why do masons pay taxes?
.....

7. Mention two dangers of masonry tools.
.....
.....

8. How can masonry tools cause electric shock?
.....

9. How can flying pieces of bricks be dangerous?
.....

10. Why should we wear goggles when using masonry tools?
.....

11. Why is it dangerous to breathe dust from stone or concrete?

    .....

12. What should you use to protect your lungs from dust?

    .....

13. Mention two safety measures when using masonry tools.

    .....

    .....

14. Why must we store tools in a proper place?

    .....

15. Explain why tools need oiling or greasing.

    .....

16. Why should tools be cleaned after use?

    .....

17. Why should tools be kept dry?

    .....

18. How does masonry create employment?

    .....

19. What type of shelter can masons build?

    .....

20. What can happen if you do not wear protective clothing?

    .....

21. Why should broken tool parts be replaced?

    .....

    .....

22. Write one reason why masonry is important in society.

    .....

23. Write one safety measure when using power tools.

    .....

24. What can happen if you handle tools carelessly?

    .....

25. Why are toolboxes important?

    .....

26. Write two ways of maintaining masonry tools.

    .....

.....

27. What do masons contribute to the government?

.....

28. How can masons help in improving living standards?

.....

29. Give one reason why masonry is a good skill.

.....

☑ C. MATCHING QUESTIONS – 10 items

Match A with B.

A (Terms)	B (Meaning)
1. Masonry	a. Person skilled in masonry
2. Mason	b. Tools for building using bricks/stones
3. Masonry tools	c. Skill of cutting and laying bricks
4. Goggles	d. Protects the eyes
5. Gloves	e. Protects hands
6. Dust mask	f. Protects lungs from dust
7. Toolbox	g. Used for storing tools
8. Rust	h. Caused by moisture on metal tools
9. Construction site	i. Place where masons work
10. Painting tools	j. Prevents rust on tools

☑ D. TRUE / FALSE QUESTIONS – 10 questions

Write **True** or **False**.

1. Masonry is the skill of cooking food. _____
2. Masons build houses and shelters. _____
3. Masonry tools should be left on the ground after use. _____
4. Dust from bricks can damage your lungs. _____

5. Gloves protect your hands. _____
6. Wearing goggles is optional when cutting bricks. _____
7. Painting tools helps prevent rust. _____
8. Masons provide jobs. _____
9. Tools should be used in wet places to save time. _____
10. A mason can work at a construction site. _____

☑ E. CHOOSE FROM THE BRACKETS – 10 questions

Choose the correct word from the brackets.

1. A person who builds with bricks is a _____. (mason / driver)
2. Masonry tools should be kept _____. (carelessly / safely)
3. Tools should be _____ after use. (cleaned / ignored)
4. Goggles protect the _____. (eyes / ears)
5. Masons help the government by paying _____. (taxes / food)
6. Dust masks protect the _____. (lungs / feet)
7. Oiling tools prevents _____. (rust / rain)
8. Masonry is the _____ of cutting and laying bricks. (action / song)
9. Tools should be stored in a _____. (toolbox / river)
10. Power tools should be kept away from _____. (water / sun)

3.0. INTRODUCTION Light is a form of energy that allows us to see the things around us. Light is obtained from many sources. These sources may be natural or artificial. It is important to know different sources of light and how to use them.

Light: is a form of energy which helps us to see.

Energy: is ability to do a work.

Forms of energy

i) Light energy **ii)** Electrical energy **iii)** Chemical energy **iv)** Mechanical energy

v) Elastic energy **vi)** Wind energy **vii)** Solar energy **viii)** Hydro-power energy

14.1 Importance of light

i) It allows us to see all objects.

ii) It allows plant to make photosynthesis (sunlight).

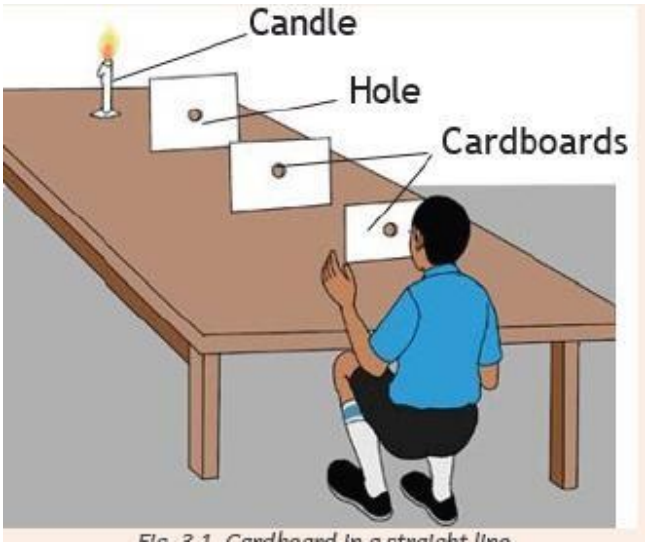
iii) **iii)** Sunlight give us vitamin D.

Sources of light

i) **Natural source of light:** sun and stars **ii)**
Artificial sources of light: electric light, torch, candle, lamps……

N.B: The moon is not source of light because it uses the light from the sun.

3.1. Light propagation



- Light moves in straight lines. We call this a ray of light. Many rays together make a beam of light. Light does not only go in one direction. It can also spread out in all directions from the source, like the sun or a lamp.
- Propagation of light means how light moves from one place to another. Light can travel through space or through things like air, water, or glass.

3.2. Types of media for light propagation

Light propagation refers to how light travels through different media.

A medium for light propagation is any material or space of the light meets when it travels.

Materials or media that transmit light can be classified into three types:

Transparent, Translucent and Opaque.

1. Transparent media

These are materials that allow light to pass through them. We can see through them clearly.

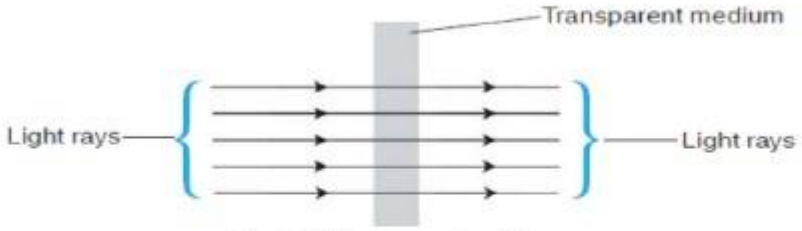


Fig. 3.2. Transparent medium

Examples of transparent materials include glass windows, colourless drinking glasses, air, clear water and windscreens.

Name 3 other examples of transparent materials.

2. Translucent media

These are materials that allow some light to pass through them. We cannot see through them clearly.

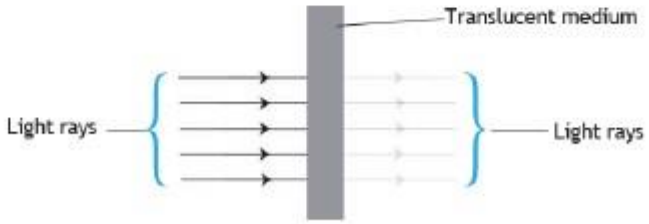


Fig. 3.3. Translucent medium

Examples of translucent materials include frosted glass, waxed paper and thin pieces of cloth or paper.

3. Opaque Media

These are materials that do not allow light to pass through them, they block it.

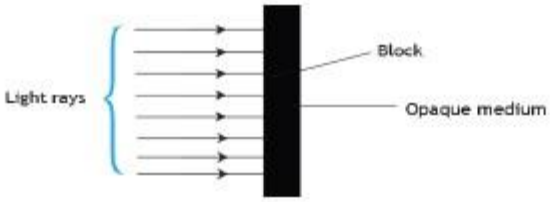


Fig. 3.3. Opaque medium

3.3. Reflection of light

It moves in **straight lines**. But when light hits something, like a wall, water, or glass, it can change direction.

When light falls on the mirror, the direction in which it will be reflected, depends on the angle at which the light hits the mirror.

Reflection is the change of direction back into the medium as light hits a shiny surface.

Smooth shiny surfaces reflect most of the light that falls on them. They are good reflectors of light.

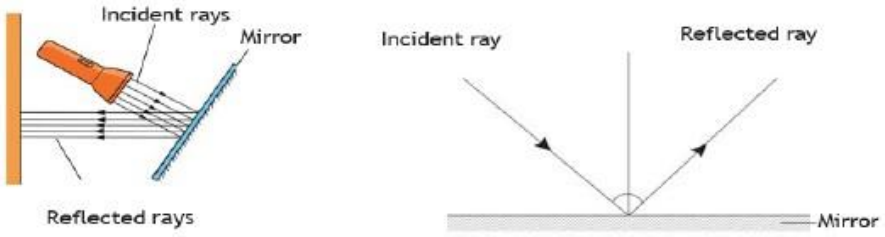


Fig. 3.4. Reflection of light

Rays falling on the mirror are called incident rays.

Rays that bounce off the surface are called reflected rays.

Brightly coloured surfaces reflect light better than dull coloured surfaces.

3. 4. Refraction of light

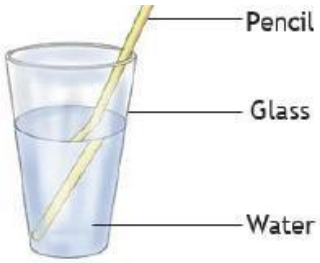


Fig. 3.5. Refraction of light

Light travelling from the air is bent at the surface of the water (contact surface between air and water).

Refraction of light makes the pencil appear bent.

Refraction occurs because light travels at different speeds in different media

Refraction is the bending of a light ray when it travels from one medium to another different medium The following are examples of refraction of light:

- A coin at the bottom of a container with water appears raised.
- Riverbeds appear shallow.
- The floor of the swimming pool appears raised.

TAKE YOUR TIME AND REVISE ENOUGH THEN ANSWER THESE QUESTIONS CORRECTLY

☑ A. MULTIPLE CHOICE QUESTIONS (50 MCQs)

Choose the correct answer.

1. Light is a form of _____. a) Water b) Energy c) Soil d) Sound
2. Energy is defined as the ability to _____a) Sleep b) Do work c) Eat d) Think
3. Which of the following is not a form of energy?
   a) Light energy b) Electrical energy c) Chocolate energy d) Wind energy
4. Which of these is a natural source of light?
   a) Torch b) Candle c) Sun d) Lamp
5. Artificial source of light is _____.a) Stars b) Sun c) Torch d) Moon
6. Light allows us to _____.
   a) Eat food b) See objects c) Smell things d) Feel pain
7. Plants use sunlight to make food through _____.
   a) Running b) Photosynthesis c) Breathing d) Eating
8. Sunlight gives humans vitamin _____. a) B b) C c) D d) A
9. The moon is not a source of light because it _____.
   a) Produces its own light b) Uses sunlight c) Is too small d) Is dark
10. Light moves in _____.
    a) Circles b) Straight lines c) Triangles d) Squares
11. A single path of light is called a _____a) Beam b) Ray c) Line d) Track
12. A group of light rays together forms a _____.
    a) Beam b) Light sheet c) Flame d) Streak
13. Propagation of light means _____.a) Stopping light from moving
    b) How light moves c) Bending of light d) Blocking light
14. Light can travel through _____a) Air b) Water c) Glass d) All of the above
15. When light hits a mirror, it _____

    a) Disappears b) Reflects c) Bends d) Stops

16. Reflection is when light _____.
    a) Changes direction on a surface b) Stops moving
    c) Becomes heat d) Travels slowly

17. The bending of light when it moves from one medium to another is called _____.
    a) Reflection b) Refraction c) Bouncing d) Radiation

18. A coin in water appears raised because of _____.
    a) Reflection b) Refraction c) Evaporation d) Pollution

19. Riverbeds look shallow because of _____.
    a) Heat b) Reflection c) Refraction d) Gravity

20. The floor of a swimming pool appears raised due to _____.
    a) Reflection b) Refraction c) Radiation d) Absorption

21. Light travels fastest in _____a) Glass b) Air c) Water d) Stone

22. Which one is a natural source of light?
    a) Lamp b) Candle c) Sun d) Torch

23. Which one is artificial?
    a) Sun b) Stars c) Candle d) Lightning

24. An example of electrical energy producing light is _____.
    a) Sun b) Torch c) Stars d) Candle

25. Which form of energy comes from the sun?
    a) Solar energy b) Chemical energy c) Elastic energy d) Wind energy

26. Which form of energy is stored in batteries?
    a) Chemical energy b) Light energy c) Elastic energy d) Mechanical energy

27. Which form of energy is produced by wind?
    a) Elastic b) Hydro-power c) Wind d) Solar

28. Which energy is generated by flowing water?
    a) Mechanical b) Hydro-power c) Electrical d) Solar

29. Which energy is stored when a rubber band stretches?
    a) Elastic energy b) Chemical energy c) Light energy d) Solar energy

30. Which energy helps machines move?
    a) Mechanical energy b) Elastic energy c) Sound energy d) Electrical energy

31. When light spreads out in all directions, it forms a _____.
a) Sheet b) Beam c) Wave d) Burst

32. Light travels in _____ direction(s). a) One b) Two c) All d) Straight

33. A mirror works based on _____.
a) Refraction b) Reflection c) Friction d) Freezing

34. A beam of light passing through glass is an example of _____.
a) Reflection b) Refraction c) Radiation d) Freezing

35. Light travels fastest in _____. a) Solid b) Liquid c) Gas d) Metal

36. When light hits a wall, it usually _____.
a) Stops b) Bends c) Reflects d) Travels through

37. A straight light ray is represented by a a) Wave b) Arrow c) Dot d) Curve

38. A torch is powered by _____ energy.
a) Solar b) Electrical c) Wind d) Mechanical

39. The main source of natural light on Earth is _____.
a) Moon b) Stars c) Sun d) Lightning

40. Light cannot travel through _____.
a) Air b) Stone c) Water d) Glass

41. Light spreads in all directions from a _____.
a) Sink b) Source c) Window d) Wall

42. Refraction occurs because light travels at different _____.
a) Speeds b) Colors c) Temperatures d) Heights

43. Which statement is correct?
a) Light bends in water b) Light stands still c) Light sleeps d) Light grows

44. Electrical energy can produce _____. a) Light b) Food c) Rain d) Soil

45. Sun provides us with vitamin _____. a) C b) D c) A d) B

46. A torch is an example of _____.
a) Natural source b) Artificial source c) Sound source d) Solar source

47. Light helps plants make _____.
a) Milk b) Photosynthesis c) Sound d) Clouds

48. The moon appears bright because it _____.
a) Glows naturally b) Reflects sunlight c) Produces heat d) Burns gas

49."Beam" means _____.

a) Group of rays b) Bent ray c) Broken light d) Shadow

50. Which of these shows refraction?

a) Mirror reflection b) Coin in water looks raised

c) Light moving in straight lines d) A person walking

☑ B. OPEN-ENDED QUESTIONS (40)

Write your answers in the space provided.

1. What is light?.....
2. Define energy. .....
3. Name two forms of energy. .....
4. Give three examples of natural sources of light. .....
5. Give three examples of artificial sources of light. .....
6. Why is the sun important to plants? .....
7. Write two importance of light to humans. .....
8. Why is the moon not a source of light? .....
9. Explain what photosynthesis is. .....
10. What vitamin does sunlight give the body? .....
11. What is a ray of light? .....
12. What is a beam of light? .....
13. Define propagation of light. .....
14. Explain how light travels. .....
15. What is reflection? .....
16. Give two examples of surfaces that reflect light. .....
17. What is refraction? .....
18. Why does a coin in water appear raised?.....
19. Write one example showing refraction in real life.....
20. Give one similarity between reflection and refraction.....

21. Give one difference between reflection and refraction……

22. What is a medium in light travel? ……

23. Mention two media through which light can travel. ……

24. Explain why riverbeds look shallow. ……

25. How does light help us see objects? ……

26. Why do stars produce light? ……

27. Why can't light pass through stone? ……

28. Define natural light. ……

29. Define artificial light. ……

30. Mention two uses of artificial light. ……

31. Why must we conserve electricity? ……

32. Give two examples of electrical energy. ……

33. Describe how light spreads from a source. ……

34. Which energy helps in lighting a bulb? ……

35. Name the form of energy used when stretching a rubber band……

36. What is hydro-power energy? ……

37. What is solar energy? ……

38. What is wind energy? ……

39. Write one activity that requires light. ……

40. Why does light bend in water? ……

☑ C. TRUE / FALSE QUESTIONS (10)

Write True or False.

1. Light is a form of energy. _____
2. The moon produces its own light. _____
3. Sunlight gives vitamin D. _____
4. A torch is a natural source of light. _____

5. Light travels in straight lines. _____
6. Reflection is the bending of light. _____
7. Refraction happens when light moves from one medium to another. _____
8. Riverbeds appear deeper due to refraction. _____
9. Artificial light includes lamps and candles. _____
10. Light allows us to see things. _____

☑ D. MATCHING QUESTIONS (10)

Match column A with column B.

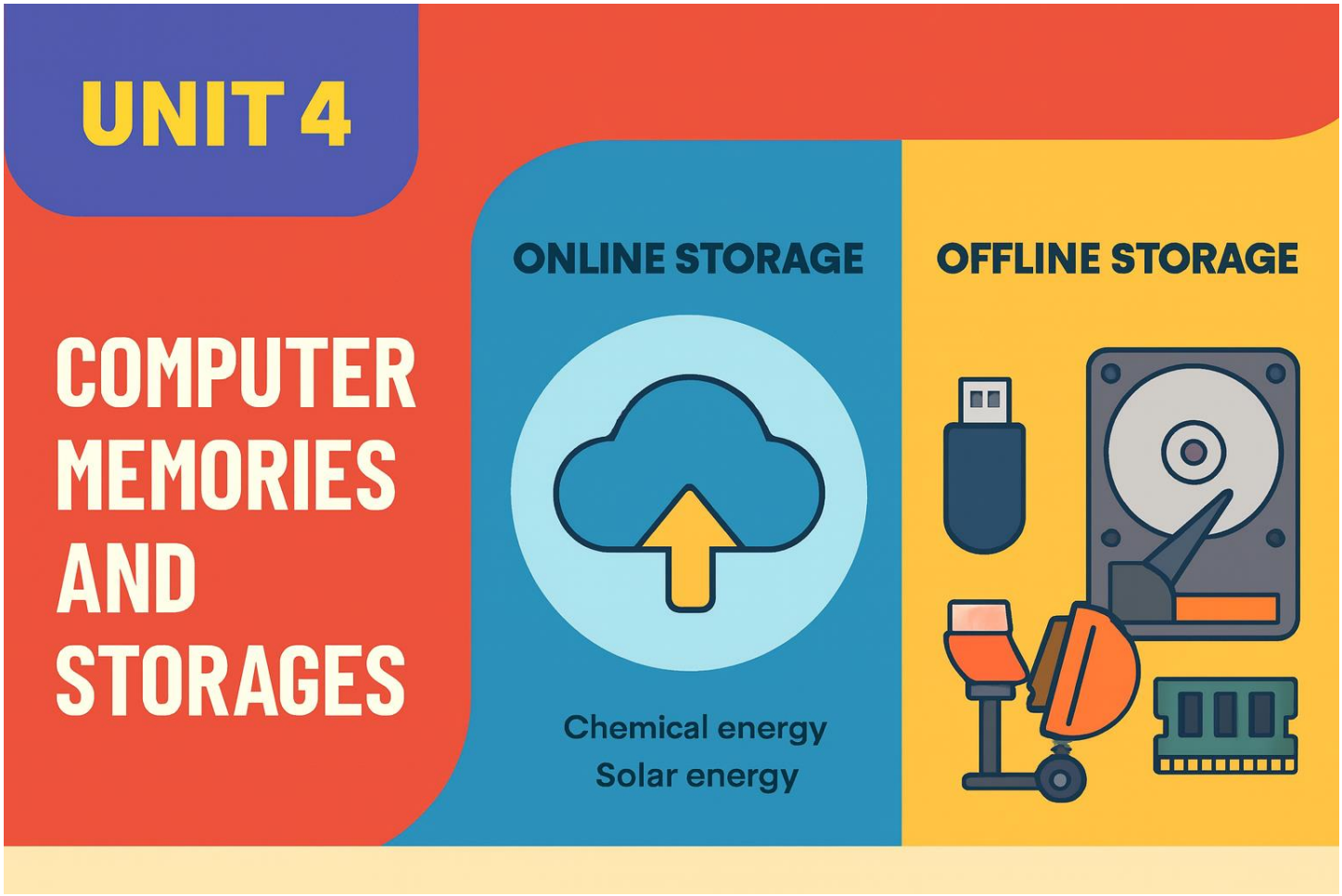
Column A	Column B
1. Light	a. Ability to do work
2. Energy	b. Bending of light
3. Ray	c. Form of energy
4. Beam	d. Comes from the sun
5. Sun	e. Light bouncing back
6. Reflection	f. Straight line of light
7. Refraction	g. Natural light source
8. Torch	h. Artificial source of light
9. Stars	i. Many rays together
10. Moon	j. Reflects sunlight

☑ E. CHOOSE FROM THE BRACKETS (20)

Choose the correct word from the brackets.

1. Light is a form of _____. (energy / water)

2. Energy is the ability to _____. (sleep / do work)
3. The _____ gives us vitamin D. (sun / lamp)
4. A torch is a/an _____ source of light. (natural / artificial)
5. Stars are _____ sources of light. (artificial / natural)
6. The moon _____ sunlight. (reflects / produces)
7. Light moves in _____ lines. (straight / curved)
8. A single path of light is called a _____. (beam / ray)
9. Many rays of light make a _____. (beam / dot)
10. The movement of light is called _____. (propagation / vibration)
11. Light can travel through _____. (air / metal)
12. Light _____ when it hits a mirror. (reflects / bends)
13. Refraction is the _____ of light. (bending / breaking)
14. A coin in water appears _____. (raised / deeper)
15. Sunlight helps plants do _____. (photosynthesis / breathing)
16. Hydro-power comes from _____. (flowing water / fire)
17. A mirror shows _____. (reflection / refraction)
18. Elastic energy is stored in a _____. (rubber band / star)
19. _____ energy helps machines move. (Mechanical / Wind)
20. Solar energy comes from the _____. (sun / candle)



4.0. INTRODUCTION

In a computer, memories store information for a short time while storages store it for a long time. This information can be saved on the computer or on the internet. When it is saved on the computer, it is called **offline** storage. When it is saved on the internet, it is called **online** storage, like Google Drive. This unit is about computer memory, storages and how to use them.

4.1. External storages

External storages are found outside the computer used to store or save information.

They are also called storages because they keep files permanently. They can be seen and touched. They help to keep files, pictures, videos and documents.

External storages are connected to the computer by using computer ports such as USB port.

Examples of external storages are:

CD or DVD
Flash disk
External hard disk
Memory card (SDcard).

a. Checking the size of external storages To check the size of external storage, do the following:

1. Turn on your computer.
2. Plug the flash disk or external hard drive into the USB port on the computer.
3. Open **"This PC" or "My Computer"**
4. Find the name of the external storage. You will see the name of the storage such as MY FLASH (D:).

In the picture below, the external storage connected to the computer has a total size of **7.48 GB**, and **6.69 GB** is still free.

Picture 4. 1. The size of an external storage (flash disk)

b. Importance of using external storages

External storages are important because they are used to store data. Some of their importance are:

They help to save work.
They help to move **files** from one computer to another.
They help to save extra copies of files.
They help to save space on the computer.

c. Proper use of external storages

To use the external storage properly, do the following:

- Delete files not needed to free up space.
- Keep external storage in a safe place and connect to a computer or remove it properly.
- Avoid using external storage on unknown computers to prevent viruses.

4.2. Internal memories and storages

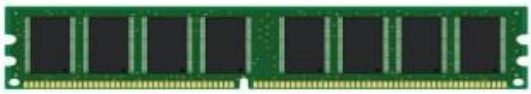
Internal memories and storages are found inside the computer. They help the computer to work fast and store information. You cannot see them easily because they are inside the computer case. Internal memories have a small size and can store less files while internal storage have a big storage size and keep more files for a long time.

a. Internal memories

There are two main internal memories which are RAM and ROM.

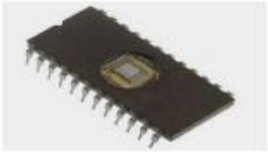
RAM (Random Access Memory): It helps the computer work quickly because it stores data that the computer is using. When the RAM has a big storage size the computer works quickly but when the RAM storage size is small, the computer works slowly.

It stores work for a short time only when the computer is on.
When the computer is turned off, the RAM loses its data.



Picture 4. 2. RAM

- **ROM (Read Only Memory):**
  - It has important instructions the computer needs to start.
  - It is not forgotten even when the computer is off.
  - It helps the computer know what to do first.



Picture 4. 3. ROM

b. Internal storages

The internal storage in a computer is the hard disk. For modern computer, the hard disk is replaced by the SSD.

- **Hard Disk**
  - A hard disk is **found inside the computer**.
  - It is used to **store many files** like videos, pictures, and documents.
  - It keeps the files **even when the computer is off**.

➢ **Solid State Drive (SSD)**

- An SSD is also found inside the computer.
- It stores files like a hard disk. It is small in physical size but it is **faster** and occupies a small space inside a computer.
- It **has no moving parts**, so it is quiet and lasts a long time.
- Computers with SSD are smaller and work faster than computers with hard disks.

Picture 4. 5.SSD

Proper use of internal memories and storages

To use the internal memories and storages properly, do the following:

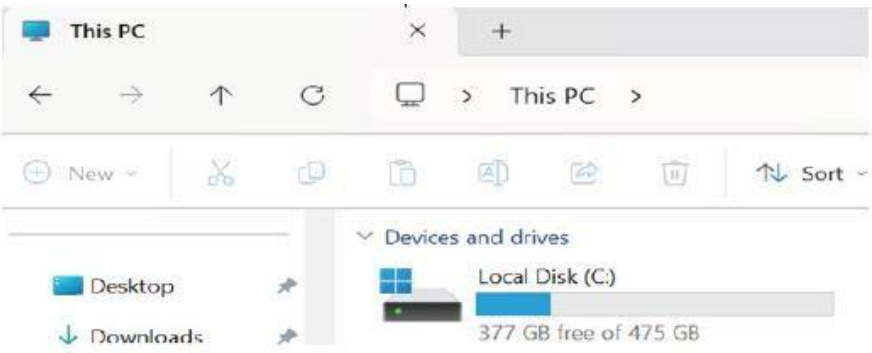
Do not overload the computer with too many programs. Close programs when not using them to keep RAM free. If the computer is slow, call a technician to check.

Checking the size of internal memories

To check the size of internal memory such as hard disk, do the following:

1. Switch on the Computer.
2. Click the "**Start**" button.

Choose "**My Computer**" or "**This PC**". In This PC there is **Local Disk (C:)** which is the size of the hard disk (or SSD).



Picture 4. 5. Local disk (C:)

4. Look under it to see the used and free space.
5. This shows how much storage is used and how much is left.

In this picture above, the Local Disk (C) has a total of **475 GB**. Out of this, **99 GB** is already used, and **377 GB** is still free to use. For some computers there are more than one local disk and the total size can be found by adding all the local disks.

4.3. Online storage

Online storage also called **cloud storage** is a place on the internet where to keep files like documents, pictures and videos. This means that to use online storage, a computer must be connected to the internet.

Examples of online storage:

Google Drive
Dropbox
OneDrive

a. Importance of Online Storages

They help to save work safely online.

Allow opening of files anytime and anywhere.
Prevent loss of files even if the computer is broken.
Allows the sharing of work with friends or teachers online.

b. Opening Google Drive

To open Google Drive, do the following:

1. Turn on the computer and connect to the internet.
2. Open a web browser such as Google Chrome.
3. In the search bar, type www.drive.google.com.

Picture 4. 6.Writing www.drive.google.com in the search bar

4. Click on "**Sign in**" button.

Picture 4. 7. Window for accessing Sign in button

5. Enter the "**Email**" then Click on "**Next**" button to enter the password.

Picture 4. 8.Login into Google Drive

1. Now you can see your **Google Drive**.
2. Click **"+ New"** to add or upload a file.

4.3. Memory size

5. Memory size tells **how much data** a computer can store or use. It helps us know if the computer has **enough space** or works **fast**. We use **units** to measure memory size.
6. Big memory means more space or that a computer can work faster. Memory size is measured in special units which are TB, GB, MB, KB, Byte and bits.
7. **To change one memory unit to another, do the following:** – Multiply by 1024 to go from a big unit to a small unit. – Divide by 1024 to go from a small unit to a big unit.
8. The table below shows main memory units:

Unit	Full Name	Example
Bit		Smallest unit of information in a computer. It can have only two values:0 (off) and 1 (on).
1Byte		8bits
1KB	Kilobyte	1024 Bytes
1MB	Megabyte	1024 KB
1GB	Gigabyte	1024 MB
1TB	Terabyte	1024 GB

Examples:

- **From the biggest to the smallest:**
  - 1 GB = 1*1024=1024MB
  - 2 GB =2*1024= 2048MB
  - 5 MB = 5*1024=5120 KB
- **From the smallest to the biggest:**
  - 3072 KB = 3072 /1024=3MB
  - 2048 MB=2048/1024=2GB

It is important to know that to simplify calculations sometimes the number 1000 is used instead of 1024.

✅ **Here is the full assessment based on your content about *Computer Memory and Storage***
Structure requested:

- **50 Multiple Choice Questions (MCQs)** — arranged horizontally
- **40 Open-ended Questions** — leave space for answers
- **10 Matching Questions**
- **10 True or False Questions**
- **20 Choose-from-bracket Questions**

✅ 50 MULTIPLE CHOICE QUESTIONS (MCQs)

(Choose the correct answer. Questions are set horizontally as requested.)

1. External storage is found (a) inside the computer (b) outside the computer (c) on the screen (d) keyboard
2. Flash disk is an example of (a) internal memory (b) external storage (c) online storage (d) monitor
3. RAM stores information (a) permanently (b) for a short time (c) forever (d) on the internet

4. ROM stands for (a) Read Only Memory (b) Run Online Machine (c) Ready On Memory (d) Room Of Memory
5. Google Drive is (a) offline storage (b) internal memory (c) online storage (d) flash disk
6. To check the size of a flash disk, open (a) Photos (b) This PC/My Computer (c) Paint (d) Calculator
7. Local Disk (C:) represents (a) RAM (b) CPU (c) internal storage (d) keyboard
8. External storage can be touched and seen. (a) True (b) False
9. Online storage requires (a) electricity only (b) internet connection (c) RAM only (d) monitor
10. A flash disk is connected through the (a) CD slot (b) USB port (c) speaker (d) charger
11. Memory card is also called (a) SD card (b) CPU (c) SSD (d) monitor
12. To open Google Drive, type (a) www.gmail.com (b) www.drive.google.com (c) www.google.com (d) www.docs.com
13. RAM data disappears when the computer is (a) turned off (b) printing (c) loading (d) saving
14. ROM stores information (a) temporarily (b) permanently (c) in flash disk (d) on internet
15. SSD/HDD refers to (a) internal storage (b) external storage (c) printer (d) mouse
16. External storages store information (a) permanently (b) temporarily (c) until power is off (d) only pictures
17. One benefit of online storage is (a) uses no internet (b) allows sharing files (c) deletes files (d) slows computer
18. Dropbox is (a) internal memory (b) cloud storage (c) RAM (d) printer
19. "Multiply by 1024" is used when converting from (a) small to big unit (b) big to small unit (c) minutes to hours (d) inches to cm
20. 1 GB = (a) 1024 KB (b) 1024 MB (c) 1024 Bits (d) 1024 Byte
21. RAM affects computer (a) speed (b) weight (c) screen colour (d) size
22. Local Disk (C:) is located in (a) CPU (b) motherboard (c) internal storage (d) printer
23. Used to prevent virus infection (a) Formatting (b) Avoid using unknown computers (c) Removing RAM (d) Breaking flash disk
24. Deleting unwanted files helps (a) slow storage (b) free space (c) hide files (d) break RAM
25. Offline storage saves files (a) on internet (b) on computer (c) on keyboard (d) on monitor
26. CDs and DVDs are examples of (a) online storage (b) external storage (c) RAM (d) mouse
27. ROM keeps data even when (a) computer is off (b) internet is off (c) mouse is unplugged (d) screen is broken

28. The smallest memory unit is (a) Byte (b) GB (c) Bit (d) TB
29. Which is bigger? (a) GB (b) TB (c) MB (d) Byte
30. To remove flash disk safely, use (a) eject option (b) restart computer (c) switch off RAM (d) format hard disk
31. OneDrive is (a) internal memory (b) online storage (c) flash disk (d) mouse
32. A computer that is slow may need (a) more RAM (b) more keyboard (c) more mouse (d) bigger monitor
33. Internal memory is found (a) inside the computer (b) outside the computer (c) online (d) on flash disk
34. Internal storage is also called (a) CPU (b) Hard disk (c) monitor (d) desktop
35. ROM is used to store (a) music (b) permanent instructions (c) pictures (d) downloaded videos
36. SD card is inserted into (a) CPU socket (b) memory card slot (c) keyboard slot (d) speaker
37. The purpose of memory is to (a) display videos (b) store data (c) print documents (d) type letters
38. Cloud storage protects files (a) when the computer is broken (b) only at home (c) only at school (d) only when printing
39. To upload files in Google Drive, click (a) + New (b) Close (c) Delete (d) Exit
40. Files can be shared online using (a) RAM (b) cloud storage (c) mouse (d) speakers
41. RAM improves computer (a) colour (b) speed (c) size (d) weight
42. Divide by 1024 when converting from (a) small to big unit (b) big to small (c) inches to cm (d) MB to Byte
43. The device that stores data permanently is (a) RAM (b) ROM (c) storage device (d) mouse
44. Example of internal storage (a) Flash disk (b) DVD (c) Hard disk (d) Memory card
45. The unit larger than GB is (a) KB (b) MB (c) TB (d) Bit
46. Flash disk helps to (a) speed typing (b) move files between computers (c) print pictures (d) change RAM
47. To check hard disk space, go to (a) This PC (b) Camera (c) Paint (d) Calculator
48. Offline storage includes (a) Google Drive (b) Flash disk (c) OneDrive (d) Dropbox
49. Big memory means (a) more space (b) slow computer (c) less files (d) expensive mouse
50. Online storage requires (a) RAM only (b) internet connection (c) printer (d) keyboard

☑ 40 OPEN-ENDED QUESTIONS

(Leave dotted space for answers)

1. What is external storage?

   .....

   .....

2. Give two examples of external storage. .....
3. Why is external storage important?

   .....

4. Describe what a flash disk is used for. .....
5. What is the meaning of offline storage?

   .....

6. What is the meaning of online storage?

   .....

7. Give two examples of online storage. .....
8. Write steps for checking the size of a flash disk.

   .....

   .....

   .....

   .....

9. What does RAM do in a computer?

   .....

   .....

10. What happens to RAM data when the computer is turned off?

    .....

    Define ROM.

    .....

11. How do you open Google Drive? .....

    .....

    .....

12. Mention one importance of cloud storage. .....
13. Why should we eject flash disks safely? .....

14. What unit is used to measure memory size? .....
15. Explain the meaning of memory size. .....
16. Write three units of memory size from smallest to biggest.

    .....
17. What is internal storage? .....
18. Give an example of internal storage. .....
19. What is the purpose of deleting unwanted files? .....
20. Why should we avoid using flash disks on unknown computers?

    .....
21. Mention two ways of proper use of external storages. .....
22. Mention two ways of proper use of internal memories. .....
23. Explain offline files. .....
24. Explain online files. .....
25. What does cloud storage prevent? .....
26. What does a computer technician do? .....
27. Write the full meaning of RAM. .....
28. Write the full meaning of ROM. .....
29. What does Local Disk (C:) represent? .....
30. Give one example of what can be stored in online storage.

    .....
31. State what "multiply by 1024" is used for. .....
32. State what "divide by 1024" is used for. .....
33. What is the advantage of having big RAM? .....
34. How can online storage be accessed? .....
35. Give one importance of internal storage. .....
36. What are memory units? .....
37. Explain why files are stored on external storage devices.

    .....
38. Define cloud storage. .....
39. What is a USB port used for? .....

✅ 10 MATCHING QUESTIONS

Match **Column A** with **Column B**.

Column A (Terms)	Column B (Meaning)
1. RAM	a. Permanent storage inside the computer
2. Flash disk	b. Online storage
3. Google Drive	c. Temporary storage in the computer
4. DVD	d. External storage device
5. ROM	e. Saves files permanently inside computer
6. SSD/HDD	f. Requires internet
7. Cloud storage	g. Stores data permanently on computer
8. USB port	h. Requires internet connection
9. Memory size	i. Amount of data a memory can store
10. Online storage	j. To connect flash disk

✅ 10 TRUE OR FALSE QUESTIONS

1. RAM keeps information permanently. _____
2. Flash disk is an external storage device. _____
3. ROM loses data when the computer is off. _____
4. Google Drive needs internet to work. _____
5. Internal storage includes hard disk. _____
6. Offline storage means saving files on the internet. _____
7. Deleting unwanted files frees space. _____
8. Cloud storage prevents loss of files. _____
9. Memory size is measured in GB, MB, KB, etc. _____
10. External storages are found inside the computer. _____

✅ 20 CHOOSE-FROM-BRACKETS QUESTIONS

(Choose the correct word from the brackets and fill in blanks.)

1. External storages are found _____ the computer. (inside / outside)

2. Flash disk is an example of _____. (internal storage / external storage)
3. Google Drive is an example of _____. (offline storage / online storage)
4. RAM stores data _____. (temporarily / permanently)
5. ROM stores data _____. (permanently / temporarily)
6. To check flash disk size, open _____. (This PC / Paint)
7. Cloud storage requires _____. (internet / keyboard)
8. Memory size is measured in _____. (GB, MB, KB / minutes)
9. Multiply by 1024 to move from big unit to _____. (small unit / largest unit)
10. Local Disk C is _____. (internal storage / external storage)
11. SD card is inserted into _____. (memory card slot / CD drive)
12. RAM helps the computer work _____. (faster / slower)
13. Delete files not needed to free _____. (space / virus)
14. Online storage allows _____ of files. (sharing / printing)
15. Flash disk connects through _____. (USB port / TV screen)
16. 1GB = 1024 _____. (MB / bits)
17. Cloud storage protects files from _____. (loss / printing)
18. SSD means _____. (Solid State Drive / Save Space Disk)
19. Memory card is also called _____. (SD card / monitor)
20. Divide by 1024 to convert to a _____. (bigger unit / smaller unit)

5.0. INTRODUCTION

In this unit, you will learn how to use tables and pictures in a Word document. Tables help you put information in a clean and easy way using boxes. You will learn how to put a table, add or remove rows and columns and how to put and change the size of a picture. better work for school. This unit will be learned using a Word processing program such as Word or Abiword.

5.1. Inserting a table

A **table** is a set of boxes made up of **rows** (across) and **columns** (up and down). We use tables to arrange information clearly and precisely.

Tables help to show things like:

-Timetables
-Class lists
-Marks
-Shopping lists

Steps to Insert a Table:

1. Open a **Word** document or AbiWord
2. Click on the "**Insert**" tab at the top of the screen.
3. Click on the "**Table**" button.

Picture 5. 1:Insert tab

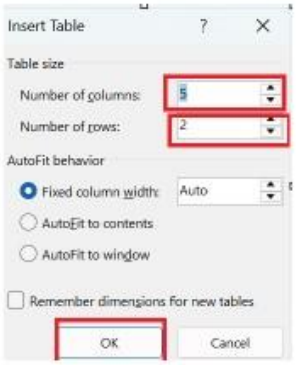
Picture 5. 2:Table icon

4. Click on **Insert Table**.

Picture 5. 3. Insert Table tab

5. Specify the number of columns and rows you need.

   Click "**OK**" button or "**Insert** "button in AbiWord.



Picture 5. 4:Defining number columns and rows

6.The table will be automatically inserted in your document.
To write in the table, click in the target cell and write using the keyboard.

5.2. Add rows and columns

a. Row

A row in a table is a horizontal line of boxes that goes from left to right across the table. Each row is used to show one line of information.

Example:

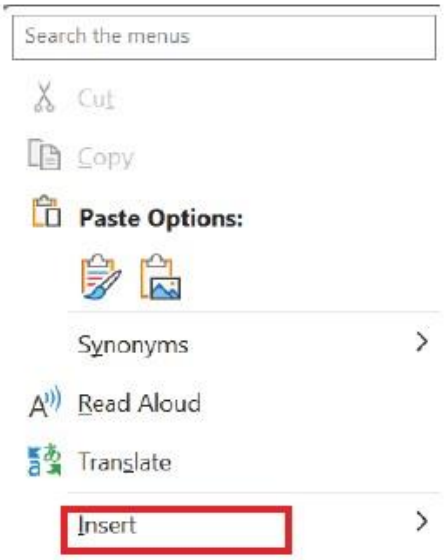
In a class list table, one row can show:

Name	Age	Class
John	10	P5

This is one row showing John's information.

- **Adding a new row:**

1. Click in the row where you want to add a new row.
2. **Right-click** your mouse.



Picture 5. 5. Insert option for inserting a row

3. Click **"Insert"**, then choose **"Insert Rows Above"** or **"Insert Rows Below"**.

The new row will be inserted. **Insert Row Above** means adding a new row on top of the row clicked. **Insert Row Below** means adding a new row under the row clicked.

b. Column:

A column in a table is a ***vertical line of boxes*** that goes ***from top to bottom***.

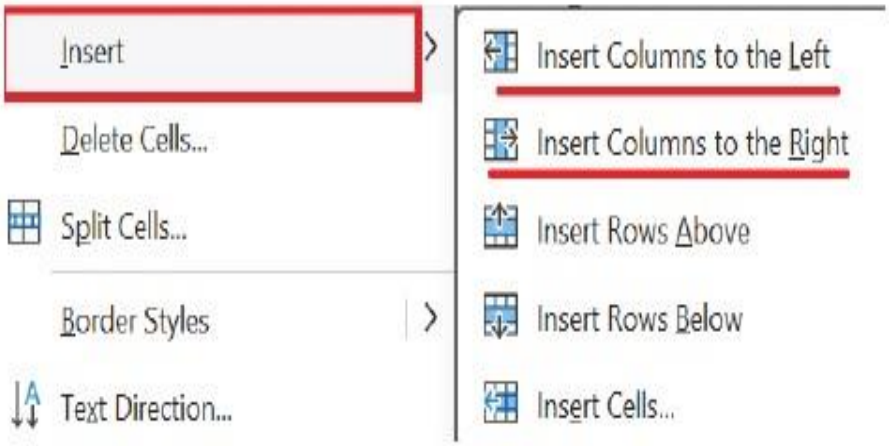
Each column shows one type of information.

. **Adding a new Column:**

Add a new column to create more space for new information in the table. A column can be added using one of the two methods.

Do the following to add a new column:

1. Click in a column where you want to add a new one.
2. **Right-click** with the mouse or touchpad.
3. Click "**Insert**", then choose: o "**Insert Column to the Left**" or o "**Insert Column to the Right**"



Picture 5. 7. Options for inserting a column

In **AbiWord**, to add a new row or column do the following:

- **Right-click** on the table.
- Click on **"Table"**, then choose **"Insert Rows"** or **"Insert Columns"**.
- The new row will go under the row you clicked.
- The new column will go to the right of the column you clicked.

5.3. Delete row and column

A table can have extra rows or columns by mistake or some information in some rows or columns may no longer be needed. Removing these rows or columns makes the table clear and correct.

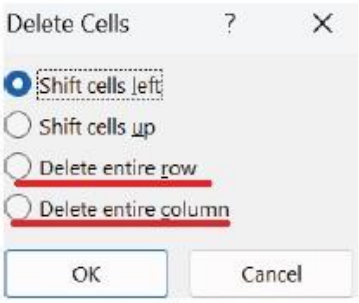
a. Delete a Row or Column:

Do the following to delete rows or columns:

1. Click inside the row or column to delete.
2. **Right-click** with the mouse or touchpad.
3. Click **"Delete Cells..."**

Picture 5. 8. Delete cells option

4. Choose to **Delete entire row** or **Delete entire column** and click **OK**



Picture 5. 9. Options to delete an entire row or column

In **AbiWord**, to delete a column:

Right-click inside the column.
Click on **"Table"**, then choose **"Delete Column."**

To delete a row:

Choose **"Delete Row"** from the same menu.

b. Deleting an entire table

To delete the whole table, do the following:
Select the table to be deleted.
Do a right click and click on **Delete table**

5.4. Inserting, resizing and removing a picture

A picture makes work more fun and easy to understand. It can show a person, a place, an animal, an object, or an idea. Pictures from a computer can be added and changed to the right size so that they fit in a page.

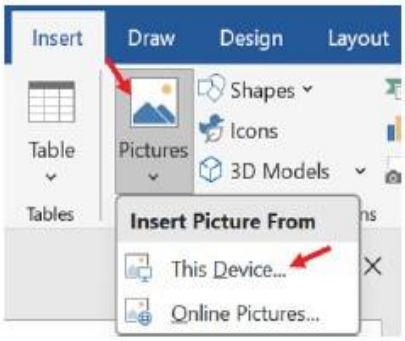
a. Inserting a picture:

To insert and resize a picture do as follows:

In the Word Processing program, click on **Insert.**

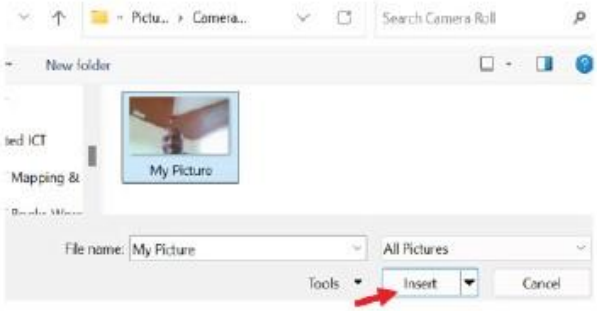
Picture 5. 10. Insert tab for inserting a picture

- Then click on **Pictures.**



Picture 5. 11. Option for selecting a picture

- Click on **This Device** (as in the picture above).
- Browse the picture to insert.
- Select the picture and click on **Insert.**



Picture 5. 12. Selected picture to be inserted

In **Abiword**, follow these steps to insert a picture

1. Open your document.
2. Click where to insert the picture.
3. Go to the "**Insert**" menu at the top.
4. Click on "**Picture**..."
5. A box will open. Find the picture on your computer.

6. Click the picture, then click "**Open**."

b. Resizing a picture:

To resize a picture in a word document, do the following:

1. Click on the picture to select it.
2. You will see **small circles** (handles) at the corners of the picture.

TAKE YOUR PACE TO ANSWER CORRECTLY THESE QUESTIONS

☑ 50 MULTIPLE CHOICE QUESTIONS (MCQs)

(Set horizontally as requested — choose the correct answer)

1. A table is made up of (a) cells (b) screens (c) keyboards (d) files
2. A row goes (a) up and down (b) across (c) diagonally (d) sideways and deep
3. A column goes (a) across (b) up and down (c) slanted (d) nowhere
4. Tables help to arrange information (a) clearly (b) secretly (c) randomly (d) confusingly
5. Which is a use of a table? (a) Timetable (b) Singing (c) Walking (d) Sleeping
6. Adding a row is done by (a) typing fast (b) Insert Row Above/Below (c) closing document (d) cutting text
7. Insert Row Above means adding a row (a) under (b) on top (c) on the side (d) nowhere
8. Insert Row Below means adding a row (a) under the selected row (b) above (c) left (d) to the right
9. A column shows (a) many types of info (b) one type of info (c) no info (d) hidden info
10. Insert Column to the Left means adding a column (a) right side (b) left side (c) center (d) outside
11. Insert Column to the Right means adding a column (a) left side (b) on top (c) right side (d) below
12. To add a column, first (a) close document (b) click inside a column (c) shut down computer (d) print file
13. To delete a column, right click, choose (a) Delete Picture (b) Delete Column (c) Remove computer (d) Delete keyboard
14. To delete a row, choose (a) Add column (b) Insert picture (c) Delete Row (d) Copy row

15. To delete a whole table, select table then (a) Delete table (b) Cut picture (c) Print file (d) Insert emoji
16. Pictures make work (a) boring (b) confusing (c) fun and easy to understand (d) slow
17. Pictures can show (a) person (b) animal (c) object (d) all the above
18. To insert a picture, go to menu named (a) View (b) Insert (c) Delete (d) Refresh
19. After clicking Insert → Picture, you must (a) close the computer (b) find picture on computer (c) delete document (d) shut down Word
20. The small circles on the picture are called (a) buttons (b) handles (c) cords (d) mirrors
21. Handles are used to (a) type text (b) resize picture (c) delete computer (d) remove table
22. Resizing a picture means (a) changing its size (b) printing it (c) deleting it (d) renaming
23. To write inside a table row, click (a) on cell (b) on screen corner (c) outside document (d) on delete
24. Abiword and Word are both (a) games (b) typing programs (c) social media (d) storage devices
25. A cell is where (a) columns and tables meet (b) dog sleeps (c) computer lives (d) none
26. Tables organize work (a) clearly (b) messily (c) secretly (d) randomly
27. Shopping lists can be arranged in (a) tables (b) paint (c) videos (d) games
28. To insert a table, use menu called (a) Insert (b) View (c) Home (d) Delete
29. A row is a (a) vertical line (b) diagonal line (c) horizontal line (d) spinning line
30. A column is (a) horizontal (b) vertical (c) diagonal (d) circular
31. To delete a picture, press (a) Delete key (b) Space key (c) Enter key (d) Shift
32. Right-click is used to (a) insert rows/columns (b) open CD drive (c) turn off PC (d) restart PC
33. Word is a (a) spreadsheet program (b) word processing program (c) video editor (d) photo camera
34. Abiword is used for (a) watching movies (b) typing work (c) drawing (d) games
35. Tables show information (a) slowly (b) neatly (c) in disorder (d) in confusion
36. To insert a picture, first (a) open document (b) shut down PC (c) remove keyboard (d) plug mouse
37. A table is made up of (a) cells (b) pages (c) printers (d) mouse
38. You resize a picture by (a) dragging handles (b) shaking mouse (c) turning off PC (d) copying

39. Insert Column means adding space (a) for more info (b) for music (c) for virus (d) for shutdown
40. Delete table means (a) remove only picture (b) remove the whole table (c) close Word (d) restart PC
41. To add more information, you insert (a) rows/columns (b) power cable (c) USB (d) mouse pad
42. Changing picture size is called (a) printing (b) resizing (c) typing (d) formatting
43. Tables are useful for (a) arranging marks (b) cooking (c) farming (d) running
44. Insert Picture option appears in (a) Insert menu (b) Home menu (c) Delete menu (d) Close menu
45. When inserting a picture, click (a) Open (b) Delete (c) Format (d) Reset
46. Clicking inside a cell allows you to (a) type text (b) delete keyboard (c) open internet (d) install software
47. Handles appear when you (a) click picture (b) close picture (c) delete picture (d) restart computer
48. You can remove a picture by pressing (a) Delete (b) F1 (c) Tab (d) Print
49. A table helps to put information in (a) boxes (b) films (c) speakers (d) internet
50. Timetables are made using (a) tables (b) sentences (c) printers (d) icons

---

☑ 40 OPEN-ENDED QUESTIONS

(Leave space for answers)

1. What is a table? .....
2. Mention two uses of tables. .....
3. What is a row? .....
4. What is a column? .....
5. How do you add a new row? .....
6. How do you add a new column? .....
7. Explain what a cell is. .....
8. Why do we use tables in Word documents? .....
9. Write two things that tables can arrange. .....
10. What does "Insert Row Above" mean? .....

11. What does "Insert Row Below" mean? .....
12. How do you delete a row in a table? .....
13. Write the steps of deleting a column. .....
14. How do you delete a whole table? .....
15. What is the meaning of resizing a picture? .....
16. Write two steps used to insert a picture. .....
17. Where do you find the option "Insert Picture"? .....
18. What appears on the corners of a picture? .....
19. What are handles used for? .....
20. Write one reason why pictures are important. .....
21. How can pictures help in school work? .....
22. Name the program used to insert tables and pictures.

    .....
23. What does right-clicking help you do? .....
24. Explain "Insert Column to the Left." .....
25. Explain "Insert Column to the Right." .....
26. Give one example of information that can be put in a table.

    .....
27. What should you do before inserting a picture? .....
28. How do you select a picture? .....
29. How do you remove a picture? .....
30. Why should a learner know how to insert tables? .....
31. Why do tables make work easier? .....
32. How do you type in a table? .....
33. What does resizing prevent? .....
34. Mention two types of information shown by tables.

    .....
35. Write the difference between a row and a column.

    .....
36. When do we use tables in school work? .....

37. What should be clicked when adding a column? .....

38. How do you add more information to the table? .....

39. What happens when you select "Delete Table"? .....

40. Why is Word processing important? .....

☑ 10 MATCHING QUESTIONS

Match Column A with Column B.

COLUMN A (Action)	COLUMN B (Result)
1. Insert Row Above	a. Adds column on right side
2. Insert Row Below	b. Deletes a full table
3. Insert Column to the Left	c. Adds a row under
4. Insert Column to the Right	d. Adds a row above
5. Delete Row	e. Adds column on left side
6. Delete Column	f. Removes column
7. Delete Table	g. Removes selected row
8. Insert → Picture	h. Adds a picture
9. Resizing picture	i. Change picture size
10. Click in cell	j. Allows typing in a table

☑ 10 TRUE OR FALSE QUESTIONS

1. A row goes up and down. _____
2. Handles are used to resize a picture. _____
3. Tables help to arrange information clearly. _____
4. Insert Column to the Right adds a column on the left. _____
5. A column is horizontal. _____
6. Pictures make work more interesting. _____
7. You can insert a picture from the Insert menu. _____
8. Deleting a table deletes only one row. _____

9. Abiword is a word processing program. _____
10. You type inside a table by clicking a cell. _____

☑ 20 CHOOSE FROM BRACKETS

1. A table is made up of _____. (cells / mice)
2. A row runs _____. (across / up and down)
3. A column runs _____. (up and down / sideways)
4. Insert Row Below adds a row _____. (under / above)
5. Insert Column to the Left adds a column _____. (left / right)
6. To delete a row, click _____. (Delete Row / Insert Row)
7. Pictures make work _____. (interesting / boring)
8. To insert a picture, go to _____. (Insert menu / Delete menu)
9. Handles appear on the _____. (corners / screen bottom)
10. Handles help in _____. (resizing / deleting)
11. Abiword is a _____ program. (Word processing / Gaming)
12. A timetable can be shown using a _____. (table / paragraph)
13. Click _____ to remove a picture. (Delete key / Enter key)
14. You type in a table by clicking a _____. (cell / mouse pad)
15. Shopping lists can be arranged using _____. (tables / scissors)
16. A table arranges info _____. (clearly / messily)
17. Insert Column adds more space for _____. (information / viruses)
18. The small circles on a picture are called _____. (handles / tires)
19. A cell is a box where a _____ and _____ meet. (row / column)
20. Word is used for _____. (typing documents / riding bikes)

6.0. INTRODUCTION

The internet helps people talk to others, find information, learn new things and play games. When using the internet, some common words appear. This unit will explain the meaning of these internet words.

6.1. Internet related terms

Common internet terms:

- **WWW (World Wide Web):** It is a system of web pages that are accessed using the Internet. It is like a collection of books or magazines, but instead of being on paper, they are on computers.

These web pages can contain text, pictures, videos and links to other pages.

- **Web page:** It is a single page on the World Wide Web. It is like a page in a book. It can have text, images, videos and links to other web pages. Each web page has its own unique address on the internet.
- **Website:** It is a collection of related web pages that are grouped together and usually connected by links. It is like a book that contains many pages. For example, a school's

website may have different pages for news, events and contact information. REB website is www.reb.rw.

- **Home page:** It is the main page of a website. It is like the cover of a book, which gives an idea of what is inside and helping in navigating to different sections. For a website's address, the home page is usually the first page that opens.

- **Web browser:** It is a type of software that allows to find and view websites on the Internet. There are many different web browsers but some of the most common ones include Google Chrome, Safari, Microsoft Edge and Mozilla Firefox.
- **Links:** Links are used to navigate the Web. When a link is clicked, it will usually take you to a different webpage. You may also notice that your cursor changes into a hand icon whenever the cursor moves over a link.
- **Download:** To get a file or picture from the internet and save it on your computer.
- **Upload:** To send a file from a computer to the internet.
- **Internet**: A big network that connects computers and helps us find and share information.
- **Online:** When your computer or phone is connected to the internet it is online.
- **Wi-Fi**: It is a way to connect to the internet without wires.
- **Social media**: They are the kind of applications where people share pictures, videos, and messages. An example is Whatsapp.

6.2. Internet security

Internet safety means using the internet in a way that keeps people safe, protects personal information and respects others online. The internet is useful but some dangers exist like harmful software, unwanted messages and tricks to steal information. Learning about these dangers can help people stay safe when using the internet.

Being safe on the internet may start with having a strong password on the computer, avoiding bad software (viruses) from the internet and having appropriate behaviors while using the internet.

6.2.1 Creating strong passwords

A password is a special secret word that helps keep things safe. It protects email, phone, and other online accounts. A strong password stops strangers or hackers from getting into a computer or an online accounts and helps keep information safe.

A strong password is:

Long: Has many letters or numbers.
Strong: Is not easy to guess.
Secret: Should not be shared.

Tips for creating a strong password:

- Do not use personal details like a name, birthday, or email because they can be easily guessed. o Choose a long password at least six letters or numbers.
- Use different passwords for different accounts.

- Add numbers, symbols, big and small letters for more security.

6.2.2. Computer viruses

A computer virus is bad software that gets into a computer or tablet and causes problems. It spreads from one device to another, like a real virus. A virus can damage a computer or slow it down. A computer virus is dangerous and should be removed to keep the device safe. Viruses enter a computer through email attachment and internet downloads from bad websites.

VIRUS = Vital Information Resources Under Siege

A **computer virus** is a malicious program that damages files, steals data, or disrupts computer operations.

How to protect a computer from viruses:

- ✓ Install antivirus software to protect the computer.
- ✓ Do not open emails or files from people you do not know.
- ✓ Scan the flash disk before opening it.
- ✓ Do not download files from unsafe websites.

6.2.3. Security when using the internet

Internet safety means using the internet in a smart and safe way. It helps people stay safe when using websites or when talking online.

Good behaviors while using the internet:

- ❖ Tell an adult if something online feels uncomfortable.
- ❖ Keep your passwords secret.
- ❖ Be kind when chatting online.
- ❖ Only talk to people you known.
- ❖ Never talk to people promising to give you things such as phones, money or other advantages.
- Use internet only after your parents give you permission.

6.3. Social media

Social media is a way to talk and share things with people using the internet. We can use phones, tablets or computers to send messages, pictures, or videos. **a. Use of social media**

People use social media to learn new things, talk to friends and family, share pictures or videos or join school groups and study together.

Examples of social media include WhatsApp, Facebook, YouTube, Instagram, TikTok, X and LinkedIn **b. Impact of social media**

Using social media can have good effects but can also have bad effects.

Good Effects

Talking to friends: People can send messages and share pictures.
Learning: Many websites have videos and lessons.

Business: Shops show their products to more people. **Groups:** People find others with the same interests.

Bad Effects

Sad feelings: Too much social media can make people feel bad.
Wrong information: Some news is not true.
Privacy problems: Personal details can be stolen.
Comparison: People may feel unhappy when they see people posting their good lives online. However, that good life may not be true.

c. Risks and dangers of social media

While social media can be fun and helpful, it also has some dangers.

1. **Cyberbullying:** This happens when a person shares lies or posts bad things online about you or others. It can make people sad, afraid, or stressed. For example, a person can write a rude comment under a photo or video.
2. **Sharing personal information:** It is dangerous to share your personal information such as your names, school, phone number, or home address because strangers can use this information in the wrong way.

3.Seeing inappropriate content: Sometimes people post videos or pictures that are not good for children or even adults. Therefore never look at such videos or pictures **d. How to stay safe on social media**

Social media is good when it is used well and it becomes dangerous when it is not well used. Follow these **rules** to **stay safe** while using social media:

- Always ask parents or teacher before using social media.
- Keep your account private.
- Never share your personal information.
- Be kind in comments and posts.
- Block or report any bad behavior.
- Tell a trusted adult if someone is bothering you online

6.4. Online research

Online research means using the internet to find information. It helps in learning new things, answering questions and finishing schoolwork. Online research is useful for school projects, homework, or personal learning. However it is important to check the information you get because not all the information from the internet is correct.

a. Steps for effective online research

i. **Understand the topic:** Decide what information is needed.
ii. **Use clear keywords:** Short and direct phrases, like effects of pollution instead of stuff about pollution.
iii. **Check the website:** If a website is well known the information from it may be true.
iv. **Check the date:** Make sure the information is current.
v. **Write notes:** Use personal words instead of copying.

b. Search engines

A search engine is a special website that helps people find information on the internet. It works like a digital librarian, showing the best places to get answers.

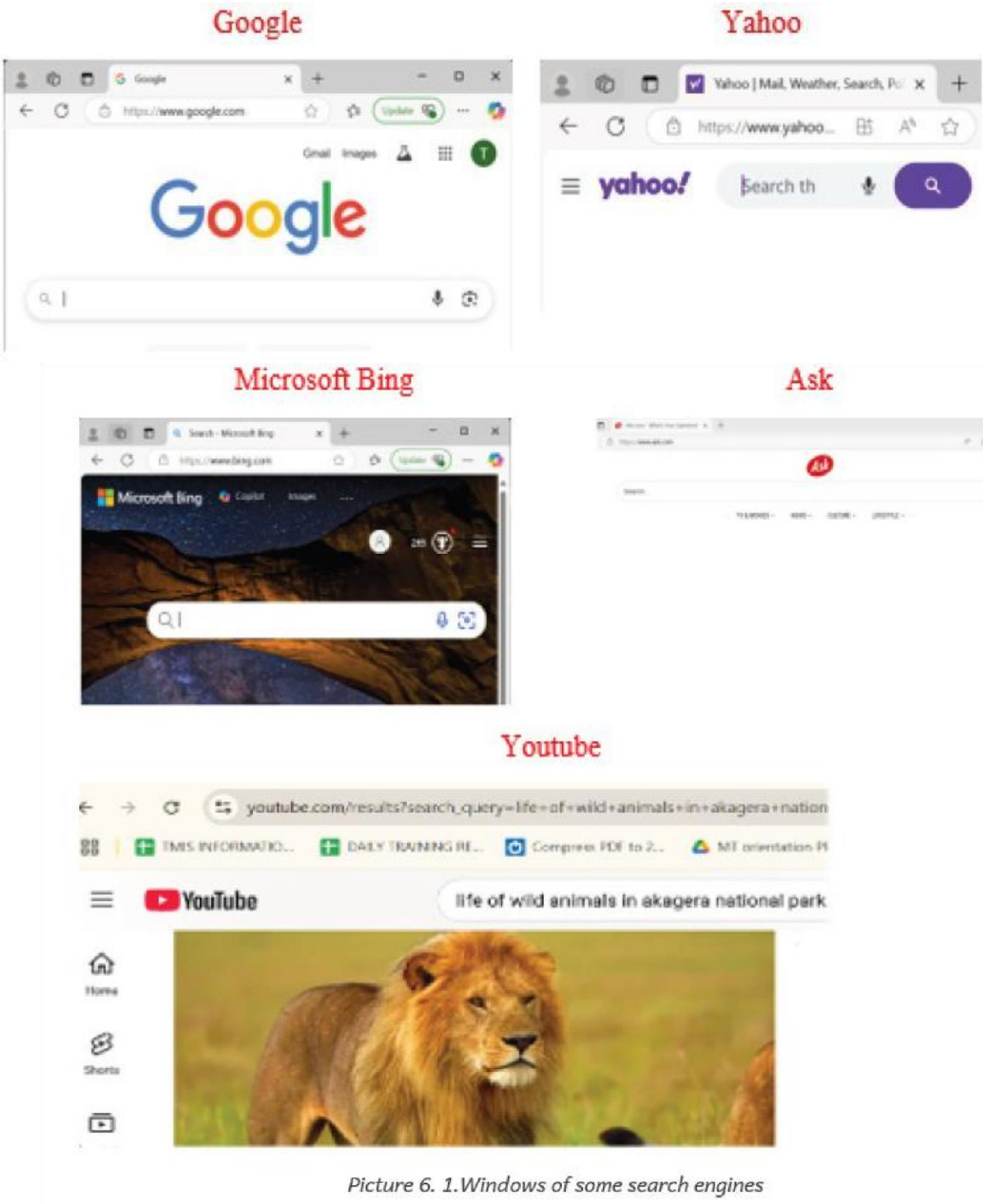
Examples of search engines are Google, Microsoft Bing, Yahoo, Ask and YouTube as a video sharing website.

To search using a search engine do as follows:

Open a web browser such as Google Chrome

In the browser's address bar write a search engine such as google.com

Here are interfaces taken from different search engines:



Picture 6. 1.Windows of some search engines

6.5. Search engine techniques

Search engine techniques are smart ways to look for information on the internet. They help in finding the right answers quickly and safely. **a. Good search techniques**

1. **Use simple keywords:** Type short, clear words.

Example: Instead of "I want to learn about animals in Africa," type: "African animals"

1. **Use quotation marks for exact search:** Type words inside " " to find exact matches.

Example: "solar system for kids".

1. **Use a safe search engine:** Use search engines made for children or with safe search on.

Examples: Google, Kiddle.co, YouTube.

Check the Website: Use websites that are for schools or learning, like:
.edu (education) .org (organizations)
Websites suggested by the teacher or parents.

Avoid ads and pop-ups: Do not click on strange ads or pictures that pop up because they can be unsafe or fake.

b. Steps to use a search engine safely and quickly:

1. Open a safe search engine (like Google).
2. Type your **keywords** or a short question. As you write you get suggestions of other search topics.

Picture 6. 2.Typing a keyword

6.6. Access to learning resources

Learning resources are tools that help you learn new things. They can be maps, textbooks, videos, quizzes, etc.

a. Websites that provide maps and school textbooks

Some websites have textbooks for school. Others have maps to explore places in the world. Here are websites for learning:

REB e- learning: You find Rwandan textbooks(https://elearning.reb.rw/).
National Geographic Kids: You find maps, animals and nature (kids. nationalgeographic.com).
Google Maps: You find World and country maps (www.google.com/maps).

Wikipedia Kids: You find simple information and pictures (simple.wikipedia. org).
Khan Academy: You find videos and practice for Mathematics and Science (www.khanacademy.org).

b. Apps that can be used on tablets or laptops

Tablets and laptops have apps for learning. Some apps help with reading, finding places, or watching videos.

Here are some of those apps:

- **eBook Reader:** It is used for reading saved textbooks.
- **Google Maps:** It is used for looking at maps and directions.
- **YouTube Kids:** It is used for watching learning videos safely.
- **Kolibri:** It is used for learning offline with books, quizzes, and videos.

c. How to access learning resources online

 Open a browser (like Google Chrome).

- Type the name of the website (example: kids.nationalgeographic.com).
- Click on the subject or topic you want.
- Download or read the book or map.
- Ask a teacher or adult for help if needed.

INTERNET AND SOCIAL MEDIA UNIT – ASSESSMENT QUESTIONS

PART A: Multiple Choice Questions (MCQs) *(Horizontal layout for A4)*

1. WWW stands for: a) World Wide Web b) Web World Wide
   c) Wide Web World d) World Website Web
2. A web page is: a) A collection of websites b) A single page on a website
   c) A type of browser d) None
3. A website is: a) A page b) A book c) A collection of web pages d) A picture
4. The main page of a website is called: a) Home page b) Browser c) Link d) Page cover
5. Software used to access websites is called: a) Website b) Search engine c) Web browser d) Wi-Fi
6. Google Chrome is a: a) Search engine b) Browser c) Website d) Antivirus
7. Clicking a link takes you to: a) Another webpage b) Music player c) Desktop d) Folder
8. Download means: a) Sending a file to internet b) Saving a file from internet c) Deleting a file d) Printing

9. Upload means: a) Saving from internet b) Sending to internet c) Opening a website d) Browsing
10. The big network that connects computers is called: a) Website b) Internet c) Social media d) Wi-Fi ... 11–50 completed horizontally

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▨ PART B: Open-ended Questions (45)

(Horizontal layout with space for answers)

◈ Section 1: Internet Basics

1. What is the internet? _____
2. What is a web browser? _____
3. Give two examples of browsers: _____ / _____
4. What is WWW? _____
5. Define a web page. _____
6. Define a website. _____
7. What is a home page? _____
8. What is a link used for? _____
9. What is downloading? _____
10. What is uploading? _____

◈ Section 2: Online & Social Media

11. What does online mean? _____
12. What does Wi-Fi mean? _____
13. Give two examples of social media: _____ / _____
14. What is social media used for? _____
15. Give one good effect of social media. _____
16. Give one bad effect of social media. _____
17. What is cyberbullying? _____

18. Why is sharing personal information risky?

_____

19. List two ways to stay safe online: _____ / _____

20. What is a password? _____

◈ Section 3: Passwords & Viruses

21. How can you make a password strong? _____

22. Why should passwords be kept secret?

_____

23. What is a computer virus? _____

24. How can viruses enter computers? _____

25. What is an antivirus? _____

26. What does VIRUS mean? _____

27. Give two examples of search engines: _____ / _____

28. What is online research? _____

29. Why check the date during research? _____

30. What are keywords? _____

◈ Section 4: Research & Safety

31. Why avoid pop-ups and ads? _____

32. What does quotation search do? _____

33. Websites ending with .edu are for? _____

34. Give one example of a learning website.

_____

35. Name one app used for reading textbooks.

_____

36. What is Google Maps used for? _____

37. What is Kolibri used for? _____

38. Mention one risk of social media. _____

39. Mention one benefit of social media. _____

40. Why tell an adult when uncomfortable?

_____

◈ Section 5: Responsible Use

41. What should you do before using social media?

_____

42. Why is the internet useful? _____

43. Why scan a flash disk before opening? _____

44. Give one rule of good online behavior. _____

45. What must you do before downloading anything?

_____

PART C: True or False (20) *(Vertical layout)*

1. WWW means World Wide Web. _____
2. A homepage is the first page of a website. _____
3. Downloading is sending files to the internet. _____
4. Uploading is sending files to the internet. _____
5. A browser is software to view websites. _____
6. Google Chrome is a web browser. _____
7. Wi-Fi connects devices without wires. _____
8. Social media includes WhatsApp and Facebook. _____
9. A strong password should be secret. _____
10. Passwords protect online accounts. _____
11. Cyberbullying is sharing lies online. _____
12. Personal information should not be shared online. _____
13. Antivirus protects computers from viruses. _____
14. VIRUS means Vital Information Resources Under Siege. _____

15. Quotation marks in search give exact results. _____
16. Safe search engines include Google and Kiddle. _____
17. Pop-ups and ads are always safe. _____
18. Kolibri can be used for offline learning. _____
19. Google Maps shows world and country maps. _____
20. REB e-learning provides textbooks. _____

PART D: Choose from brackets (20) *(Horizontal compact)*

1. A _____ is a single page on a website. (web page/website)
2. Uploading means _____ a file. (sending/saving)
3. Downloading means _____ a file. (sending/saving)
4. WWW stands for _____. (World Wide Web/World Wide Website)
5. Wi-Fi connects devices _____. (with wires/without wires)
6. Social media is used to _____. (chat/cook)
7. Antivirus protects _____. (computer/TV)
8. Kolibri app is for _____ learning. (offline/online)
9. Search engines help _____ information. (find/store)
10. Google Maps is used for _____. (maps/music)

PART E: Matching Questions (10) *(Horizontal block)*

Column A → Column B

▨ Matching Activity: Computer Terms

Instructions: Match each word in Column A with the correct meaning in Column B. Write the letter of the correct answer in the blank next to each number.

Column A: Questions	Column B: Meanings
1. What is a web browser used for?	a. Helps find and view websites
2. What is a website?	b. A single page on a website
3. What is a web page?	c. Save file from internet
4. What does a link do?	d. Opens another webpage
5. What does it mean to download something?	e. Collection of web pages
6. What does it mean to upload something?	f. Send file to internet
7. What is a password used for?	g. Keeps accounts safe
8. What is cyberbullying?	h. Finds information on internet
9. What does a search engine help you do?	i. Sharing lies online
10. What is social media used for?	j. Platform for sharing messages, videos, pictures

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PART F: Additional True or False (10) *(Vertical layout)*

1. Online means connected to the internet. _____
2. A strong password can be shared with friends. _____
3. Pop-ups can be unsafe. _____
4. Personal info should never be shared online. _____
5. Using a safe search engine is important. _____
6. Cyberbullying can make people sad. _____
7. Google is a search engine. _____
8. Facebook is a web browser. _____
9. Wi-Fi requires wires. _____
10. Kolibri can be used offline. _____

PART G: Short forms to be written in full (10) *(Horizontal compact)*

The short forms section has been **cleanly rewritten** and properly numbered for clarity.

1. WWW → _____
2. Wi-Fi → _____
3. URL → _____
4. REB → _____
5. ICT → _____
6. USB → _____
7. PDF → _____
8. FAQ → _____
9. CPU → _____
10. VPN → _____

UNIT 7

PROGRAMMING FOR CHILDREN

7.0. Introduction

This unit explores coding using Turtle Art and Scratch. It also explore robotics by using Pictoblox. **In this unit learners will draw shapes, make colorful patterns and solve simple math problems like addition, subtraction, multiplication and division with code blocks.**

7.1. Perform arithmetic operations in Turtle Art

a. Arithmetic operations

An arithmetic operation is a basic calculation used in Mathematics to work with numbers. In Turtle Art, math blocks give instructions to the turtle about how far to move or turn.

The four basic arithmetic operations are:

Operation	Symbol	Example
Addition	+	10+20=30
Subtraction	-	50-20=30
Multiplication	*or x	5*6=30
Division	/	60/2=30

b. Turtle Art instructions for Math Turtle blocks can be used like this:

Forward 10 + 20 → the turtle moves **30 steps**
Forward 50 - 10 → the turtle moves **40 steps**
Forward 10 * 3 → the turtle moves **30 steps**
Forward 60 / 2 → the turtle moves **30 steps**

c. Using variables

A variable is like a box that keeps a number or a word inside. In Turtle Art, it is possible to use a variable instead of just using a number.

Example:

steps = 20

Forward steps + 10. The turtle moves **30 steps** because the value of steps is 20 (20+10=30)

d. Order of operations

There may be cases in which there are more than one mathematical operation used in Turtle Art. In this case this order is followed:

1. **Brackets first**: Do calculations for the numbers inside the brackets ( )
2. **Multiply or Divide**: Multiplication or divide are done second and from left to right
3. **Add or Subtract**: These operations are done last and from left to right

Example: **Forward (10 + 5) * 2 will give 30 as a result because first it will calculate 10+5 (which is 15) then will multiply by 2.**

7.2. Drawing complex shapes in Turtle Art

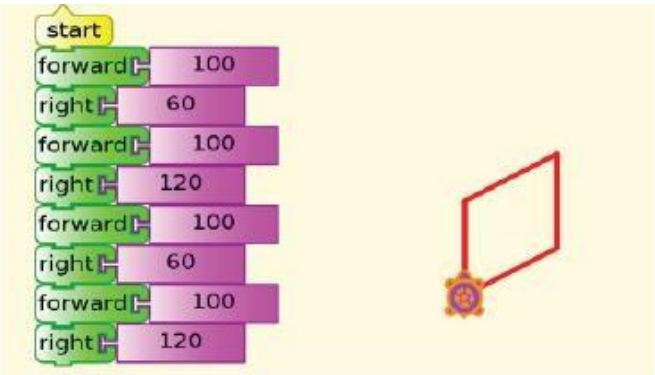
In Turtle Art, shapes are made by giving the turtle clear directions such as **Move forward** and **Turn**. When the Move Forward and Turn steps are repeated the turtle draws a shape. For example a square is made by moving forward and turning right four times. **a) Drawing a rhombus**

A **rhombus** is a shape with **four equal sides and four corners which looks like a diamond.** The opposite sides are parallel, and the opposite corners have the same angle.

A **rhombus** has equal sides and slanted angles.

To draw a Rhombus, repeat the instructions below 2 times:

- Forward 100
- Turn right 60
- Move forward 100
- Turn right 120



Picture 7. 1.Rhombus shape drawn by Turtle Art

b) Drawing a parallelogram

A parallelogram has opposite sides that are equal and slanted. However not all the four sides are equal. To draw a parallelogram the turtle uses **Forward** and **Right** blocks.

To draw a Parallelogram, repeat the instructions below 2 times:

- Move forward 100

- Turn right 60
- Move forward 150
- Turn right 120

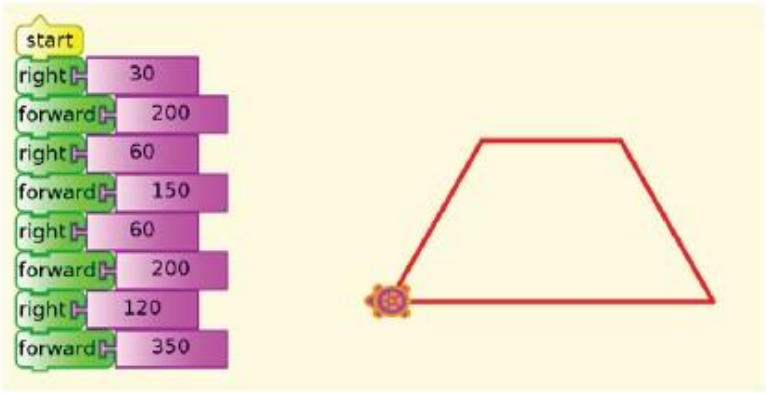
The turtle draws two long sides at 60° and two short sides at 120°.

Picture 7. 2. Parallelogram shape drawn in Turtle Art

c. Drawing a Trapezium

A trapezium is a shape with 4 sides. Two sides are parallel which means that they go in the same direction and never meet and the other two sides are not parallel.

To draw a Trapezium, use these blocks: Right 30, Forward 200, Right 60, Forward 150, Right 60, Forward 200, Right 120, Forward 350. These blocks give a trapezium like the one below:



Picture 7. 3. Trapezium shape drawn in Turtle Art

7.3. Using Paint editor in Scratch

The Paint Editor is a place to draw and change pictures in Scratch. It helps make new sprites or new backgrounds.

It has many tools to help change colors, shapes, lines and more.

a. The main tools in Paint editor

The Scratch Paint editor has tools to create and edit sprites, costumes and backdrops. Here are those tools:

Tool	What It Does
Pencil:	Draws thin lines freely
Brush:	Paints with thicker strokes
Rectangle Tool:	Makes squares and rectangles
Circle Tool:	Makes circles and ovals
Text Tool:	Adds words and letters
Fill Tool:	Fills shapes with color
Eraser:	Removes parts of the drawing
Select Tool:	Is used to select a zone of the paint

b. Designing a custom background

Create a background using the paint editor. The background should match the story or game. To create a background follow these steps:

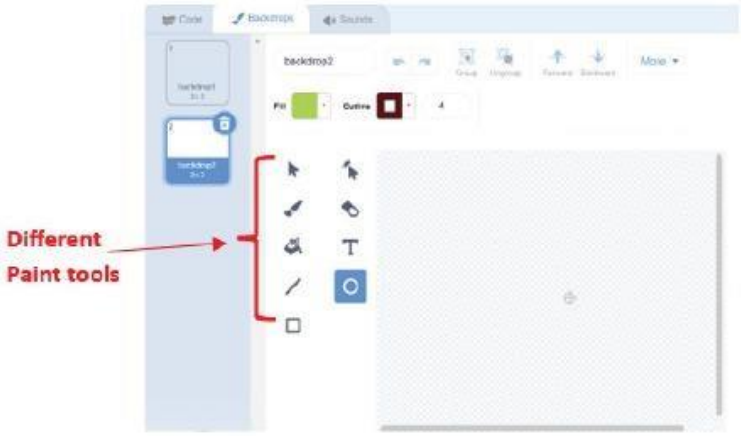
1. Go to the **Stage**.
2. Click on **Backdrops**.

Picture 7. 4. Backdrop icon in Scratch

3. Click the Paint icon.

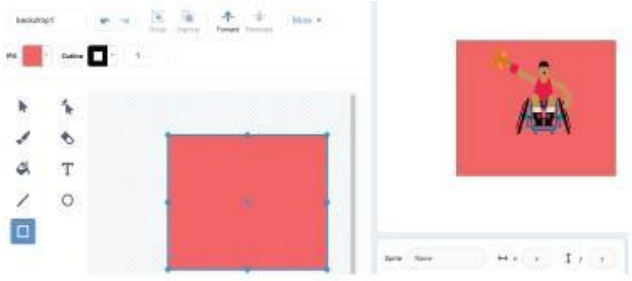
Picture 7. 5. Paint Icon in Scratch

4. The Paint will be opened and looks like this:



Picture 7. 6. Paint window with Paint tools

5. Choose your background color by clicking on **Fill** and choose a color to use for your drawings.
6. Choose the tools to draw things you want such as rectangle.



Picture 7. 7. Background image

7. The stage color will be changed.

7.4. Using sound and music in Scratch projects

In Scratch, a sound is any audio like music, sound effects or voice recordings that can be added to a project to make it more engaging. Sounds can come from three main sources which are: **Library sounds**: Scratch already has sounds such as "meow" which can be added in a Scratch project.
Record sounds: You can speak into a microphone. Scratch can record your voice.
Upload sounds: You can add a sound file from your computer.

a. Why use sound in Scratch project?

Sounds make games more interesting and fun.
They help explain what is happening in a story.
Sounds can show actions, like when a character jumps, falls or claps.
When you use your voice, your project feels more real and personal.

b. How to use sound in Scratch

Do the following steps to add sound to a Scratch project:

1. **Find sound blocks:** Go to the **Sound section** (pink color) in the coding blocks area and pick a sound block such as "**play sound Meow**" or "**start sound Pop**".
2. **Add a sound to a Sprite:** Click on the sprite then go to the **Sounds tab** at the top. After click "**Choose a sound**" to add music or sound from the Scratch library.
3. **To play sound when Sprite is clicked:** Use the block "**when this sprite clicked**" and add the sound block under it like "**play sound Meow**".
4. **To play sound when Sprite moves:** Use a block like "**move 10 steps**".

Add a sound block after it to play music when the sprite walks.

1. **Record your voice:** Go to the **Sounds tab**, click the **microphone** to **record** your own sound or voice and finally name the recording to use in your project.

c. Example:

Here is an example of a cat sprite that moves and says "Hello" when the green flag is clicked. With these blocks below, when you start the project, the cat says "Hello" and moves.

Picture 7. 8. Adding sound to the sprite

7.5. Programming a robot

a) Definition of terms:

Robot: A robot is a machine that can do tasks, often by following instructions from a computer. Some robots work by themselves (autonomous), while others need help from people to control them.

Robots can move, pick things up, or talk. They help in factories, hospitals, homes, etc. They use sensors to see or feel and programs to know what to do.

Command: In robotics, a command is an instruction given to a robot to tell it what to do. It's like giving the robot a clear order, such as: Move forward, Turn left, Pick up the object, Play a sound.
Loop: A loop is a set of instructions that repeats again and again until a condition is met. It helps robots do the same task many times without writing the same command again.

Condition: It is a rule that tells the robot when to do something.

Example

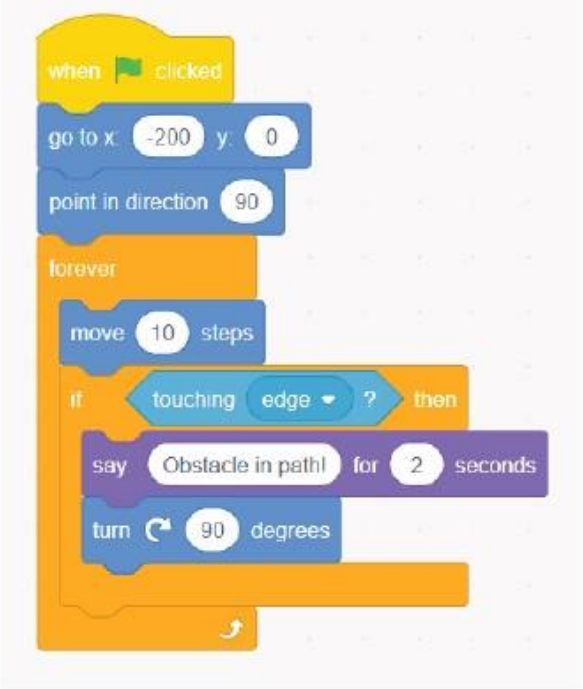
If the robot sees an object then it stops.
If the battery is low then it goes to charge.

Obstacle: It is something in the way (like a wall or block).

In PictoBlox, we can program a robot to move, turn or stop by giving it a list of commands that it will follow in order. We can also tell the robot what to do if something happens, like turning when it sees a wall.

b) Example:

Below is a Pictoblox program to make a robot move forward. When it sees a block in its way, it says, "An obstacle in path!" and then it turns right to move forward again.



Picture 7. 9. Pictoblox blocks for moving a robot

TURTLE ART, SCRATCH & ROBOTICS UNIT – ASSESSMENT QUESTIONS

PART A: Multiple Choice Questions (MCQs) *(Horizontal layout for A4)*

1. Turtle Art is used to: a) Draw shapes b) Play music c) Send emails d) Browse the internet
2. Scratch helps to: a) Code animations b) Cook food c) Draw only d) Paint only
3. Pictoblox is used for: a) Robotics b) Math c) Internet surfing d) Reading books
4. Forward 10 + 20 in Turtle Art moves the turtle: a) 10 b) 20 c) 30 d) 50
5. Forward 50 - 10 in Turtle Art moves the turtle: a) 40 b) 60 c) 50 d) 10
6. Forward 10 * 3 in Turtle Art moves the turtle: a) 10 b) 20 c) 30 d) 40
7. Forward 60 / 2 in Turtle Art moves the turtle: a) 30 b) 20 c) 60 d) 15
8. A variable in Turtle Art is like: a) A box that keeps a number b) A loop c) A sound d) A sprite
9. The order of operations in Turtle Art starts with: a) Add/Subtract b) Multiply/Divide c) Brackets d) Variables

10. Forward (10 + 5) * 2 moves the turtle: a) 20 b) 25 c) 30 d) 15
11. A rhombus has: a) Four unequal sides b) Four equal sides c) Three sides d) Five sides
12. To draw a rhombus in Turtle Art you repeat the steps: a) 2 times b) 3 times c) 4 times d) 5 times
13. A parallelogram has: a) Four equal sides b) Opposite sides equal c) All angles 90° d) Triangle shape
14. To draw a parallelogram, you use: a) Forward and Right b) Left only c) Up and Down d) Color only
15. A trapezium has: a) Four sides, two parallel b) Three sides c) Four equal sides d) Circle shape
16. Scratch Paint editor is used to: a) Draw sprites b) Browse internet c) Program robot d) Send emails
17. The Pencil tool in Scratch is used to: a) Draw thin lines b) Paint thick lines c) Erase lines d) Play sound
18. The Brush tool in Scratch: a) Draws thick strokes b) Draws thin lines c) Records sound d) Moves sprite
19. Rectangle tool in Scratch makes: a) Squares/rectangles b) Circles c) Text d) Loops
20. Circle tool in Scratch makes: a) Circles/ovals b) Rectangles c) Lines d) Sounds
21. Text tool in Scratch: a) Adds words b) Draws shapes c) Moves sprite d) Uploads music
22. Fill tool in Scratch: a) Colors shapes b) Erases shapes c) Records sound d) Plays music
23. Eraser in Scratch: a) Removes parts of drawing b) Draws shapes c) Plays sound d) Moves sprite
24. Select tool in Scratch: a) Selects zone b) Paints c) Draws lines d) Plays music
25. Scratch sounds can come from: a) Library b) Recording c) Uploading d) All of the above
26. Scratch sound block "play sound Meow" is used to: a) Play sound b) Move sprite c) Draw line d) Create variable
27. Pictoblox robots can: a) Move b) Pick items c) Talk d) All of the above
28. Command in robotics is: a) Instruction to robot b) Sound c) Shape d) Variable
29. Loop in robotics: a) Repeats instructions b) Adds sound c) Draws shapes d) Moves forward
30. Condition in robotics tells the robot: a) When to act b) Color to use c) Shape to draw d) Sound to play
31. Obstacle in robotics is: a) Something in the way b) A sound c) Variable d) Scratch sprite
32. Robot sensors are used to: a) See or feel b) Draw shapes c) Record sound d) Play music
33. Forward block in Pictoblox moves robot: a) Ahead b) Backward c) Turns d) Stops

34. Turn block in Pictoblox: a) Changes robot direction b) Plays sound c) Draws shapes d) Adds variable
35. If battery low command is a: a) Condition b) Loop c) Command d) Obstacle
36. Scratch sprite is: a) Character b) Sound c) Variable d) Loop
37. Backdrop in Scratch is: a) Background b) Sprite c) Sound d) Tool
38. Paint editor helps to create: a) Sprites b) Backgrounds c) Costumes d) All of the above
39. To play sound when sprite clicked: a) Use "when this sprite clicked" b) Use variable c) Use loop d) Use backdrop
40. Record your voice in Scratch: a) Microphone b) Paint tool c) Loop d) Forward
41. Sounds in Scratch help to: a) Explain story b) Draw shapes c) Add variable d) Turn robot
42. Adding music in Scratch makes project: a) More fun b) Less interactive c) Slower d) Non-functional
43. Turtle Art forward 100 turn right 60 repeated 2 times draws: a) Rhombus b) Parallelogram c) Trapezium d) Circle
44. Forward 100 turn right 120 forward 150 turn right 60 repeated 2 times draws: a) Parallelogram b) Rhombus c) Trapezium d) Circle
45. Trapezium blocks in Turtle Art include: a) Right 30, Forward 200, Right 60 b) Only forward c) Only turn d) Only loop
46. Turtle Art can be used for: a) Arithmetic b) Drawing shapes c) Both a and b d) Playing music
47. Variable name in Turtle Art example: a) steps b) forward c) right d) turn
48. Scratch Paint tool for words: a) Text tool b) Pencil c) Brush d) Fill
49. Scratch Paint tool to erase: a) Eraser b) Pencil c) Brush d) Fill
50. Scratch Paint selection tool is: a) Select b) Pencil c) Brush d) Eraser

---

PART B: Open-ended Questions (45) *(Vertical layout)*

Got it! Here's your **open-ended questions** with **two lines of space for answers** after each question:

Got it! Here's your **open-ended questions with one line left for answers** after each question:

Open-ended Questions – Turtle Art, Scratch & Robotics

1. What is Turtle Art?

2. What is Scratch?

3. What is Pictoblox used for?

4. How do you perform addition in Turtle Art?

5. How do you perform subtraction in Turtle Art?

6. How do you perform multiplication in Turtle Art?

7. How do you perform division in Turtle Art?

8. What is a variable in Turtle Art?

9. Give an example of using a variable in Turtle Art.

10. Explain order of operations in Turtle Art.

11. How do you draw a rhombus in Turtle Art?

12. How do you draw a parallelogram in Turtle Art?

13. How do you draw a trapezium in Turtle Art?

14. What is Scratch Paint Editor?

15. Name three main tools in Paint Editor.

16. How do you create a custom background in Scratch?

17. How do you add a sprite in Scratch?

18. How do you add a sound from Scratch library?

19. How do you record your voice in Scratch?

20. Why is sound important in Scratch projects?

21. What is a robot?

22. Give two examples of robot actions.

23. Define a command in robotics.

24. Define a loop in robotics.

25. What is a condition in robotics?

26. Give an example of a condition.

27. What is an obstacle in robotics?

28. How do robot sensors help?

29. How do you move a robot forward in Pictoblox?

30. How do you turn a robot in Pictoblox?

31. Explain the "if battery low" command.

32. What is a sprite in Scratch?

33. What is a backdrop?

34. How does Paint Editor help create sprites?

35. How does Paint Editor help create backgrounds?

36. How does adding sound make projects interesting?

37. What blocks are used to draw a rhombus?

38. What blocks are used to draw a parallelogram?

39. What blocks are used to draw a trapezium?

40. How can Turtle Art be used for math operations?

41. Give an example of a Turtle Art variable.

42. How can you play a sound when a sprite is clicked?

43. How can you make a sprite move with sound?

---

44. What is the purpose of loops in robot programming?

---

45. How can conditions prevent a robot from hitting obstacles?

If you want, I can now **also format all 45 questions in a compact horizontal layout** so it **fits more questions on an A4 page**, making it printer-friendly.

Do you want me to do that?

PART C: True or False (20) *(Vertical layout)*

1. Turtle Art is used to draw shapes. _____
2. Scratch can create animations. _____
3. Pictoblox is for robotics. _____
4. Forward 10 + 20 moves turtle 30 steps. _____
5. Forward 50 - 10 moves turtle 50 steps. _____
6. A variable stores numbers or words. _____
7. Order of operations is important in Turtle Art. _____
8. A rhombus has four equal sides. _____
9. A parallelogram has opposite sides equal. _____
10. A trapezium has two parallel sides. _____
11. Scratch Paint Editor is used to draw sprites. _____
12. The Pencil tool draws thick lines. _____
13. The Brush tool draws thick strokes. _____
14. The Text tool adds words. _____
15. The Fill tool colors shapes. _____
16. The Eraser removes parts of the drawing. _____
17. Select tool is used to select zones. _____

18. Scratch sounds can come from recording, library or upload. _____

19. Pictoblox robots can pick up objects. _____

20. Conditions tell robots when to act. _____

PART D: Matching Questions (10) *(Horizontal block)*

Coding Terms Challenge: Fix the Match!

Instructions: The terms in Column A are matched incorrectly with the meanings in Column B. Identify and correct each mismatch.

Column A: Terms	**Column B: Incorrect Meanings**
1. Turtle Art	b. Create animations
2. Scratch	c. Robotics
3. Pictoblox	j. Background in Scratch
4. Forward block	e. Changes direction
5. Turn block	f. Stores number/word
6. Variable	d. Moves turtle/robot
7. Loop	h. Tells robot when to act
8. Condition	i. Character in Scratch
9. Sprite	g. Repeats instructions
10. Backdrop	a. Draw shapes

PART E: Choose from brackets (20) *(Horizontal compact)*

1. Turtle Art is used to _____. (draw/play)
2. Scratch can _____ animations. (create/delete)
3. Pictoblox is for _____. (robotics/music)
4. Forward 10 + 20 moves turtle _____ steps. (30/20)

5. Forward 50 - 10 moves turtle _____ steps. (40/50)
6. Forward 10 * 3 moves turtle _____ steps. (30/20)
7. Forward 60 / 2 moves turtle _____ steps. (30/20)
8. Variable stores _____. (number/loop)
9. Loop is used to _____ instructions. (repeat/draw)
10. Condition tells robot _____. (when to act/what color)
11. Pencil tool draws _____ lines. (thin/thick)
12. Brush tool draws _____ strokes. (thick/thin)
13. Rectangle tool makes _____. (rectangles/circles)
14. Circle tool makes _____. (circles/rectangles)
15. Text tool adds _____. (words/shapes)
16. Fill tool colors _____. (shapes/lines)
17. Eraser _____ parts of drawing. (removes/draws)
18. Select tool _____ a zone. (selects/colors)
19. Sound can be from _____. (library/variable)
20. Sprite in Scratch is a _____. (character/sound)

PART F: Additional True or False (10) *(Vertical layout)*

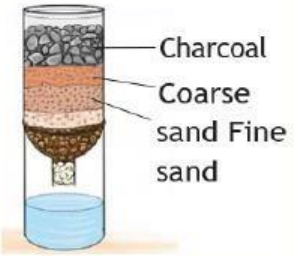
1. Paint Editor is used to create sprites and backdrops. _____
2. Forward 10 + 20 moves turtle 25 steps. _____
3. Scratch can record voice. _____
4. Pictoblox robots can talk. _____
5. Loops help avoid repeated coding. _____
6. Conditions can prevent robot hitting obstacles. _____
7. Turn block changes robot direction. _____
8. Backdrop is a background in Scratch. _____
9. Fill tool erases drawings. _____
10. Variables store numbers or words. _____

PART G: Short Forms to be written in full (10) *(Vertical layout)*

1. MCQs → _____
2. TV → _____
3. URL → _____
4. ICT → _____
5. USB → _____
6. PDF → _____
7. FAQ → _____
8. CPU → _____
9. VPN → _____
10. Wi-Fi → _____

UNIT 8

WATER POLLUTION



8.0. INTRODUCTION

Water is a liquid that is important in our daily life; we cannot live without it. Water is used for example for domestic, industrial and hygienic purposes. It is necessary for all of us to ensure that water sources are not polluted.

UNIT 8: WATER

Water: is the precious gift of nature.

All living things need water to live, means that all living things cannot live without water.

8.1 Importance (uses) of water

a) **As human food:** we use water for cooking food and drinking.

b) **In sanitation:** we use water in sanitary activities like bathing, washing, cleaning toilets and mapping floors.

c) **In farming:** water is essential for plant's growth so, we use water plants in our garden and agricultural fields.

d) **In industries:** we use water in many industries to produce medicines, soft drinks, cement and paper.

8.2 Sources of water

Sources of water: are the places where we can get water. There are natural and artificial (man-made) sources of water.

a) **Natural sources of water:** we can get water from **rivers, lakes, ponds, oceans, seas and stream.**

b) **Artificial (man-made) sources of water:** we can get water from **dams, wells, canals, borehole and water taps.**

8.3 Properties of water

Properties are also called characteristics. Here we consider for properties of pure water.

i) Pure water is colorless.
ii) Pure water is odorless (has no smell).
iii) Pure water is tasteless.
iv) Pure water is a good solvent.
v) Pure water has melting point of 0 ^{0}C.
vi) Pure water has a boiling point of 100 ^{0}C.

8.4 Rain water

Rain: is the main source of water. We get a plenty of rain in the wet season.

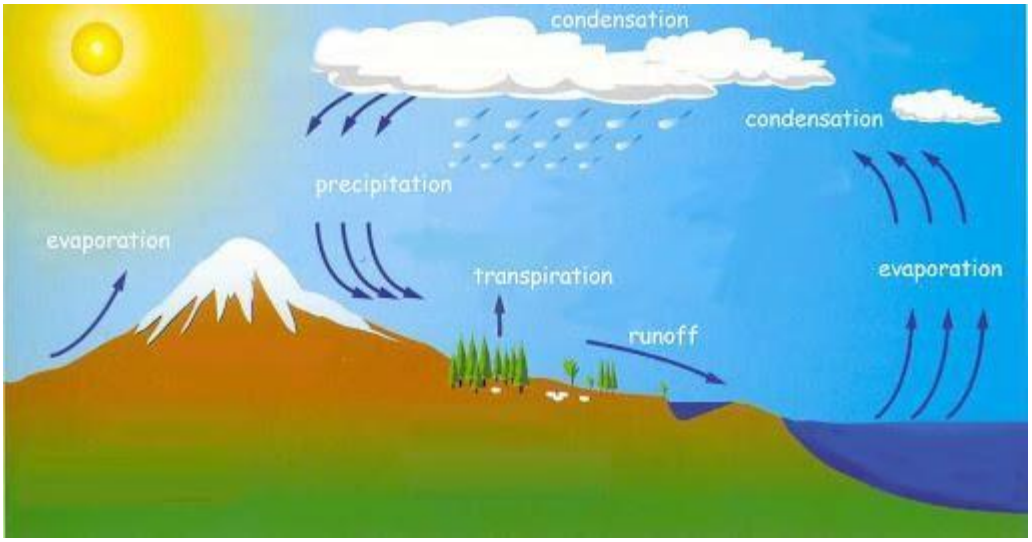
Water cycle

Water cycle: is the continuous process by which water moves from the land to the atmosphere and back to the land again.

Processes involved in water cycle

1. **Evaporation:** is the change of liquid (water) to vapor (gas). By heat of the sun, water gets heated up and changes into water vapor.
2. **Transpiration:** is the loss of water from the plant leaves in form of vapor.
3. **Condensation:** is the change of water vapor to liquid water. Water vapor goes up in the sky. It comes in contact with cool air and changes into small water droplets.
4. **Precipitation:** are all forms of water vapor condensed in the sky. They fall down on earth as rainfall, snow, hail, etc.

Diagram of water cycle



Effects of rain water

Rain water has both positive and negative effects.

Positive effects of rain water

i) Rain fills lakes, rivers and ponds with water.

ii) It helps the plants to grow. **iii)** It keeps our atmosphere cool. **iv)** It removes dust from our surroundings.

v) It is used at home for drinking, cooking and cleaning.

Negative effects of rain water

i) Too much rain causes flood.

ii) Too much rain causes soil erosion. **iii)** Too much rain destroy infrastructure. **iv)** Too much rain disrupts people's activities.

v) When there is too much rain, water borne diseases tend to emerge and spread.

N.B: Water borne diseases: are diseases caused by drinking or using dirty (contaminated) water.

Examples: Dysentery, salmonella, typhoid fever, cholera, hepatitis A and diarrhea.

8.5 Ways of protecting the environment from rain water

i) Planting trees: the roots of plants hold the soil firmly. When the soil particles are hold together firmly, they cannot be washed away easily by water.

ii) Making terraces: terraces are built on very steep slopes or hilly sides of the farm. They slow down the flow of water. **iii) Making ditches:** people make ditches to reduce the flow of water. **N.B: Ditches:** are narrow channels dug in the ground.

iv) Cultivating anti-erosive plants: such plants include grass, sweet potatoes, pumpkins, cow peas and beans.

N.B: Anti-erosive plants: are the plants that grow and cover the surface of soil.

8.6 Water pollutants

Water pollution: is the contamination of water bodies as a result of human activities.

Water pollutants: are dirty (harmful) substances that make water to be polluted (contaminated).

The following are some water pollutants

i) **Human faeces and animal dung:** germs from faeces enter in water bodies by rain water and contaminate it.
ii) **Domestic wastes:** those are vegetables peels, maize cobs and food leftover into water bodies also cause water pollution.
iii) **Industrial waste:** industries create chemical waste during manufacturing processes. If these wastes are channeled into water bodies such as rivers, lakes and ponds, they contaminate water.
iv) **Agricultural chemicals:** farmers use chemicals like fertilizers, insecticides and pesticides to increase yield of the crops. These get into water bodies when they are washed away by heavy rain.
v) **Dead bodies of animals:** sometimes people throw dead bodies of animals into water. When they rot, the water gets contaminated.

8.7 Dangers of water pollution

i) Spreading of water borne diseases.
ii) Polluted water can harm domestic as well as wild animals. They become sick and can die.
iii) Affect water animals (aquatic animals) like fish, turtles and crocodile.

8.8 Prevention of water pollution

i) Avoid bathing, watering animals and washing clothes in water sources.

ii) Practicing proper hygiene for example use of toilets, latrines and urinals.

iii) Use dustbins instead of dumping waste into water. **iv)** Practicing farming methods that reduce soil erosion like contour and terrace farming.

v) Don't dump solid waste in water sources.

vi) Clearing accidental oil spills as soon as they happen.

vii) Fencing around water sources.

8.9 Purification of water

Purification of water: is the removing of suspended wastes and germs from water.

Methods of water purification

i) **Boiling:** is the process of killing germs from water by heating.

ii) **Filtration:** is the removing of solid wastes from water. The clear water is passed through the cloth and the insoluble solid particles like dust and sand remain above cloth. **N.B:** Filtered water is not safe for drinking because it has germs.

iii) **Chlorination:** is the process of killing germs from water by using chemical treatments.

The chemicals kill harmful micro-organism in water making water safe for drinking and domestic use.

8.10 Making a water filters

Materials needed to make water filter:

i) A large plastic bottle.

ii) A coarse sand. **iii)** Beaker. **iv)** Clean cotton wool. **v)** Small gravel. **vi)** Clean sand **vii)** Sharp knife or razor blade.

viii) Charcoal

ix) Paper filter.

N.B: Do not drink this water because it contains germs in it.

8.1 Water storage

Water storage: is the storing of water safely for future use.

a) Storing potable water for drinking

i) Store the cleaned and purified water in clean container such as jerry cans, buckets and clay pots.

ii) Always cover the water containers. **iii)** Never put hands into the drinking water container.

iv) Use ladle or gourd with long handle to scoop out water from a container. Do not drink directly with it. Use a cup or a glass.

v) Storage container should be washed or rinsed regularly.

b) Storing general purpose water

i) Store water in large containers e.g. barrels large plastic tanks and underground tanks.

ii) Always cover the containers. **iii)** Clean the water tank regularly using bleaching powder.

HERE IS THE FULL QUESTION SET BASED ON THE WATER UNIT CONTENT. SO TAKE YOYR TIME TO ANSWER THEM CORRECTLY

✅ A. 40 MULTIPLE CHOICE QUESTIONS (MCQs)

Choose the correct answer: A, B, C or D.

1. Water is a _____ gift of nature. A. useless B. dangerous C. precious D. harmful
2. All living things _____ water. A. avoid B. need C. destroy D. fear
3. Water used for cooking and drinking is used in: A. sanitation B. food preparation C. farming D. industry
4. Bathing and washing are examples of water used in: A. sanitation B. farming C. storage D. pollution
5. Water helps plants to: A. grow B. die C. dry D. burn
6. Which is a use of water in industries? A. making music B. producing medicines C. making soil D. eating
7. Places where we get water are called: A. water sources B. water diseases C. water pollutants D. water storage

8. Rivers and lakes are _____ sources of water. A. artificial B. natural C. man-made D. dirty
9. Dams and wells are _____ sources of water. A. natural B. artificial (man-made) C. dangerous D. polluted
10. Pure water has _____ colour. A. no B. red C. blue D. brown
11. Pure water is odorless. Odorless means: A. no taste B. no colour C. no smell D. no shape
12. Pure water is tasteless. Tasteless means: A. no colour B. no flavour C. no smell D. no use
13. Pure water is a good: A. solvent B. fuel C. object D. container
14. Boiling point of pure water is: A. 0°C B. 100°C C. 50°C D. 25°C
15. Melting point of pure water is: A. 0°C B. 100°C C. -10°C D. 10°C
16. The main source of water is: A. snow B. rain C. fog D. frost
17. The continuous movement of water is called: A. soil erosion B. water cycle C. pollution D. process
18. Water changing to vapour: A. condensation B. evaporation C. precipitation D. transpiration
19. Vapour changing back into water droplets: A. transpiration B. evaporation C. condensation D. pollution
20. Rain, snow and hail are: A. condensation B. evaporation C. precipitation D. freezing
21. Loss of water from plant leaves: A. transpiration B. evaporation C. condensation D. precipitation
22. Too much rain causes: A. cooking B. floods C. drinking D. storage
23. Rain helps remove: A. food B. dust C. animals D. insects
24. Soil erosion is caused by: A. too much rain B. sunlight C. wind only D. cold
25. Diseases from dirty water are called: A. air diseases B. water-borne diseases C. plant diseases D. rain diseases
26. Cholera is a: A. plant B. virus C. water-borne disease D. mineral
27. Planting trees prevents: A. soil erosion B. evaporation C. condensation D. flooding
28. Terraces are built on: A. flat land B. steep slopes C. rivers D. oceans
29. Ditches are used to: A. wash clothes B. reduce water flow C. store water D. pollute water

30. Water pollution means: A. burning water B. storing water C. making water dirty D. freezing water
31. Agricultural chemicals pollute water when they are: A. washed away by rain B. locked in boxes C. sold D. covered
32. Dead animals thrown into water cause: A. purification B. contamination C. farming D. storage
33. Using dustbins helps reduce: A. farming B. pollution C. evaporation D. condensation
34. Boiling kills: A. solids B. colour C. germs D. taste
35. Removing solid particles from water by using cloth is: A. filtration B. boiling C. freezing D. dissolving
36. Chlorination uses _____ to kill germs. A. temperature B. chemicals C. wind D. paper
37. Making a water filter requires: A. sticks B. charcoal, sand and gravel C. glue D. metal
38. Clean water must be stored in _____ containers. A. dirty B. clean and covered C. open D. cracked
39. Hands should not be put inside drinking water containers to avoid: A. rain B. contamination C. boiling D. evaporation
40. General purpose water is stored in: A. tanks and barrels B. cups C. bags D. pockets

---

☑ B. 30 OPEN-ENDED QUESTIONS

Write your answer on the dotted line.

1. What is water?
   .....
2. State two uses of water at home. .....
3. Give one use of water in farming. .....
4. Name two natural sources of water. .....
5. Name two artificial sources of water. .....
6. Define pure water. .....
7. List three properties of pure water. .....
   .....
8. What is the boiling point of pure water? .....
9. What is the melting point of pure water? .....

10. Explain evaporation. .....
.....
11. Explain condensation. .....
.....
12. Explain precipitation. .....
.....
13. What is transpiration? .....
.....
14. What is water pollution? .....
.....
15. List three causes of water pollution. .....
.....
16. Name any two water-borne diseases. .....
.....
17. What is soil erosion? .....
18. Give two positive effects of rain. .....
19. Give two negative effects of rain. .....
20. What are terraces? .....
21. How do trees prevent soil erosion? .....
.....
22. Give one example of anti-erosive plants. .....
23. Define water purification. .....
.....
24. What is chlorination? .....
.....
25. What is filtration? .....
.....
26. Write three materials used to make a water filter. .....
27. Why should water storage containers be covered? .....
28. Why should we not put hands inside drinking water containers? .....
.....
29. What is potable water? .....
.....

30.How do you keep drinking water safe? .....

.....

☑ C. 10 MATCHING QUESTIONS

Match item in Column A with correct answer from Column B.

COLUMN A	COLUMN B
1. Evaporation	A. Water vapour turns into droplets
2. Condensation	B. Water changing to vapour
3. Precipitation	C. Chemicals used to kill germs
4. Transpiration	D. Rain, snow, hail
5. Chlorination	E. Loss of water from leaves
6. Filtration	F. Removing solid particles
7. Rain	G. Main source of water
8. Terraces	H. Colourless and odorless
9. Pure water	I. Built on steep slopes
10. Dustbin	J. Prevents water pollution

☑ D. 10 TRUE / FALSE QUESTIONS

1. Pure water has taste. _____
2. All living things need water to live. _____
3. Wells are natural sources of water. _____
4. Rain is the main source of water. _____
5. Evaporation is water changing to vapour. _____
6. Too much rain causes soil erosion. _____
7. Dead animals do not pollute water. _____
8. Filtering water kills germs. _____
9. Chlorination is done using chemicals. _____
10. Drinking water should be kept covered. _____

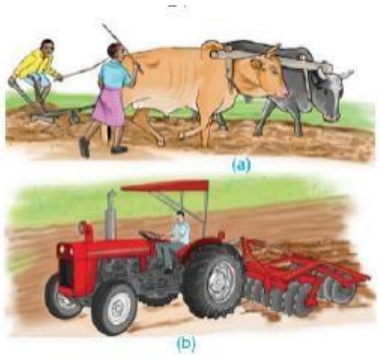
☑ E. 10 CHOOSE FROM THE BRACKETS

Choose the correct word from the brackets.

1. Pure water is _____ (colorless / green).
2. Wells are _____ sources of water. (natural / artificial)
3. _____ is the main source of water. (Rain / Dust)
4. The boiling point of pure water is _____. (50°C / 100°C)
5. The process of water changing into vapour is _____. (Evaporation / Filtration)
6. Throwing waste into rivers causes _____. (pollution / storage)
7. Farmers use chemicals called _____. (fertilizers / rain)
8. Removing germs from water by boiling is called _____. (purification / pollution)
9. Dirty water causes _____ diseases. (water-borne / air-borne)
10. Water for drinking should be stored in _____ containers. (clean / dirty)

UNIT 9

SOIL AND CULTIVATION



9.0.Introduction

Soil is the top layer of the Earth where plants grow. It is very important because it gives plants the nutrients they need to grow. It is also a habitat for many animals like worms and insects and other very small organisms called microorganisms. It is important to know the components of the soil and how to prepare it during cultivation.

Soil: is the most layer of the earth's surface.

9.1 Preparation of soil for cultivation

Soil preparation: is the process of making the soil suitable for cultivation.

These are the various steps of soil preparation:

i) **Land clearing:** in this stage, people clear the bushes, tree stumps and shrubs from the land. It makes digging and ploughing easier. We use machetes and slasher.

ii) **Primary cultivation (ploughing):** after clearing the land, farmers plough the land with animals and plough. The ploughing is done before the wet season starts. It loosens the soil, but leaves some soil clods.

CLODS: are the big lamps of soil.

iii) **Secondary cultivation (harrowing):** to turn and break the soil clods, the farmers re-plough the land. It is done a tractor with harrow and harrow driven by animals. It makes the soil fine and soft for easy planting. It also helps to allow easy application of manure and fertilizers. **iv) Levelling (seedbed preparation):** in this stage, the farmers level soil to prepare the seedbeds. It done with the help of a rake. Levelling remove the big soil and stones. It also helps in controlling weeds.

9.2 Fertilization of soil for cultivation

Fertilization of soil: is the process of adding fertilizers to the soil.

It provides nutrients to the soil. It helps the plant grow well.

Types of fertilizers

i) **Natural (Organic) fertilizers:** they are also called **manure.** They are formed from dead plants and animal wastes. The main organic fertilizers are: animal wastes, plant wastes and sewage sludge. **EXAMPLES:**

a) **Green manure:** is formed from green plants.

b) **Farmyard manure:** is formed from animal beddings, their dungs and urine.

c) **Compost manure:** is formed from rotting garbage and degradable waste. **ii) Chemical, inorganic (artificial) fertilizers:** these are artificial material added to the soil for plant growth.

Groups of chemical fertilizers

a) **Straight fertilizers:** are fertilizers that contain only one major type of nutrients. **EX: SSP** (Single Super Phosphate) and Urea.

b) **Compound (complex) fertilizers:** are fertilizers that contain two or more major types of nutrients.
Ex: NPK: Nitrogen Phosphorous and Potassium.

CAN: Calcium Ammonium Nitrate.

DAP: Diammonium Phosphate.

9.3 Importance of fertilizers

i) It improves the growth of plants. **ii)** It provides nutrition to the crops.

iii) It develops the fighting capacity of crops against pests like weeds,

insects and diseases. **iv)** It improves soil fertility.

v) It increases agricultural productivity.

9.4 Rules of applying fertilizers

We must follow some rules while applying fertilizers on crops. These includes:

i) Use organic fertilizers before using artificial (chemical) fertilizers.

ii) Always choose the appropriate fertilizers for each crop.

iii) Respect the dose.

iv) Apply fertilizers when the soil is moist.

v) Wear gloves while handling fertilizers.

vi) Watch weather before applying fertilizers.

vii) Never apply fertilizers if the soil is already fertile.

Understood ✅

Here is the **complete assessment set** based on the SOIL / SOIL PREPARATION / FERTILIZATION content.

✅ A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — set horizontally)

(Choose the correct answer from A, B, C, or D)

1. Soil is the top layer of the Earth where _____ grow. A) Cars B) Plants C) Houses D) Clothes
2. Soil provides _____ to plants. A) Toys B) Nutrients C) Music D) Cement
3. Soil is a habitat for _____.A) Worms and microorganisms B) Cars C) Robots D) Shoes
4. Soil preparation means making soil suitable for _____.
   A) Sleeping B) Swimming C) Cultivation D) Playing
5. The first step of soil preparation is _____.
   A) Harvesting B) Land clearing C) Selling D) Cooking
6. Land clearing removes _____. A) Bushes and shrubs B) Medicines C) Clothes D) Doors
7. Tools for land clearing are _____. A) Machetes and slasher B) Spoon C) Fork D) Pen
8. Primary cultivation is also called _____. A) Baking B) Ploughing C) Painting D) Filling
9. Ploughing _____ the soil. A) Loosens B) Hardens C) Burns D) Freezes
10. Ploughing leaves _____. A) Stones B) Soil clods C) Shoes D) Seeds
11. Soil clods are _____. A) Big lumps of soil B) Water C) Fertilizer D) Sand
12. Harrowing is also called _____ cultivation. A) Primary B) Secondary C) Tertiary D) Final
13. Harrowing helps to _____ soil clods. A) Hide B) Break C) Freeze D) Boil
14. Harrowing makes the soil _____. A) Fine and soft B) Wet C) Hot D) Sticky
15. Levelling helps to control _____. A) Clothes B) Weeds C) Shoes D) Books

16. Farmers use a _____ for levelling. A) Rake B) Spoon C) Mop D) Fork

17. Seedbed preparation is also known as ____A) Levelling B) Drying C) Cooking D) Harvesting

18. Fertilization of soil means adding _____ to the soil.
A) Rocks B) Fertilizers C) Clothes D) Salt

19. Fertilizers provide _____. A) Lights B) Nutrients C) Noise D) Heat

20. Natural fertilizers are also called _____. A) Paint B) Manure C) Gas D) Rocks

21. Organic fertilizers come from _____. A) Metal B) Plants and animals C) Glass D) Stone

22. Green manure comes from _____. A) Green plants B) Oil C) Chalk D) Paper

23. Compost manure is made from ___A) Rotting degradable waste B) Plastic C) Iron D) Glass

24. Farmyard manure comes from _____.
A) Engine oil B) Animal dung, urine and bedding C) Plastic bags D) Sand

25. Chemical fertilizers are _____. A) Artificial B) Natural C) Liquid D) Organic

26. Straight fertilizers contain _____ nutrient. A) No B) One C) Four D) Many

27. Example of a straight fertilizer is _____. A) Compost B) SSP C) Farm manure D) Leaves

28. Compound fertilizers contain _____.
A) One nutrient B) Two or more nutrients C) No nutrients D) Sand

29. NPK contains _____.
A) Nitrogen, Phosphate, Potassium B) Nails, Pins, Keys C) Nitrogen, Petrol, Kerosene D) None

30. CAN means _____.
A) Calcium Ammonium Nitrate B) Cook And Nap C) Calcium Acid Neutral D) None

31. DAP stands for _____.
A) Diammonium Phosphate B) Dark Apple Pie C) Double Acid Paint D) Dairy Animal Product

32. Fertilizers improve soil _____. A) Colour B) Fertility C) Temperature D) Smell

33. Fertilizers increase _____ productivity. A) Agricultural B) Brain C) Music D) Sports

34. Fertilizers help plants fight _____. A) School B) Pests C) Money D) Clothes

35. Fertilizers should be applied when soil is _____. A) Wet B) Moist C) Dry D) Burning

36. Farmers must wear _____ when applying fertilizers. A) Gloves B) Rings C) Socks D) Belts

37. Never apply fertilizers on soil that is already _____. A) Far B) Fertile C) Hot D) Watery

38. Compost manure improves soil _____ A) Fertility B) Temperature C) Sound D) Colour

39. Ploughing is done before the _____ season starts. A) Dry B) Rainy C) Holiday D) Sports

40. Harrowing is done using a _____. A) Harrow B) Chair C) Brush D) Knife

41. Soil helps plants grow _____. A) Strong B) Weak C) Dead D) Rotten
42. Microorganisms are living things that are _____.A) Visible B) Very small C) Huge D) Plastic
43. Soil is important because it gives plants ___A) Nutrients B) Songs C) Electricity D) Clothes
44. Fertilization helps in _____ growth of crops. A) Poor B) Healthy C) Weak D) Small
45. Organic fertilizer example: _____. A) Compost B) SSP C) NPK D) CAN
46. Chemical fertilizer example: ____A) Compost B) DAP C) Farmyard manure D) Green manure
47. Land clearing makes _____ easier. A) Digging B) Driving C) Teaching D) Sleeping
48. Organic fertilizers are used _____ chemical fertilizers.
    A) After B) Before C) Instead of water D) Never
49. Soil is important because it supports ____A) Plant growth B) Sleeping C) Running D) Flying
50. Soil contains _____ organisms. A) Glass B) Living C) Paper D) Plastic

---

☑ B. 30 OPEN QUESTIONS

(Leave enough space for learners to write answers)

1. What is soil?
   .....
2. Give two reasons why soil is important.
   .....
   .....
3. What is soil preparation?
   .....
   .....
4. List the four steps of soil preparation.
   .....
   .....
5. What is land clearing?
   .....
   .....
6. Name two tools used in land clearing.
   .....

7. What is primary cultivation?

   .....

   .....

8. Define soil clods.

   .....

9. What is harrowing?

   .....

10. What does harrowing do to soil clods?

    .....

11. What is levelling?

    .....

12. Why is levelling important?

    .....

13. What is fertilization of soil?

    .....

14. Why do farmers fertilize soil?

    .....

15. What are organic fertilizers?

    .....

16. Give FOUR examples of organic fertilizers.

    .....

17. What is compost manure made from?

    .....

18. What is farmyard manure?

    .....

19. What is green manure?

    .....

20. What are chemical fertilizers?

    .....

21. What are straight fertilizers?

    .....

22. Give one example of a straight fertilizer.

    .....

23. What are compound fertilizers?

.....

24. What is NPK?

.....

25. Give two importance of fertilizers.

.....

.....

26. Why should fertilizers be applied when soil is moist?

.....

.....

27. Why should farmers wear gloves when applying fertilizers?

.....

.....

28. Why should we not apply fertilizers when soil is already fertile?

.....

.....

29. Why must we respect the dose when applying fertilizers?

.....

.....

30. Why should organic fertilizers be applied before chemical fertilizers?

.....

.....

☑ D. 20 TRUE OR FALSE QUESTIONS

1. Soil gives nutrients to plants. _____
2. Soil preparation is done after planting seeds. _____
3. Land clearing removes shrubs and tree stumps. _____
4. Harrowing breaks soil clods. _____
5. Levelling helps control erosion. _____
6. Compost manure comes from metal waste. _____
7. Green manure comes from green plants. _____
8. DAP is a natural fertilizer. _____
9. NPK is a chemical fertilizer. _____

10. Soil is a habitat for microorganisms. _____
11. Fertilizers improve soil fertility. _____
12. Fertilizers should be applied on dry soil. _____
13. Farmers must wear gloves when applying fertilizers. _____
14. Ploughing loosens the soil. _____
15. Soil clods are big lumps of soil. _____
16. Organic fertilizers are chemical fertilizers. _____
17. Compost manure increases soil fertility. _____
18. Soil supports plant growth. _____
19. Fertilizers help crops resist pests. _____
20. Harrowing is done before ploughing. _____

☑ C. 10 MATCHING QUESTIONS

Match **Column A** with **Column B**

Absolutely! Here's your matching exercise presented in a clean, structured table format:

🌾 Agricultural Practices and Inputs – Matching Table.

No.	Column A	Column B (Match)
1	Land clearing	A. Fine and soft soil
2	Ploughing	B. Degradable waste
3	Harrowing	C. Seedbed preparation
4	Levelling	D. Loosening soil
5	Compost manure	E. Removing shrubs and bushes
6	Green manure	F. Animal bedding, dung, and urine
7	Farmyard manure	G. Green plants
8	NPK	H. One major nutrient
9	SSP	I. Nitrogen, Phosphorus, Potassium
10	Straight fertilizer	J. Contains two or more nutrients

☑ E. 20 CHOOSE FROM BRACKETS QUESTIONS

1. Soil is a habitat for _____ (worms / computers).
2. Soil gives plants _____ (nutrients / toys).
3. Soil preparation makes soil ready for _____ (cultivation / dancing).
4. Land clearing removes _____ (shrubs / paper).
5. Ploughing leaves _____ (soil clods / books).
6. Harrowing makes soil _____ (fine / heavy).
7. Levelling prepares the _____ (seedbed / bedroom).
8. Organic fertilizers are also called _____ (manure / water).
9. Green manure comes from _____ (green plants / stones).
10. Compost manure comes from _____ (degradable waste / plastic).
11. NPK is a _____ fertilizer (compound / wooden).
12. Straight fertilizers contain _____ nutrient (one / many).
13. DAP is _____ fertilizer (chemical / natural).
14. CAN means Calcium _____ Nitrate (Ammonium / Apple).
15. Fertilizers increase _____ productivity (agricultural / sleeping).
16. Fertilizers help crops fight _____ (pests / tablets).
17. Apply fertilizers when soil is _____ (moist / burning).
18. Farmers must wear _____ (gloves / sandals).
19. Compost improves soil _____ (fertility / noise).
20. Land clearing makes ploughing _____ (easier / harder).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Soil is the top layer of the Earth where _____.
2. Soil preparation is making soil suitable for _____.
3. The first step of soil preparation is _____.
4. Ploughing loosens the _____.
5. Harrowing breaks the _____.
6. Levelling helps in controlling _____.
7. Organic fertilizers are also called _____.
8. Compost manure is made from _____ waste.
9. NPK means _____, _____, and _____.
10. Fertilizers increase _____ productivity

10.0. Introduction

Plants are very important for people and animals to live. They give food to eat, clean the air and help to take care of the Environment. It is good to know the importance of plants and how to protect them in environment.

Plant: is a living thing that grows in the ground, usually has leaves or flowers and needs sun and water to survive.

Environment: is everything that around us.

10.1 Importance of plants

a) Human food (food crops)

b) Animal feeding

c) Medicines

d) Cash crops

e) Protection of environment

a) **Human food (food crops):** they provide carbohydrates, fats, proteins, vitamins, and minerals to the humans.

Types of food crops

i) **Cereals:** these are crops grown their grains. Ex: rice, wheat, maize, oats, barley, millet, sorghum.

ii) **Legumes:** these crops mainly produce their seeds in pods. Ex: peas, green grams, beans, groundnuts, black beans.

iii) **Fruits:** these include: pawpaw, oranges, mangoes, bananas, pineapple, passion fruits, pears, apples, avocado. **Fruits have two scars while seeds have one scar.**

iv) **Vegetables:** these include: spinach, kales, cabbages, broccoli, lettuce, cauliflower, eggplant, onions, tomatoes.

v) **Tubers:** these are plants that store food in their roots (root tubers) or stem (stem tubers).

1. **Root tubers:** carrots, cassava, radish, turnips, beetroot, arrow roots, sweet potatoes.
2. **Stem tubers:** yam, and Irish/English potatoes.

b) **Animals' feeding:** human and cattle like cows, buffaloes, horses feed on plant. They plant eaters. **N.B: Plant eaters:** are living things that eat plant.

c) **Medicinal plants:** we use them as medicine in our day-to-day life.

Plants	**Uses**
Eucalyptus (Inturusu)	Its oil helps relieve pain of rheumatism and stiffness.
Iboza riparia	Its leaves are used to heal sore chest, stomachache and malaria.
Cinchona (Kenkina)	It contains quinine which is used to treat malaria.
Aloe Vera (Igikakarubamba)	It is used for digestive problems and loss of appetite.
Ocimum suave (Umwenya)	Its leaves are used to treat cough and diabetes.

d) **Cash crops:** these are crops grown mainly for sale. The farmer sells the crops to industries for processing.

Groups of cash crops

i) **Beverage crops:** they are processed in industries for beverages. Ex: tea, coffee, cocoa and barley.

ii) **Fibre crops:** they are grown to produce thread or fibre. Ex: cotton, sisal and flax.

iii) **Oil crops:** they are grown mainly for oil production. Ex: sunflower, groundnuts, coconut, cashew nuts and cotton.

Cash crops and their products

1. Coffee: coffee drink
2. Sugar cane: sugar
3. Cotton: clothes
4. Tobacco: cigarettes
5. Pyrethrum: insecticide
6. Tea: tea drink

e) **Protection of environment:** making air clean, protecting against soil erosion, help in rain formation by transpiration.

10.2 Common importance of trees on the environment

i) Improve weather condition: trees produce moisture during transpiration. This moisture forms rain clouds. Trees also act as windbreaker by slowing down the speed of the wind. **ii) Protect soil erosion:** the roots of plants hold the soil together and prevent soil erosion. **iii) Shelter of wild animals and birds:** both birds and animals make their shelter in the trees.

iv) Recycle air through photosynthesis: plants need water and carbon dioxide to make food through photosynthesis.

Photosynthesis: is the process by which green plants make their own food. It takes place in the leaves.

Raw materials (natural resources) of photosynthesis: water and carbon dioxide.

Products of photosynthesis: sugar and oxygen.

Conditions of photosynthesis

i) **Sun light:** speed up reaction. **ii) Chlorophyll:** attracting sun light.

Carbon dioxide + Water ⟶ **sugar + Oxygen**

N.B: Plants take in **carbon dioxide** and give out **oxygen.**

10.3 Other importance of trees

i) **Ornamental trees:** trees that are grown for decoration. Ex: Rose, Lavender, Cherry trees.

ii) **Fruit trees:** mango, orange and banana. **iii) Agro-forestry:** is the planting trees with other crops. **iv) Fuel and timber tress:** they are used as fire wood or for making timber. **N.B: Casuarina** is the best fuel tree in Rwanda.

10.4 Effects of afforestation and deforestation on the environment

Afforestation: is the activity of planting trees where there is not exist.

Deforestation: is the cutting down trees.

Importance of afforestation

i) It increases the amount of rain fall.
ii) It keeps environment cool.
iii) It controls soil erosion.
iv) It maintains a balance between oxygen and carbon dioxide.
v) It prevents floods.

Causes of deforestation

i) To make more land available for farming.
ii) To make more land available for housing and urbanization.
iii) To clear land for mining.
iv) To get wood and charcoal.

Effects of deforestation

i) It increases the amount of rainfall which can lead to drought.
ii) It causes flood.
iii) It causes soil erosion.
iv) Displacement of wild animals which lead to loss of tourist.
v) Lack of charcoal and firewood.

Prevention of deforestation (conservation of trees)

i) **Re-afforestation:** planting trees where there were existed. ii) **Afforestation:** planting trees where there were not existed.

iii) **Making laws of protecting forest:** one cannot cut trees without getting permission from the government.

Different ways of maintaining trees

i) Planting trees by digging hole in the soil.

ii) Fencing the trees to protect it from stray animals.

iii) Watering the trees regularly.

iv) Remove weeds and grasses around the trees.

v) Add organic manure to the trees.

vi) Trim the trees regularly.

☑ **A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — set horizontally)**

1. A plant is a living thing that grows in the _____. A) Air B) Ground C) Water D) Sky
2. Plants need _____ and water to survive. A) Sunlight B) Soil C) Oil D) Clothes
3. The environment is _____. A) Everything around us B) Only trees C) Only animals D) Only soil
4. Plants provide _____ for humans. A) Music B) Food C) Shoes D) Clothes
5. Animals feed on _____. A) Rocks B) Plants C) Plastic D) Metal
6. Medicinal plants are used as _____. A) Food B) Medicines C) Toys D) Clothes
7. Cash crops are grown mainly for _____. A) Decoration B) Sale C) Food D) Shade
8. Plants help to _____ the environment. A) Pollute B) Protect C) Destroy D) Burn
9. Cereals include _____. A) Beans B) Maize C) Pawpaw D) Spinach
10. Legumes produce seeds in _____. A) Flowers B) Pods C) Leaves D) Roots
11. Fruits include _____. A) Pawpaw B) Maize C) Rice D) Wheat
12. Vegetables include _____. A) Tomatoes B) Mangoes C) Oranges D) Bananas
13. Root tubers include _____. A) Yam B) Carrots C) Potato D) Coconut
14. Stem tubers include _____. A) Yam B) Carrots C) Spinach D) Onion

15. Plant eaters are called _____. A) Carnivores B) Herbivores C) Omnivores D) Birds
16. Eucalyptus oil helps relieve _____. A) Pain B) Hunger C) Thirst D) Cold
17. Cinchona contains _____ used to treat malaria. A) Quinine B) Sugar C) Salt D) Oil
18. Aloe Vera is used for _____ problems. A) Digestive B) Skin C) Heart D) Teeth
19. Ocimum suave leaves treat _____. A) Cough B) Fever C) Malaria D) Broken bones
20. Beverage cash crops include _____. A) Tea B) Cotton C) Sunflower D) Groundnuts
21. Fibre crops include _____. A) Cotton B) Coffee C) Cocoa D) Sugarcane
22. Oil crops include _____. A) Sunflower B) Tea C) Coffee D) Cotton
23. Coffee is processed into _____. A) Coffee drink B) Clothes C) Sugar D) Firewood
24. Sugarcane produces _____. A) Sugar B) Coffee C) Cotton D) Timber
25. Cotton is used to make _____. A) Clothes B) Sugar C) Coffee D) Firewood
26. Tobacco is used to make _____. A) Cigarettes B) Sugar C) Oil D) Coffee
27. Pyrethrum is used as _____. A) Insecticide B) Medicine C) Food D) Oil
28. Tea is processed into _____. A) Tea drink B) Clothes C) Oil D) Sugar
29. Trees improve weather by producing _____ during transpiration. A) Moisture B) Heat C) Soil D) Smoke
30. Trees act as a _____ by slowing wind. A) Windbreaker B) Sunlight C) Rainmaker D) Soil protector
31. Tree roots prevent _____. A) Soil erosion B) Rain C) Sunshine D) Shadows
32. Trees provide shelter for _____. A) Birds and animals B) Stones C) Cars D) Clothes
33. Photosynthesis takes place in the _____. A) Leaves B) Roots C) Stem D) Flowers
34. Raw materials of photosynthesis are _____. A) Water and carbon dioxide B) Soil and air C) Oil and sugar D) Fire and smoke
35. Products of photosynthesis are _____. A) Sugar and oxygen B) Sugar and carbon dioxide C) Water and oxygen D) Air and soil
36. Ornamental trees are grown for _____. A) Decoration B) Food C) Fibre D) Oil
37. Fruit trees include _____. A) Mango B) Cotton C) Sunflower D) Cocoa
38. Agro-forestry involves planting trees with _____. A) Other crops B) Animals C) Water D) Stones
39. Fuel and timber trees are used for _____. A) Firewood and timber B) Food C) Medicine D) Clothes

40. Casuarina is the best _____ tree in Rwanda. A) Fuel B) Fruit C) Fibre D) Coffee
41. Afforestation means planting trees where _____. A) None existed B) Trees exist C) Grass exists D) Animals exist
42. Deforestation means _____. A) Cutting down trees B) Planting trees C) Watering trees D) Fertilizing trees
43. Afforestation increases _____. A) Rainfall B) Pollution C) Soil erosion D) Disease
44. Afforestation helps keep environment _____. A) Cool B) Hot C) Dry D) Polluted
45. Deforestation is caused by _____. A) Farming B) Watering C) Fertilizing D) Cooking
46. Deforestation leads to _____. A) Soil erosion B) Fertilization C) Photosynthesis D) Planting
47. Re-afforestation means planting trees where they _____. A) Existed B) Never existed C) Are cut D) Are young
48. Fencing trees protects them from _____. A) Stray animals B) Sunlight C) Rain D) Wind
49. Watering trees regularly helps _____. A) Tree growth B) Soil erosion C) Pollution D) Cutting
50. Trimming trees is done to _____. A) Maintain them B) Cut down C) Sell D) Destroy

---

☑ B. 30 OPEN QUESTIONS

(Leave enough space for answers)

1. Define a plant.
   .....
2. What is the environment?
   .....
3. List five importance of plants.
   .....
   .....
4. Give two examples of cereals.
   .....
5. Name three legumes.
   .....
6. List three fruits.
   .....
7. Give three vegetables.
   .....

8. Name two root tubers.

   .....

9. Name two stem tubers.

   .....

10. What are plant eaters?

    .....

11. Give one use of Eucalyptus.

    .....

12. What is quinine used for?

    .....

13. Give two uses of Aloe Vera.

    .....

14. Give one use of Ocimum suave.

    .....

15. Define cash crops.

    .....

16. Name two beverage crops.

    .....

17. Give two fibre crops.

    .....

18. Name two oil crops.

    .....

19. Give two effects of trees on weather.

    .....

20. How do trees prevent soil erosion?

    .....

21. How do trees recycle air?

    .....

22. What is photosynthesis?

    .....

23. Name two products of photosynthesis.

    .....

24. Give two ornamental trees.

    .....

25. Name two fruit trees.

    .....

26. Define afforestation.

    .....

27. Define deforestation.

    .....

28. Give two causes of deforestation.

    .....

29. Give two ways of maintaining trees.

    .....

30. Why is Casuarina considered a good fuel tree?

    .....

☑ C. 10 MATCHING QUESTIONS

Column A	**Column B**
1. Photosynthesis	A. Sugar and oxygen
2. Fruit tree	B. Mango
3. Ornamental tree	C. Rose
4. Agro-forestry	D. Planting trees with other crops
5. Fuel tree	E. Firewood
6. Afforestation	F. Planting trees where none existed
7. Deforestation	G. Cutting down trees
8. Beverage crop	H. Tea
9. Fibre crop	I. Cotton
10. Oil crop	J. Sunflower

☑ D. 20 TRUE OR FALSE QUESTIONS

1. Plants provide food for humans. _____
2. Plants do not help clean the air. _____

3. Legumes produce seeds in pods. _____
4. Tubers store food in roots or stems. _____
5. Plant eaters eat only meat. _____
6. Cash crops are grown for sale. _____
7. Trees improve weather by transpiration. _____
8. Roots of trees prevent soil erosion. _____
9. Photosynthesis occurs in roots. _____
10. Raw materials of photosynthesis are water and carbon dioxide. _____
11. Products of photosynthesis are sugar and oxygen. _____
12. Casuarina is a fruit tree. _____
13. Afforestation prevents floods. _____
14. Deforestation causes soil erosion. _____
15. Fencing trees protects them from animals. _____
16. Trimming trees helps maintain them. _____
17. Agro-forestry is planting trees with other crops. _____
18. Pyrethrum is a food crop. _____
19. Tea is a beverage cash crop. _____
20. Deforestation is beneficial for the environment. _____

☑ E. 20 CHOOSE FROM BRACKETS QUESTIONS

1. Plants provide _____ (food / cars).
2. Environment is _____ (everything around us / only soil).
3. Cereals include _____ (maize / mango).
4. Legumes include _____ (beans / carrots).
5. Root tubers include _____ (carrots / yam).
6. Stem tubers include _____ (potato / carrot).
7. Plant eaters are _____ (herbivores / carnivores).
8. Cinchona is used to treat _____ (malaria / cough).
9. Tea is a _____ crop (beverage / fibre).

10. Cotton is a _____ crop (fibre / oil).
11. Sunflower is an _____ crop (oil / beverage).
12. Trees recycle air through _____ (photosynthesis / evaporation).
13. Photosynthesis occurs in _____ (leaves / roots).
14. Products of photosynthesis are _____ (sugar and oxygen / water and salt).
15. Afforestation means planting trees where _____ (none existed / trees exist).
16. Deforestation means _____ (cutting trees / planting trees).
17. Casuarina is a good _____ tree (fuel / fruit).
18. Re-afforestation is planting trees where they _____ (existed / never existed).
19. Fencing protects trees from _____ (stray animals / sun).
20. Trimming trees is done to _____ (maintain them / cut them down).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Plants are important because they provide _____.
2. Legumes produce seeds in _____.
3. Fruits have _____ scars while seeds have one scar.
4. Root tubers store food in _____.
5. Stem tubers store food in _____.
6. Plant eaters are living things that eat _____.
7. Photosynthesis takes place in the _____.
8. Raw materials of photosynthesis are _____ and _____.
9. Afforestation helps prevent _____.
10. One way to maintain trees is to _____ them regularly.

UNIT 11

HUMAN DIGESTIVE SYSTEM

11.0. INTRODUCTION

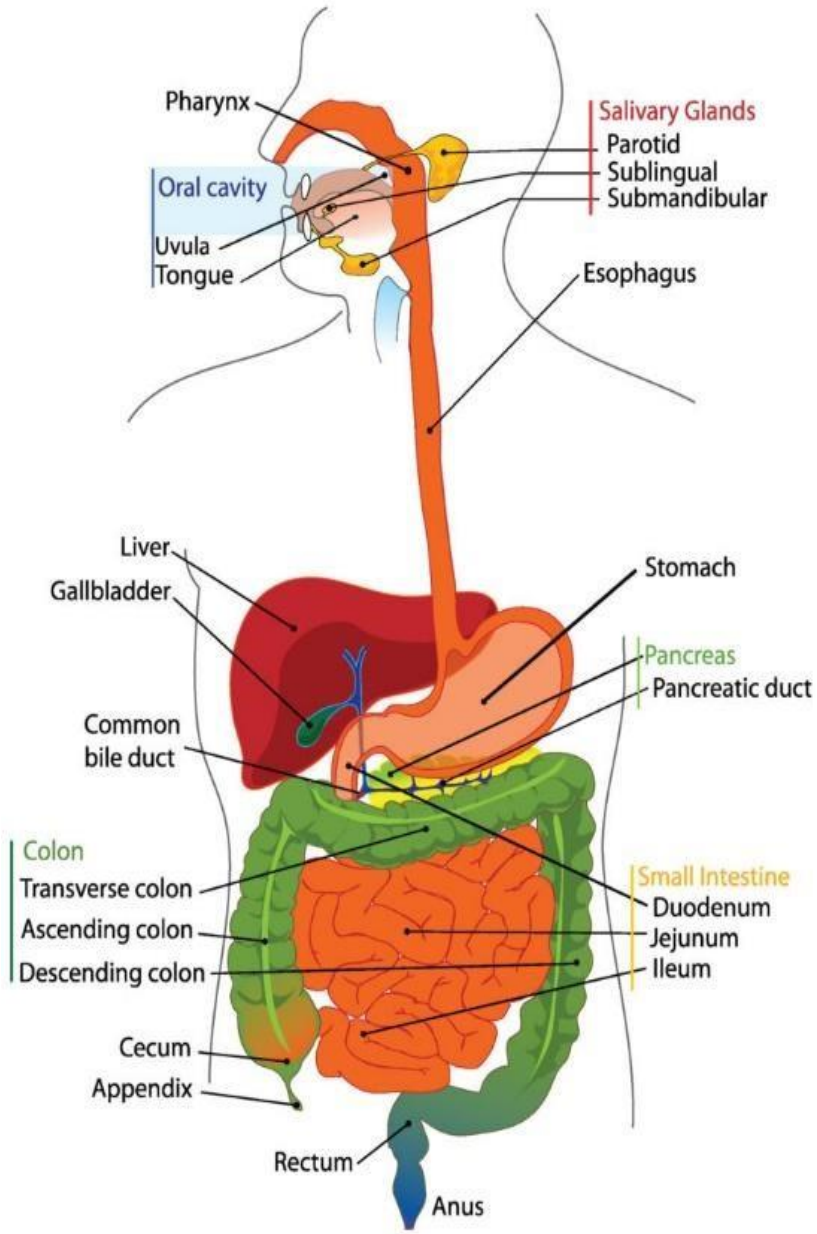
The digestive system is the part of your body that carries out digestion. Digestion is the process whereby food is broken down into nutrients that the body can absorb easily. It is important to know the process of digestion and how to take care the digestive system.
Digestive system: is the system which concern for how a food is broken down into nutrients that the body can absorb.

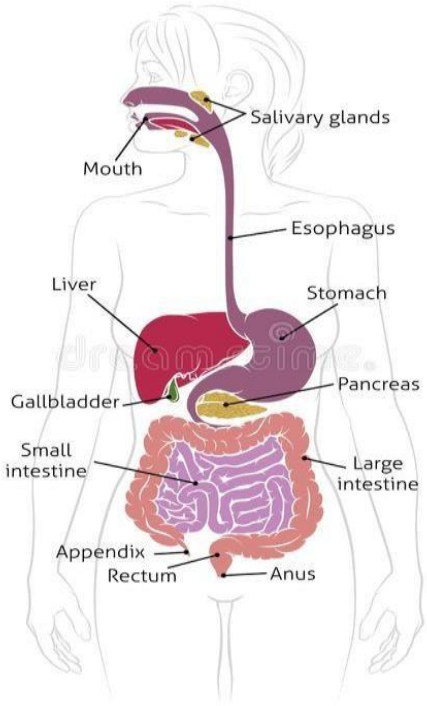
Digestive system is made up of:

i) **Alimentary canal:** are all the parts food pass through. Ex: mouth, oesophagus, stomach, small intestine (ileum and duodenum), large intestine (colon, caecum and rectum) and anus. **N.B: Peristalsis:** is the process by which food move down through alimentary canal.

ii) **Digestive gland:** are the gland which make secretions that help in digestion of food. Ex: Salivary glands, gastric glands, liver, gall bladder and pancreas.

11.1 Parts of digestive system and their functions



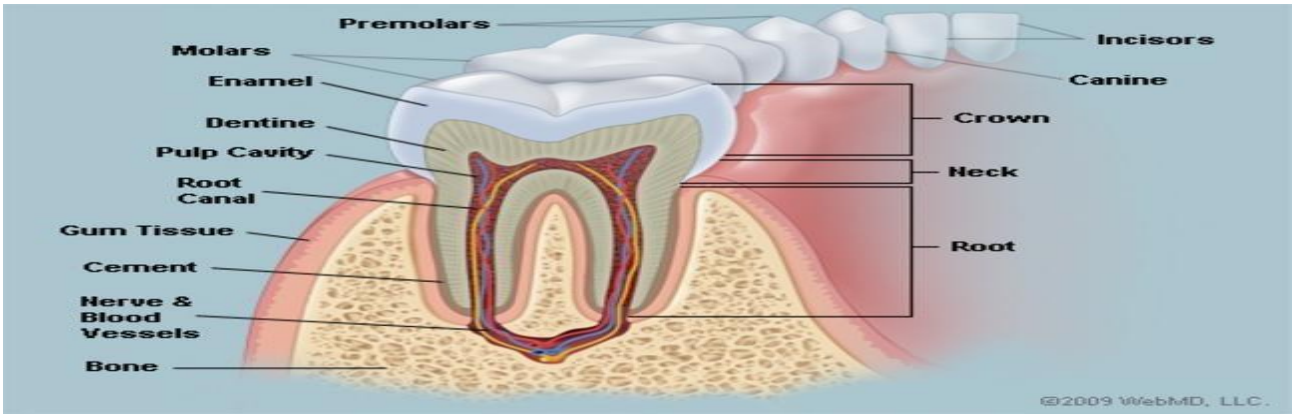


1.Mouth: chewing the food. It is done by helps teeth and saliva.

Types of human teeth and their functions

Types of teeth	Incisors	Canines	Premolars	Molars	Total
Numbers	8	4	8	12	32

Parts of tooth



2. **Salivary gland:** secrete saliva which moistens the food.
3. **Food pipe (oesophagus):** carries food from the mouth to the stomach.
4. **Liver:** it produces bile which helps in digestion of fats.
5. **Gall bladder:** it sores bile.
6. **Bile duct:** it carries bile from gall bladder to duodenum.
7. **Stomach:** produce hydrochloric acid which kill germs in the food.

9. **Gastric gland:** produce gastric juice.

8. **Pancreas:** produce pancreatic juice.

N.B: Pancreas also produces **insulin** and **glucagon** which control sugar regulation.

9. **Small intestine:** produces digestive enzymes and also absorbs digested food. **N.B:** Small intestine consists:

i) **Duodenum:** produce hormones and receives secretions from the liver (bile) and pancreas (pancreatic juice).

ii) **Jejunum:** absorb sugars, amino acids and fatty acid.

iii) **Ileum:** digest food coming from the stomach and other parts of small intestine.

10. **Large intestine:** reabsorbs water. **N.B:** large intestine consists:

i) **Colon:** reabsorb fluid and process waste products from the body and prepare for its elimination.

ii) Caecum: absorb fluids and salts that remain after completion intestinal digestion and absorption.

11. Appendix: act as a storehouse for good bacteria.

12. Rectum: stores undigested food until eliminated.

13. Anus: eliminates undigested food.

11.2 Functions of digestive system

i) Digestion: is the process by which is broken down into smaller particles.

ii) Absorption: is the process of uptaking the nutrients from the food.

12.3 Stages of digestion

1) Ingestion

2) Digestion

3) Absorption (assimilation)

4) Elimination (egestion)

1) Ingestion: is the entering of food in the mouth. We should ingest clean food and digestible food.

2) Digestion: is the process by which is broken down into smaller particles.

a) Digestion in the mouth: the ingested food is chewed using teeth and mixed with **saliva** from salivary glands.

Saliva: is the digestive juice that moistens the food.

The tongue rolls the food into small rounded balls called **boluses**. Saliva also contains digestive enzymes called **amylase** that break down starch into simpler form. **Enzymes:** are chemical substances that speed up digestion.

b) Digestion in the stomach: the food enters in the stomach from the oesophagus. The lining of the stomach produces **hydrochloric acid**.

Hydrochloric acid: kills germs that may be present in the food. The stomach serves as a temporary store food. From time to time, food is released into the small intestine.

c) Digestion in small intestine: small intestine is divided into two parts: upper part **(duodenum)** and the lower **(ileum)**.

Most digestion in small intestine takes place in **the duodenum.** In the duodenum, bile and pancreatic juices mix with food. Pancreatic juices help in further digestion of food.

The ileum is involved in the absorption of digested food. After digestion in the ileum, fats, proteins and carbohydrates are ready for absorption.

N.B: Digestion starts in the mouth and ends in the small intestine.

3) **Absorption:** is the uptaking the nutrients from the food to the blood. It is also known as **assimilation.**

The digested food is absorbed into the blood stream through the walls of

the ileum. **N.B:** Absorption takes place in the small intestine.

4) **Elimination:** is the entering of unabsorbed food and water into the large intestine. The large intestines consist of **the colon** and **the rectum.**

In the colon: most of water is reabsorbed into the blood stream. The remaining food waste passed down to the rectum.

Egestion: is the removal of undigested food outside the body.

11.4 Hygiene of digestion

i) Chew the food properly.

ii) Do not drink water while taking meals. **iii)** Eating balanced

diet. **iv)** Do not overeat.

v) Drink a lot of water daily.

vi) Wash hand before and after eating. **vii)** Exercise

regularly.

11.5 Groups of food (balanced diet)

***A* balanced diet:** is a meal that contains all the nutrients needed by the body.

***A* meal:** is food eaten during any occasion in the day.

Different foods have different functions. Based on their functions foods are grouped into:

i) **Body building foods:** those foods help to grow and build strong muscles. These foods provide us **protein. Ex:** meat, fish, eggs, pulses, beans,…….

ii) **Energy giving foods:** those foods give us energy to jump, run and play. Those foods provide us **carbohydrate** and **fats**. **Ex:** cassava, yam, potato, cooking oil,……

iii) **Protective foods:** those foods make our body strong to fight against diseases. These foods provide us **vitamins** and **minerals**. **Ex:** banana, spinach, cabbage, carrots,…….

11.6 Components (elements) of balanced diet

Food groups should contain the following:

a) **Carbohydrate:** provide the body with energy to work. These foods also keep the body strong and warm. **Ex:** sweet potato, maize, rice, yam, wheat,…….

b) **Proteins:** they necessary for the growth and repair of body tissues. **Ex:** beans, milk, fish, eggs, meat,…….

c) **Vitamins:** these foods protect the body against diseases. **Fresh fruits** and **vegetables** are the main sources of vitamins. **Ex:** oranges, water melon, pineapple, avocado, strawberries,…… **Types of vitamins**
Water soluble vitamins: vitamin C and B complex.
Fat soluble vitamins: vitamin A, D, E and K.

d) **Minerals:** they present in many foods. They are required by the body in the small quantities. **Ex:**
calcium, phosphorus, iron, iodine, potassium, sodium and zinc.
The following table shows some minerals, their uses in the body and their sources:

Minerals	**Uses in the body**	**Sources**
Calcium	. Building strong bones and teeth. . Helps in clotting of blood.	Milk and milk products, whole grain cereals and small fish eaten whole.
Phosphorus	Formation of strong bones and teeth.	Milk, beans and eggs.
Iron	Helps in formation of blood.	Liver, kidney, meat, eggs spinach and other green vegetables.
Iodine	Prevention of goiter.	Common salts and onions.

e) **Lipids (fats and oils):** provide the body with energy. They also make the skin shiny and healthy. **Fats** exist in solid form while **oils** are in liquid form. **Ex:** avocado, sunflower, sesame, corn, coconut, ground nuts, milk product (butter, ghee and cheese).

f) **Water:** the body needs water in order to stay healthy.

Functions of water in the body

i) Regulating our body temperature.

ii) Digestion of food. **iii)** Carrying nutrients and oxygen to various parts of our body. **iv)** Absorption of nutrients by our body.

v) Removal of toxins and wastes from our body.

11.7 Nutritional deficiency diseases and their prevention

Nutritional deficiency diseases: are diseases caused by lack of enough nutrients in the diet.

If we do not get a balanced diet to eat, we shall become weak. We shall suffer from nutritional deficiency diseases.

The following are some common nutritional deficiency diseases:

Diseases	Cause	Signs and symptoms	Prevention
Kwashiorkor	Lack of **protein** in the diet.	Thin body, swollen face and belly, slow body growth, hair turns reddish brown, loss of muscle mass.	Eating food with proteins. Ex: meat, fish, eggs, milk, soya bean, legumes.
Marasmus	Lack of **protein** and **carbohydrate** in the diet.	Thin body with prominent ribs, face looks like that of an old man or woman, rapid loss of weight.	Eating balanced diet with protein and carbohydrate. Ex: meat, fish, eggs, milk, soya bean, legumes.
Goiter	Lack of **iodine** in the diet.	Swelling of thyroid gland, difficulty in swallowing and breathing, change in voice such as hoarseness.	Eating sea foods and iodinated salts.

Rickets	Lack of **vitamin D, calcium** and **phosphorous.**	Pain in bone, bending of legs and backbones, swelling at the wrist, knees and ankles, dental deformities.	Daily have an early morning sun light exposure, eat foods that include an adequate amount of calcium and vitamin D. Ex: milk, eggs, fish,…
Anaemia	Lack of **iron** in diet.	Feeling weak and tired, headache, paleness, shortness of breathing.	Eating protein supplements and balanced diet. Ex: green leafy vegetables, meat, fish, milk and eggs.

11.8 Prevention of nutritional deficiency diseases

i) Take different types of fruits and vegetables.

ii) Get calcium rich foods. iii) Take protein rich foods. iv) Find a balance between food and physical activity.

v) Avoid tobacco use.

vi) Maintain a healthy weight.

11.8 Preparation of balanced diet

We can make a balanced diet by using food from each group of food.

Example: fish, bread, cabbage and mango.

N.B: **A balanced diet protects us from nutritional deficiency diseases**

Here's a **full assessment SCIENCE** based on your **DIGESTIVE SYSTEM AND BALANCED DIET**

☑ A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — horizontal format)

1. Digestion is the process of breaking down _____. A) Water B) Food C) Air D) Soil
2. Digestive system helps in _____. A) Photosynthesis B) Digestion C) Respiration D) Circulation
3. Alimentary canal includes all of the following except _____. A) Mouth B) Stomach C) Liver D) Small intestine

4. Peristalsis is the movement of food through the _____. A) Blood B) Alimentary canal C) Lungs D) Muscles
5. Salivary glands produce _____. A) Bile B) Saliva C) Insulin D) Gastric juice
6. Liver produces _____. A) Saliva B) Bile C) Hydrochloric acid D) Pancreatic juice
7. Gall bladder stores _____. A) Saliva B) Bile C) Pancreatic juice D) Food
8. Stomach produces _____ to kill germs. A) Hydrochloric acid B) Saliva C) Bile D) Enzymes
9. Pancreas produces _____. A) Insulin and glucagon B) Bile C) Hydrochloric acid D) Saliva
10. Duodenum receives secretions from _____. A) Liver and pancreas B) Mouth and stomach C) Gall bladder only D) Teeth and tongue
11. Jejunum absorbs _____. A) Sugars, amino acids and fatty acids B) Water only C) Fats only D) Minerals only
12. Ileum digests food coming from _____. A) Mouth B) Stomach and small intestine C) Large intestine D) Gall bladder
13. Large intestine _____ water. A) Produces B) Reabsorbs C) Destroys D) Stores
14. Colon is part of _____. A) Large intestine B) Small intestine C) Stomach D) Liver
15. Caecum absorbs _____. A) Fluids and salts B) Carbohydrates C) Proteins D) Vitamins
16. Appendix acts as a storehouse for _____. A) Bad bacteria B) Good bacteria C) Bile D) Enzymes
17. Rectum stores _____. A) Digested food B) Undigested food C) Water only D) Saliva
18. Anus _____ undigested food. A) Stores B) Absorbs C) Eliminates D) Digest
19. Ingestion occurs in the _____. A) Mouth B) Stomach C) Small intestine D) Large intestine
20. Digestion starts in the _____. A) Mouth B) Stomach C) Small intestine D) Large intestine
21. Amylase breaks down _____. A) Starch B) Protein C) Fat D) Minerals
22. Bolus is formed by the action of _____. A) Tongue B) Teeth C) Saliva D) Enzymes
23. Digestion in stomach mainly involves _____. A) Hydrochloric acid B) Saliva C) Bile D) Insulin
24. Digestion in duodenum involves _____. A) Bile and pancreatic juices B) Saliva only C) Hydrochloric acid only D) Insulin only
25. Absorption occurs in the _____. A) Small intestine B) Large intestine C) Stomach D) Mouth
26. Egestion is the removal of _____. A) Nutrients B) Undigested food C) Water D) Saliva
27. Balanced diet contains all _____. A) Nutrients B) Water only C) Carbohydrates only D) Proteins only
28. Body building foods provide _____. A) Protein B) Carbohydrates C) Vitamins D) Minerals

29. Energy giving foods provide _____. A) Carbohydrates and fats B) Proteins only C) Vitamins only D) Minerals only

30. Protective foods provide _____. A) Vitamins and minerals B) Protein C) Fat D) Water

31. Carbohydrates give _____. A) Energy B) Muscles C) Protection D) Water

32. Proteins are necessary for _____. A) Growth and repair B) Energy C) Digestion D) Water absorption

33. Fat soluble vitamins include _____. A) A, D, E, K B) B, C C) Iron, Calcium D) Phosphorus, Iodine

34. Water soluble vitamins include _____. A) B complex and C B) A, D C) E, K D) Calcium, Iron

35. Minerals are required in _____ quantities. A) Small B) Large C) Medium D) Unlimited

36. Calcium helps in _____. A) Building strong bones B) Digestion C) Respiration D) Circulation

37. Iron helps in _____ formation. A) Blood B) Bone C) Enzyme D) Water

38. Lipids provide _____. A) Energy B) Protein C) Minerals D) Vitamins

39. Water helps in _____. A) Regulating body temperature B) Building muscles C) Blood formation D) Vision

40. Kwashiorkor is caused by lack of _____. A) Protein B) Carbohydrate C) Fat D) Vitamins

41. Marasmus is caused by lack of _____. A) Protein and carbohydrate B) Vitamins only C) Minerals D) Water only

42. Goiter is caused by lack of _____. A) Iodine B) Calcium C) Iron D) Protein

43. Rickets is caused by lack of _____. A) Vitamin D, calcium, phosphorus B) Iron only C) Protein D) Water

44. Anaemia is caused by lack of _____. A) Iron B) Protein C) Fat D) Vitamin D

45. Balanced diet prevents _____. A) Nutritional deficiency diseases B) Sunburn C) Frostbite D) Drowning

46. Fruits and vegetables provide _____. A) Vitamins B) Protein C) Fat D) Carbohydrates

47. Fats and oils make skin _____. A) Shiny and healthy B) Rough C) Dry D) Weak

48. Insulin and glucagon are produced by _____. A) Pancreas B) Liver C) Stomach D) Salivary gland

49. Hydrochloric acid is secreted by _____. A) Stomach B) Liver C) Pancreas D) Gall bladder

50. Bile is stored in _____. A) Gall bladder B) Liver C) Stomach D) Pancreas

---

☑ B. 30 OPEN QUESTIONS

(Leave enough space to write answers)

1. Define digestion.

   .....

2. What is the digestive system?

   .....

3. Name the parts of the alimentary canal.

   .....

4. What is peristalsis?

   .....

5. Name three digestive glands.

   .....

6. State the function of the mouth in digestion.

   .....

7. List the types of human teeth.

   .....

8. What is the function of saliva?

   .....

9. State the function of the oesophagus.

   .....

10. What is the role of bile?

    .....

11. What does the stomach produce to kill germs?

    .....

12. Name two hormones produced by the pancreas.

    .....

13. State the main function of the small intestine.

    .....

14. What is the function of the large intestine?

    .....

15. Define absorption.

    .....

16. What is egestion?

    .....

17. List four stages of digestion.

    .....

18. What is a balanced diet?

    .....

19. Name three body building foods.

    .....

20. Give two energy giving foods.

    .....

21. List two protective foods.

    .....

22. Give two fat soluble vitamins.

    .....

23. Give two water soluble vitamins.

    .....

24. Name two minerals and their functions.

    .....

25. What are lipids used for in the body?

    .....

26. List two functions of water in the body.

    .....

27. What causes kwashiorkor?

    .....

28. How can marasmus be prevented?

    .....

29. What causes goiter and how can it be prevented?

    .....

30. Give an example of a balanced meal.

    .....

☑ D. 20 TRUE OR FALSE QUESTIONS

1. Digestion converts food into nutrients. _____
2. The digestive system does not include the liver. _____
3. Peristalsis moves food through the alimentary canal. _____
4. Salivary glands secrete saliva. _____
5. The stomach stores food temporarily. _____
6. Pancreas produces insulin and glucagon. _____

7. Most digestion occurs in the small intestine. _____
8. Absorption takes place in the large intestine. _____
9. Egestion is the elimination of undigested food. _____
10. A balanced diet contains only carbohydrates. _____
11. Body building foods provide protein. _____
12. Energy giving foods provide fats and carbohydrates. _____
13. Protective foods provide vitamins and minerals. _____
14. Lipids provide energy and healthy skin. _____
15. Water helps in digestion and nutrient absorption. _____
16. Kwashiorkor is caused by lack of carbohydrates. _____
17. Marasmus is caused by lack of protein and carbohydrate. _____
18. Rickets is caused by lack of vitamin D, calcium, and phosphorus. _____
19. Anaemia is caused by lack of iron. _____
20. Balanced diet prevents nutritional deficiency diseases. _____

☑ C. 10 MATCHING QUESTIONS

Column A	Column B
1. Mouth	A. Chewing food
2. Salivary gland	B. Secretes saliva
3. Stomach	C. Produces hydrochloric acid
4. Liver	D. Produces bile
5. Gall bladder	E. Stores bile
6. Pancreas	F. Produces pancreatic juice and hormones
7. Small intestine	G. Absorbs nutrients
8. Large intestine	H. Reabsorbs water
9. Rectum	I. Stores undigested food
10. Anus	J. Eliminates undigested food

☑ E. 20 CHOOSE FROM BRACKETS QUESTIONS

1. Digestion is the process of breaking down _____ (food / water).
2. Alimentary canal includes _____ (mouth / liver).
3. Peristalsis moves food through _____ (alimentary canal / blood).
4. Salivary glands produce _____ (saliva / bile).
5. Bile is produced by _____ (liver / pancreas).
6. Stomach produces _____ (hydrochloric acid / insulin).
7. Pancreas produces _____ (pancreatic juice and insulin / saliva).
8. Small intestine absorbs _____ (nutrients / water only).
9. Large intestine _____ water (reabsorbs / produces).
10. Egestion removes _____ (undigested food / nutrients).
11. Body building foods provide _____ (protein / fats).
12. Energy giving foods provide _____ (carbohydrates and fats / vitamins).
13. Protective foods provide _____ (vitamins and minerals / protein).
14. Fat soluble vitamins include _____ (A, D, E, K / B, C).
15. Water soluble vitamins include _____ (B complex and C / A, D).
16. Kwashiorkor is caused by lack of _____ (protein / iron).
17. Marasmus is caused by lack of _____ (protein and carbohydrate / fats only).
18. Goiter is caused by lack of _____ (iodine / calcium).
19. Rickets is caused by lack of _____ (vitamin D, calcium, phosphorus / iron).
20. Anaemia is caused by lack of _____ (iron / vitamin A).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Digestion is the process of breaking down _____.
2. Peristalsis is the movement of _____ through the alimentary canal.
3. Saliva moistens food and contains _____.
4. The stomach lining produces _____ to kill germs.
5. Bile helps in digestion of _____.
6. Absorption takes place in the _____.
7. Egestion is the removal of _____.
8. Body building foods provide _____.
9. Energy giving foods provide _____.
10. Protective foods provide _____.

UNIT 12

HUMAN DISEASES

12.0. Introduction

A disease is when something in the body goes wrong and stops working the way it should. Learning about diseases helps us understand how to stay healthy and how to help others feel better too.

12.1. Infectious diseases

a. definition

Infectious diseases (also called communicable diseases) are sicknesses caused by tiny germs. These germs can spread from one person to another by touching, sneezing, coughing, or sharing food and water.

Examples of infectious diseases include:

Respiratory infections caused by bacteria or viruses spread through air or droplets.

Examples: Tuberculosis (TB), pneumonia, common cold, influenza (Flu), COVID-19

Waterborne diseases caused by contaminated water or poor sanitation.

Examples: Cholera, typhoid fever, hepatitis A, dysentery

Foodborne diseases caused by contaminated or improperly cooked food.

Examples: Salmonella, E. coli infections

Vector-borne diseases transmitted by insects (vectors) like mosquitoes or ticks.

Examples: Malaria, yellow fever

Sexually transmitted infections (STIs) Spread through sexual contact.

Examples: HIV/AIDS, syphilis, gonorrhea

Zoonotic diseases which are transmitted from animals.

Example: Avian influenza, ebola

Skin infections: Examples: Fungal infections (ringworm),

Eye infections: Examples: Trachoma, conjunctivitis

b. Prevention of infectious diseases

There are different ways that can be used to prevent infectious diseases and stay healthy:

1. Wash your hands regularly with soap and clean water, especially before eating and after using the bathroom.
2. Cover your mouth and nose when coughing or sneezing, using a tissue or your elbow
3. Eat clean and safe food to avoid infectious sickness.

Keep a safe distance from others if you are sick and keep a safe distance from individuals

who are sick.

12.2. Non – infectious diseases

Identifying common non-infectious diseases

a. Definition

Non-infectious diseases (or non-communicable diseases) are illnesses that are not caused by germs (like bacteria or viruses) and cannot spread from one person to another.

Example of non-infectious diseases can be:

Heart diseases often linked to diet, physical inactivity, and smoking.

Examples: Hypertension (high blood pressure), coronary artery disease, stroke, heart failure

Cancers caused by abnormal cell growth and multiplication due to environment or lifestyle factors.

Examples: Breast cancer, lung cancer, prostate cancer, cervical cancer, skin cancer.

Body malfunction diseases

Examples: Diabetes, obesity

Non-infectious respiratory diseases caused by many factors, including allergies, environmental factors, smoking, or air pollution.

Examples: Asthma, bronchitis,

Mental diseases caused by psychological problems

Examples: Depression, anxiety disorders, epilepsy

Nutritional deficiency diseases caused by inadequate intake nutrients.

Examples: Anemia (iron deficiency), rickets (vitamin D deficiency), scurvy (vitamin C deficiency), goiter (iodine deficiency)

b. Prevention of non-infectious diseases

- You can help stop non-infectious diseases by following healthy habits:
- Eating healthy food like fruits and vegetables.
- Doing physical exercise regularly, like walking, running, or playing sports.
- Staying away from smoking and alcohol.
- Reducing stress by resting, relaxing, and staying calm
- Keeping the environment clean by not littering and keeping the air fresh.

12.3. Chronic diseases

a. definition

Chronic diseases are diseases that last a long time and usually get worse slowly. This means that some infectious and non-infectious diseases that last long can be considered as chronic diseases.

Examples of chronic diseases include:

Heart diseases Examples: Hypertension (high blood pressure), coronary artery disease, heart failure

Respiratory diseases Example: Asthma

Body malfunction diseases Examples: Diabetes, obesity

Musculoskeletal disorders Example: Chronic back pain

b. Prevention of chronic diseases

- You can help stop chronic (long-lasting) diseases by following healthy habits:
- Eat healthy foods like fruits and vegetables.
- Engage in daily physical activity through sports or exercise.
- Drink water instead of soda.
- Get enough sleep every night.
- Say no to smoking and drugs.
- Keep yourself clean and wash your hands often.
- Visit the doctor regularly for checkups.
- Talk about your feelings with someone you trust

Here's a **full assessment set** based on your **DISEASES (Infectious, Non-Infectious, Chronic)** content, formatted like your previous requests:

☑ A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — horizontal format)

1. A disease is when something in the body _____. A) Works properly B) Goes wrong C) Grows faster D) Produces energy
2. Infectious diseases are also called _____. A) Non-communicable B) Communicable C) Chronic D) Genetic
3. Infectious diseases are caused by _____. A) Lifestyle B) Tiny germs C) Stress D) Aging
4. Tuberculosis (TB) is an example of a _____ disease. A) Respiratory B) Foodborne C) Vector-borne D) Skin
5. Cholera is a _____ disease. A) Respiratory B) Waterborne C) Foodborne D) Zoonotic
6. Salmonella infection is _____. A) Vector-borne B) Foodborne C) Skin C) Eye disease
7. Malaria is transmitted by _____. A) Mosquitoes B) Contaminated food C) Touch D) Air
8. HIV/AIDS is an example of _____. A) Waterborne B) Sexually transmitted C) Zoonotic D) Respiratory
9. Ebola is a _____ disease. A) Skin B) Zoonotic C) Foodborne D) Eye
10. Ringworm is a _____ infection. A) Eye B) Skin C) Respiratory D) Waterborne
11. Trachoma affects the _____. A) Skin B) Lungs C) Eyes D) Stomach
12. Washing hands prevents _____. A) Non-infectious diseases B) Infectious diseases C) Chronic diseases D) Genetic disorders
13. Covering mouth while coughing prevents _____. A) Eye infections B) Infectious diseases C) Chronic diseases D) Nutritional deficiency
14. Non-infectious diseases are also called _____. A) Communicable B) Non-communicable C) Acute D) Vector-borne
15. Non-infectious diseases cannot _____. A) Last long B) Spread from person to person C) Affect children D) Affect adults
16. Hypertension is a _____ disease. A) Infectious B) Non-infectious C) Skin D) Eye
17. Stroke is a type of _____ disease. A) Respiratory B) Heart C) Eye D) Skin

18. Diabetes is a _____ disease. A) Infectious B) Non-infectious C) Respiratory D) Vector-borne
19. Asthma is a _____ disease. A) Non-infectious respiratory B) Infectious respiratory C) Eye D) Skin
20. Depression is a _____ disease. A) Infectious B) Mental C) Chronic D) Nutritional deficiency
21. Anemia is caused by lack of _____. A) Protein B) Iron C) Water D) Exercise
22. Rickets is caused by lack of _____. A) Vitamin D B) Vitamin C C) Calcium D) Iron
23. Scurvy is caused by lack of _____. A) Vitamin C B) Vitamin D C) Iodine D) Protein
24. Goiter is caused by lack of _____. A) Iodine B) Iron C) Calcium D) Vitamin D
25. Eating fruits and vegetables helps prevent _____. A) Infectious diseases B) Non-infectious diseases C) Chronic diseases D) All of the above
26. Physical exercise helps prevent _____. A) Infectious diseases B) Chronic diseases C) Genetic disorders D) Eye infections
27. Chronic diseases are _____. A) Short-term B) Long-lasting C) Always infectious D) Always non-infectious
28. Hypertension can be considered a _____ disease. A) Acute B) Chronic C) Infectious D) Eye
29. Obesity is a _____ disease. A) Infectious B) Chronic C) Skin D) Eye
30. Chronic diseases can be prevented by _____. A) Eating healthy B) Smoking C) Drinking soda D) Ignoring symptoms
31. Drinking water instead of soda helps prevent _____. A) Infectious diseases B) Chronic diseases C) Non-infectious diseases D) Eye infections
32. Getting enough sleep helps prevent _____. A) Infectious diseases B) Chronic diseases C) Eye infections D) Skin infections
33. Washing hands prevents _____. A) Eye infections B) Infectious diseases C) Chronic diseases D) Nutritional deficiencies
34. Visiting the doctor regularly helps prevent _____. A) Chronic diseases B) Eye infections C) Skin diseases D) Waterborne diseases
35. Talking about your feelings helps prevent _____. A) Mental diseases B) Respiratory diseases C) Heart diseases D) Eye diseases
36. COVID-19 is a _____ disease. A) Vector-borne B) Respiratory infectious C) Nutritional deficiency D) Chronic

37. Typhoid fever is a _____ disease. A) Waterborne infectious B) Non-infectious C) Chronic D) Mental
38. Syphilis is _____. A) Sexually transmitted B) Waterborne C) Foodborne D) Skin
39. Conjunctivitis is a _____ disease. A) Eye B) Skin C) Respiratory D) Chronic
40. Ebola is transmitted from _____. A) Mosquitoes B) Contaminated food C) Animals D) Humans only
41. Non-infectious respiratory diseases include _____. A) Asthma B) Tuberculosis C) Malaria D) Cholera
42. Lifestyle factors can cause _____. A) Non-infectious diseases B) Infectious diseases C) Eye infections D) Skin infections
43. Mental diseases include _____. A) Anxiety and depression B) Malaria C) Typhoid D) Ringworm
44. Nutritional deficiency diseases include _____. A) Goiter B) Malaria C) Tuberculosis D) Conjunctivitis
45. Smoking can cause _____. A) Non-infectious diseases B) Infectious diseases C) Eye infections D) Skin infections
46. Chronic diseases often get _____. A) Worse slowly B) Better quickly C) Cured by water D) Cured by handwashing
47. Daily physical activity prevents _____. A) Chronic diseases B) Eye infections C) Skin infections D) Infectious diseases
48. Eating unhealthy food can lead to _____ diseases. A) Non-infectious B) Infectious C) Eye D) Skin
49. Keeping the environment clean prevents _____. A) Non-infectious diseases B) Infectious diseases C) Chronic diseases D) Eye infections
50. Vaccination primarily helps prevent _____. A) Infectious diseases B) Non-infectious diseases C) Chronic diseases D) Mental diseases

---

☑ B. 30 OPEN QUESTIONS

1. Define disease.

   .....

2. What are infectious diseases?

   .....

3. List three examples of respiratory infectious diseases.

.....

4. Name two waterborne infectious diseases.

.....

5. Give two examples of foodborne diseases.

.....

6. What are vector-borne diseases? Give an example.

.....

7. Name two sexually transmitted infections (STIs).

.....

8. Give an example of a zoonotic disease.

.....

9. Name one skin infection and one eye infection.

.....

10. How can infectious diseases be prevented?

.....

11. Define non-infectious diseases.

.....

12. Give two examples of heart-related non-infectious diseases.

.....

13. Give two examples of cancers.

.....

14. Name two body malfunction diseases.

.....

15. Give two non-infectious respiratory diseases.

.....

16. Name two mental diseases.

.....

17. Give two nutritional deficiency diseases.

.....

18. How can non-infectious diseases be prevented?

.....

19. Define chronic diseases.

.....

20. Give two examples of chronic respiratory diseases.

.....

21. Name two chronic body malfunction diseases.

.....

22. Give one musculoskeletal disorder that is chronic.

.....

23. List three ways to prevent chronic diseases.

.....

24. How does physical exercise help prevent diseases?

.....

25. Why is drinking water important for disease prevention?

.....

26. How does sleep help prevent chronic diseases?

.....

27. What role does handwashing play in disease prevention?

.....

28. Why should people avoid smoking and drugs?

.....

29. How can talking about your feelings help prevent mental diseases?

.....

30. Name three healthy habits that help prevent chronic diseases.

.....

☑ C. 20 TRUE OR FALSE QUESTIONS

1. Infectious diseases are caused by germs. _____
2. Non-infectious diseases can spread from person to person. _____
3. Washing hands helps prevent infectious diseases. _____
4. Ebola is a zoonotic disease. _____
5. Malaria is a vector-borne disease. _____

6. Diabetes is an infectious disease. _____
7. Chronic diseases last a long time. _____
8. Mental diseases are always infectious. _____
9. Physical exercise prevents non-infectious diseases. _____
10. Drinking soda helps prevent chronic diseases. _____
11. COVID-19 is a respiratory infectious disease. _____
12. Typhoid is caused by contaminated water. _____
13. Rickets is caused by lack of vitamin C. _____
14. Smoking can contribute to chronic diseases. _____
15. Fruits and vegetables help prevent non-infectious diseases. _____
16. Anxiety and depression are mental diseases. _____
17. Heart failure is a non-infectious chronic disease. _____
18. Goiter is caused by iodine deficiency. _____
19. Vaccination helps prevent non-infectious diseases. _____
20. Keeping the environment clean can prevent non-infectious diseases. _____

☑ D. 10 MATCHING QUESTIONS

Column A	**Column B**
1. Tuberculosis	A. Respiratory infectious disease
2. Cholera	B. Sexually transmitted disease
3. Salmonella	C. Vector-borne disease
4. Malaria	D. Foodborne disease
5. HIV/AIDS	E. Waterborne disease
6. Ebola	F. Non-infectious body malfunction disease
7. Ringworm	G. Eye infection
8. Conjunctivitis	H. Skin infection
9. Hypertension	I. Non-infectious chronic disease
10. Diabetes	J. Zoonotic disease

☑ E. 20 CHOOSE FROM BRACKET QUESTIONS

1. Infectious diseases are caused by _____ (germs / lifestyle).
2. Non-infectious diseases cannot _____ (spread / last long).
3. Chronic diseases are _____ (short-term / long-lasting).
4. Malaria is transmitted by _____ (mosquitoes / contaminated food).

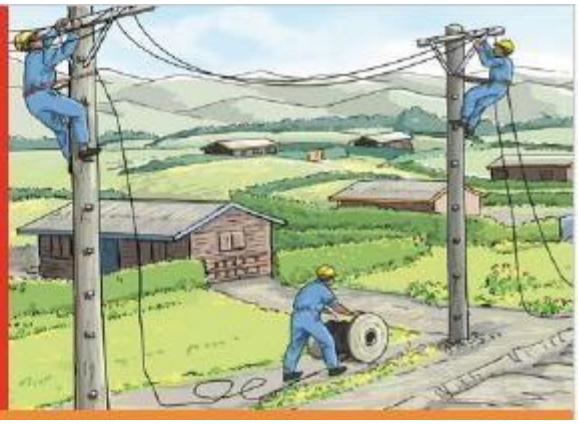
5. Cholera is a _____ disease (waterborne / respiratory).
6. Salmonella infection is _____ (foodborne / vector-borne).
7. HIV/AIDS is _____ (sexually transmitted / nutritional deficiency).
8. Ebola is transmitted from _____ (animals / water).
9. Rickets is caused by lack of _____ (vitamin D / iron).
10. Anemia is caused by lack of _____ (iron / vitamin D).
11. Goiter is caused by lack of _____ (iodine / calcium).
12. Depression is a _____ disease (mental / infectious).
13. Smoking can cause _____ diseases (non-infectious / infectious).
14. Fruits and vegetables prevent _____ diseases (non-infectious / infectious).
15. Drinking water prevents _____ diseases (chronic / infectious).
16. Chronic back pain is a _____ disorder (musculoskeletal / eye).
17. Handwashing prevents _____ diseases (infectious / non-infectious).
18. Obesity is a _____ disease (chronic / infectious).
19. Mental diseases include _____ (anxiety and depression / malaria).
20. Clean environment helps prevent _____ diseases (non-infectious / eye).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Infectious diseases are caused by _____.
2. Non-infectious diseases cannot _____ from person to person.
3. Chronic diseases are _____ and usually get worse slowly.
4. Malaria is transmitted by _____.
5. HIV/AIDS is spread through _____.
6. Drinking water helps prevent _____ diseases.
7. Fruits and vegetables help prevent _____ diseases.
8. Physical exercise prevents _____ diseases.
9. Handwashing helps prevent _____ diseases.
10. Mental diseases can be prevented by _____ and talking about your feelings.

UNIT 13

ELECTRICITY



13.0.INTRODUCTION

Electricity is another form of energy. It is generated from various sources. It also has a wide range of uses. During installation and use of electricity various tools and materials are used.
Electricity: is the form of energy. It is generated from different sources.

13.1 Importance of electricity

i) It is used to power radios, televisions, computers and phones. **ii)** It is used to light homes, schools and other important places. **iii)** It is used to power vehicles and machines. **iv)** It is used for heating in ovens and micro waves.

v) It is used for air conditioning and refrigeration.

vi) It is used to press clothes (ironing) and to dry clothes in dry cleaning shops. **vii)** It is used to solder (press together) metals. **viii)** It is used in factories to produce various.

13.2 Production (sources) of electricity

a) **Bicycle dynamo:** producing electricity by changing mechanical energy into electrical energy. It done by rotating a wheel of bicycle.

b) **Solar panel:** producing electricity by changing light energy from the sun into electrical energy. The electricity produced can be stored in a battery (storage unit). It is then used when there is no sunlight especially at night.

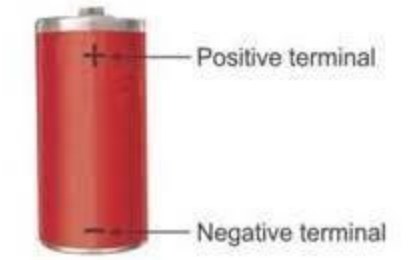
c) **Wind power:** producing electricity by changing wind energy into electrical energy.

d) **Hydro power:** producing by changing energy of running water to generate electricity.

e) **Thermal (heat) power:** producing electricity by changing heat energy into electrical energy.

f) **Dry cell:** producing electricity by changing chemical energy into electrical energy. Dry cell has two terminals: **positive (+ve)** and **negative (-ve)** terminal.

Dry cell



It produces a force which pushes electricity through the circuit. The pushing power is called **voltage (V).** The unit of voltage is called **volts** (v). Each cell has 1.5 V.

Types of dry cells

Primary cells: are the cells that cannot be recharged.

Secondary cells: are the cells that can be recharged.

N.B: Dry cells store **chemical energy** and produce **electrical energy**. **13.3 Common tools and materials used in electricity a) Tools used in electricity**

i) **A plier:** is used to cut, hold or tighten wires.

ii) **Screw driver:** is used to loosen or tighten screws. **iii) Wire stripper:** is used to remove the plastic cover from electric wire. **iv) Tester:** is used to check whether electricity is flowing through a conductor or not.

v) **Rubber gloves:** prevent us from electric shocks.

b) Materials used in electricity

1) **An electric meter:** is used to measure the consumption of electricity in a building.

2) **Fuse:** it breaks the circuit if electricity exceeds the safe limit. It breaks electricity by melts it when there is too much current flowing through a circuit. When the fuse melts, the circuit is broken. By breaking the circuit, electrical damage is prevented.

3) **A plug:** is used to connect appliances to the sockets. Materials used in electricity are either conductors or insulators.

Conductors: are used to make conducting wires, contacts in switches and fuses, plugs and sockets.

Example of conductors of electricity: silver,

aluminum, copper **N.B:** The best conductor of

electricity is **silver**.

Insulators: are used to insulate electric cables and prevent short circuiting.

A plug usually has **three wires** connected in a cable. These include the live, neutral and earth wires.

i) **A live wire (L):** is colored **red** or **brown**. It carries electricity from the electricity supply point (mains) to an appliance.

ii) **The neutral wire (N):** is colored **black** or **blue**. It carries electricity from the appliance and back to the electricity supply (mains). This help to complete the circuit.

iii) **The earth wire (E):** is colored **green** or **yellow**. It conducts away excess current to the earth (underground). This prevents electric shock.

13.4 Components of simple electric circuit

Electric circuit: is a path through which electricity flows.

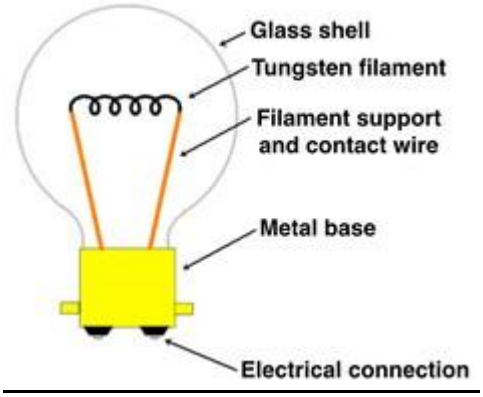
i) **Dry cell:** is a source of electricity. It produces electricity from the chemicals stored inside it.

ii) **Switch:** it either breaks or complete the circuit. **iii) Connecting wires:** It provides path to electricity to complete the circuit.

iv) **Bulb:** it gives light when the circuit is complete. It has two forms of energy: **light** and **heat energy**.

N.B: A bulb has very thin metal in its center called **filament**.
This filament is coiled in order to increase resistance. This filament is made from **tungsten** and has the mineral called **wolfram**. A bulb also has **nitrogen** and **argon** gas which prevent the filament.

Parts of bulb



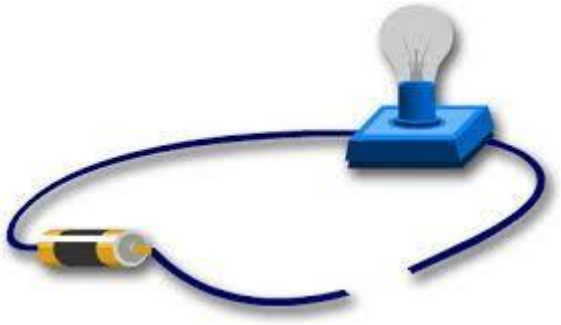
Controlling electric circuit

An electric circuit can be controlled by switch. The switches help to control the flow of electric current by switching it on or off.

i) When you **switch on**, you **complete the circuit**.

ii) When you **switch off**, you **break the circuit**.

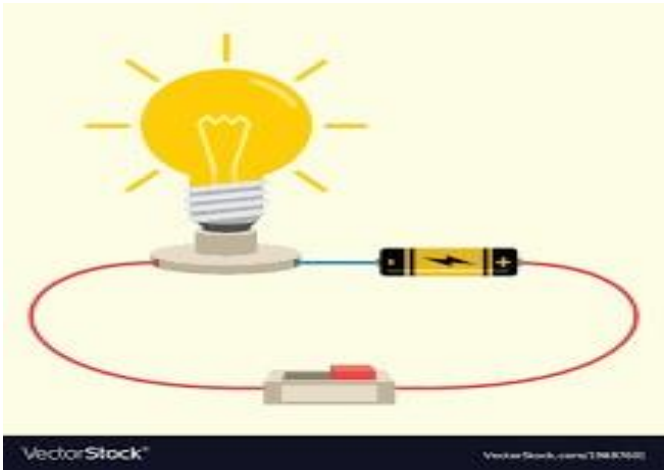
OBSERVATIONS SET UP: A



Question: Does the bulb light in set up A light?

Answer: The bulb does not light when you disconnect the switch end from the dry cell. This is also because the circuit is incomplete.

SET UP: B

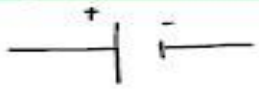
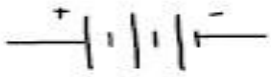
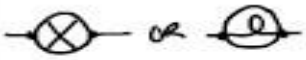
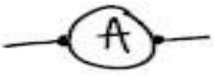
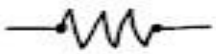


Question: Does the bulb light in set up B light?

Answer: The bulb light when you connect the switch to the dry cell. This is also because the circuit is complete.

Common materials used in electric circuit functions and their symbols.

Electric Schematic Circuit Symbols

Symbol	Function	Description
	Cell	• Source of current electricity
	Battery	• Two or more cells joined together. • This battery is made of three cells.
	Light Bulb	• Converts electrical energy into light & thermal energy
	Motor	• Converts electrical energy into mechanical energy
	Switch • Knife or button	• Can be opened to stop a current or closed to allow current to flow.
	Fuse	• Prevents too much current from flowing through a circuit • Will break during a surge and protect the circuit
	Ammeter	• Measures current (amperage) o Flow of electrons
	Voltmeter	• Measure voltage (volts) o Potential energy
	Resistor	• A device the impedes (slows) the flow of electrons
	Ground Connection	• Connects the circuit to the earth

13.5 Dangers of electricity

When mishandled electricity can cause dangers such as:

i) Burns

ii) Electrocution **iii)** Fires **iv)** Deaths

v) Destruction of electrical appliances.

13.6 Ways of preventing the dangers of electricity

i) Avoiding inserting nails and other metallic objects into sockets.

ii) Avoiding touching electrical appliances with wet hands. **iii)** Avoiding repairing electrical appliances while plugged. **iv)** Avoiding operating electrical appliances with damaged cables (wires).

.

HERE'S A **FULL ASSESSMENT SET** BASED ON YOUR **ELECTRICITY** CONTENT, FORMATTED LIKE YOUR

✅ A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — horizontal format)

1. Electricity is a form of _____. A) Matter B) Energy C) Water D) Force
2. Electricity is used to power _____. A) Radios B) Computers C) Phones D) All of the above
3. Electricity can be used to _____ homes and schools. A) Heat B) Light C) Paint D) Break
4. A bicycle dynamo produces electricity by converting _____. A) Electrical to mechanical B) Mechanical to electrical C) Light to sound D) Chemical to thermal
5. Solar panels convert _____ into electricity. A) Sound energy B) Light energy C) Heat energy D) Chemical energy
6. Wind energy is converted into electricity using _____. A) Water B) Turbines C) Dry cells D) Switches
7. Hydro power generates electricity from _____. A) Sunlight B) Wind C) Running water D) Chemical reactions
8. Thermal power generates electricity from _____. A) Heat B) Sunlight C) Wind D) Water
9. A dry cell converts _____ into electricity. A) Chemical energy B) Mechanical energy C) Light energy D) Thermal energy
10. A dry cell has _____ terminals. A) One B) Two C) Three D) Four
11. Voltage is the _____. A) Resistance B) Flow of electrons C) Pushing force D) Energy consumed
12. Primary cells _____. A) Can be recharged B) Cannot be recharged C) Produce light D) Measure voltage
13. Secondary cells _____. A) Can be recharged B) Cannot be recharged C) Measure energy D) Produce heat
14. A plier is used to _____. A) Measure electricity B) Cut, hold, or tighten wires C) Produce electricity D) Insulate wires
15. A screw driver is used to _____. A) Connect wires B) Loosen or tighten screws C) Produce voltage D) Measure resistance

16. A wire stripper is used to _____. A) Remove the plastic cover from a wire B) Check current C) Connect a circuit D) Switch on electricity
17. A tester is used to _____. A) Cut wires B) Check if electricity flows C) Increase voltage D) Reduce resistance
18. Rubber gloves are used to _____. A) Cut wires B) Measure current C) Prevent electric shocks D) Connect wires
19. An electric meter measures _____. A) Voltage B) Electricity consumption C) Resistance D) Energy in joules
20. A fuse _____. A) Stores energy B) Produces electricity C) Breaks circuit if current is too high D) Lights a bulb
21. A plug connects _____. A) Switches B) Appliances to sockets C) Mains to battery D) Bulb to filament
22. Conductors _____. A) Block electricity B) Allow electricity to flow C) Store energy D) Insulate wires
23. Best conductor of electricity is _____. A) Copper B) Aluminum C) Silver D) Iron
24. Insulators _____. A) Allow electricity to flow B) Store energy C) Prevent electricity from flowing D) Produce voltage
25. A live wire is colored _____. A) Blue B) Red or brown C) Green D) Black
26. The neutral wire is colored _____. A) Blue or black B) Red C) Green D) Yellow
27. The earth wire is colored _____. A) Green or yellow B) Blue C) Red D) Brown
28. A live wire carries electricity _____. A) From appliance to mains B) From mains to appliance C) To the earth D) To the fuse
29. The neutral wire carries electricity _____. A) To appliance B) From appliance back to mains C) To earth D) Nowhere
30. The earth wire _____. A) Provides light B) Prevents electric shock C) Produces voltage D) Measures current
31. An electric circuit is a _____. A) Source of voltage B) Path for electricity C) Tool D) Battery
32. Switches _____. A) Only produce electricity B) Complete or break circuit C) Measure voltage D) Store energy

33. A bulb produces _____. A) Heat only B) Light and heat C) Electricity D) Mechanical energy

34. Filament of a bulb is made from _____. A) Aluminum B) Tungsten C) Copper D) Silver

35. Nitrogen and argon gases in a bulb _____. A) Produce heat B) Prevent filament from burning C) Conduct electricity D) Store energy

36. Circuit is complete when switch is _____. A) Off B) On C) Removed D) Broken

37. Circuit is incomplete when switch is _____. A) On B) Off C) Connected D) Closed

38. Electricity can cause _____ if mishandled. A) Burns B) Electrocution C) Fires D) All of the above

39. Avoid inserting nails in sockets to prevent _____. A) Voltage increase B) Shock or fire C) Bulb lighting D) Fuse melting

40. Avoid touching appliances with wet hands to prevent _____. A) Shock B) Fuse melting C) Lighting D) Switch failure

41. Avoid repairing plugged appliances to prevent _____. A) Fire B) Shock C) Both A and B D) None

42. Damaged cables should not be used because they may cause _____. A) Short circuit B) Electric shock C) Fire D) All of the above

43. Dry cell stores _____. A) Electrical energy B) Chemical energy C) Both A and B D) Mechanical energy

44. Solar panels can store electricity in _____. A) Fuse B) Battery C) Bulb D) Cable

45. Thermal power uses _____ energy to produce electricity. A) Light B) Heat C) Chemical D) Mechanical

46. Hydro power uses _____ to generate electricity. A) Wind B) Water C) Sunlight D) Chemical energy

47. Wind power converts _____ into electrical energy. A) Heat B) Wind C) Light D) Sound

48. The filament in a bulb is coiled to _____. A) Increase brightness B) Increase resistance C) Reduce heat D) Store energy

49. Tungsten in filament is also called _____. A) Wolfram B) Copper C) Iron D) Silver

50. A bulb lights when _____. A) Circuit is complete B) Circuit is broken C) Switch off D) Dry cell disconnected

☑ B. 30 OPEN QUESTIONS

1. Define electricity.

   .....

2. List three uses of electricity in homes.

   .....

3. How does a bicycle dynamo produce electricity?

   .....

4. How does a solar panel produce electricity?

   .....

5. Explain how wind energy is converted to electricity.

   .....

6. How is hydro power electricity generated?

   .....

7. How does thermal power produce electricity?

   .....

8. What is a dry cell?

   .....

9. State the voltage of a dry cell.

   .....

10. Differentiate between primary and secondary cells.

    .....

11. List two tools used in electricity and their functions.

    .....

12. Name three materials used in electricity.

    .....

13. What is the function of a fuse?

    .....

14. What is a conductor of electricity? Give one example.

    .....

15. What is an insulator? Give one example.

.....

16. Name the three wires in a plug and their colors.

.....

17. What is the function of the live wire?

.....

18. What is the function of the neutral wire?

.....

19. What is the function of the earth wire?

.....

20. Define an electric circuit.

.....

21. State the components of a simple electric circuit.

.....

22. How does a switch control an electric circuit?

.....

23. What is a filament in a bulb made of?

.....

24. Why are nitrogen and argon gases used in a bulb?

.....

25. Name four dangers of electricity.

.....

26. List four ways to prevent the dangers of electricity.

.....

27. What is the pushing force in a circuit called?

.....

28. How can you prevent electric shock while working with electricity?

.....

29. How does a bulb produce light?

.....

30. Explain why the filament in a bulb is coiled.

.....

☑ C. 10 MATCHING QUESTIONS

Column A	Column B
1. Dry cell	A. Completes or breaks circuit
2. Switch	B. Source of electrical energy
3. Connecting wires	C. Produces light and heat
4. Bulb	D. Provides path for electricity
5. Plier	E. Removes plastic from wires
6. Screw driver	F. Loosens or tightens screws
7. Wire stripper	G. Cuts, holds, or tightens wires
8. Tester	H. Checks if electricity flows
9. Fuse	I Measures electricity consumption.
10. Electric meter	J. Breaks circuit if current too high

☑ D. 20 TRUE OR FALSE QUESTIONS

1. Electricity is a form of energy. _____
2. Solar panels convert light energy into electrical energy. _____
3. A dry cell produces electricity from mechanical energy. _____
4. The voltage of a dry cell is 1.5V. _____
5. Primary cells can be recharged. _____
6. Secondary cells can be recharged. _____
7. A plier is used to check electricity. _____
8. Rubber gloves prevent electric shock. _____
9. A fuse melts when current is too high. _____
10. The live wire is colored green. _____
11. The neutral wire completes the circuit. _____

12. The earth wire prevents electric shock. _____
13. Filament of a bulb is made of tungsten. _____
14. Nitrogen and argon in a bulb prevent filament burning. _____
15. The filament in a bulb is coiled to reduce resistance. _____
16. Electricity can cause fires if mishandled. _____
17. Damaged cables are safe to use. _____
18. A tester is used to measure consumption. _____
19. Hydro power uses running water to generate electricity. _____
20. Circuit is complete when switch is off. _____

☑ E. 20 CHOOSE FROM BRACKET QUESTIONS

1. Electricity is a form of _____ (energy / water).
2. Solar panels convert _____ energy into electrical energy (light / heat).
3. Wind turbines convert _____ energy (wind / water).
4. Hydro power generates electricity from _____ (running water / chemical).
5. Thermal power uses _____ energy to produce electricity (heat / light).
6. A dry cell converts _____ energy (chemical / mechanical).
7. Primary cells _____ be recharged (can / cannot).
8. Secondary cells _____ be recharged (can / cannot).
9. Conductors _____ electricity (allow / block).
10. Insulators _____ electricity (allow / prevent).
11. Live wire carries electricity from _____ (mains / appliance).
12. Neutral wire carries electricity from _____ (appliance / mains).
13. Earth wire prevents _____ (electric shock / lighting).
14. A switch can _____ a circuit (complete or break / melt).
15. A bulb produces _____ (light and heat / sound).
16. Filament of a bulb is made of _____ (tungsten / copper).

17. Fuse breaks circuit when current is _____ (too high / too low).
18. Electric meter measures _____ (consumption / voltage).
19. Rubber gloves prevent _____ (shock / heat).
20. Damaged cables may cause _____ (fire / cooling).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Electricity is a form of _____.
2. Solar panels produce electricity by converting _____ energy.
3. A dry cell produces electricity from _____ energy.
4. The pushing force in a circuit is called _____.
5. Primary cells _____ be recharged.
6. A fuse protects a circuit by _____.
7. Conductors _____ electricity, while insulators _____ it.
8. A bulb produces _____ when circuit is complete.
9. The earth wire prevents _____.
10. Switches control electricity by _____ or _____ a circuit.

UNIT 14

MATERIALS AND STATE OF MATTERS

14.0. INTRODUCTION

Materials are things we see and use every day. These things can be solids (like wood and metal), liquids (like water and oil) or gases (like air). Materials are all around us and help to do our different activities.

Materials: are the things which around us.

16.1 Classification of materials

Natural materials can be classified broadly into two:

a) **Metals**
b) **Non-metals.**

a) Non-metals: is material that lacks metallic characteristics.

Properties of non-metals

i) They are poor conductors of both heat and electricity.
ii) They are soft and break easily. **iii)** Most have a dull appearance.

Examples of non-metals: bricks, paper, plastics, wood and glass.

b) Metals: is a material that is typically hard and shiny. In nature metals are found on or in the earth crust.

Properties of metals

i) They are shiny.
ii) They are sonorous: most make bell-like sound when hit. **iii)** They good conductor of both heat and electricity.

Examples of metals: aluminium, zinc, iron, tin, copper, lead, silver and gold.

16.2 Uses of common metals

i) **Iron:** is used to make roofing materials like hoes, shovels, screws, nails, iron sheets….

ii) **Copper, silver and bronze:** are used to make coins and medals. **N.B: Copper** is used to make electric wires and water pipes.

iii) **Gold and silver:** are used to make jewelry and other decoration items. **iv) Tin:** is used to make cans and tin lamps.

v) **Aluminium:** is used to make saucepans.

16.3 Maintenance of metals

i) **Painting:** is the process of coating the iron surface with paint.

ii) **Galvanization:** is the process of applying protective zinc coating to steel or iron. **iii) Store in dry place:** all metallic tools and equipment need to be stored in a dry safe place. **iv) Oiling:** moving or rotating metallic parts should be oiled to reduce friction.

16.4 Calculation of density

Density $\frac{Mass}{Volume}$ = $\frac{M}{V}$ **D** = $\frac{M}{V}$

Density: is the mass of substance per unit volume.

Mass: is the quantity of matter in a body.

Volume: is the amount of space that is occupied by a container.

N.B: i) The standard unit of density is grams per cubic centimeter **(g/cm^3)** (g/cc) or kilograms per cubic meter (**kg/m^3**).

iii) Instrument used to measure density is **densitometer**.

Example: A metallic block has a mass of 500g and volume of $50cm^3$ Calculate the density of the block. **Solution**

Given: Mass = 500g **Question:** Density =?

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

Volume = $50cm^3$

Calculation: $D = \frac{M}{V} = \frac{500g}{50cm3} = 10g/cm^3$

Measuring the volume of irregular materials

Volume of irregular materials is obtained by using **displacement method.**

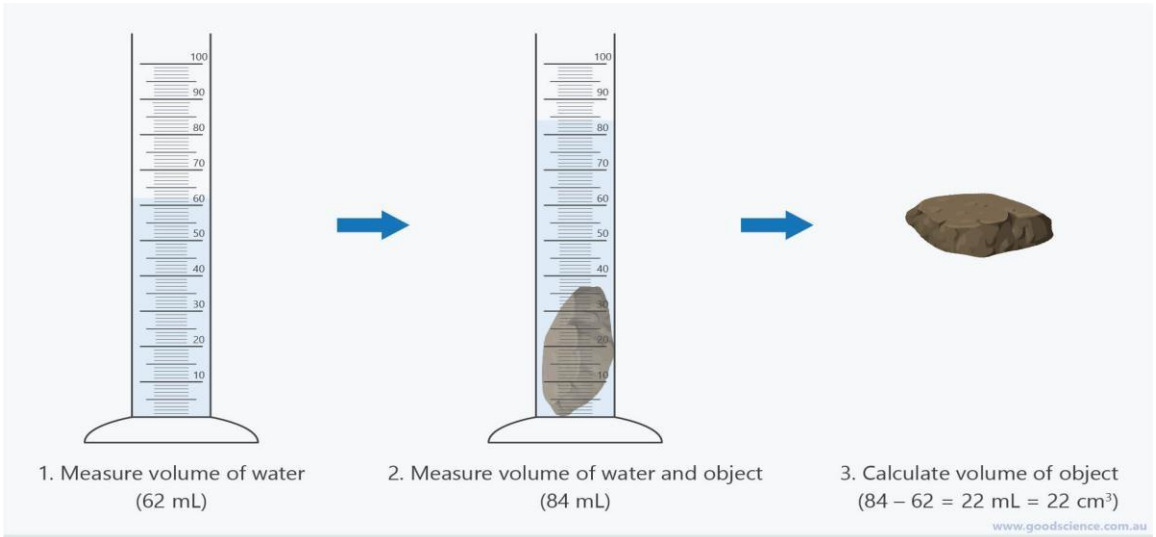
a) **Materials needed:** water, measuring cylinder and stone.

b) **What to do:**

i) Collect water in a measuring cylinder.

ii) Note the initial (first) level of water in the cylinder. Record it as **initial volume of water. iii)** Tie a piece of thread around a stone. **iv)** Lower the stone gently into the measuring cylinder or container.

v) Note the final (last) level of water in the cylinder. Record it as **final volume of water.**



Measuring Volume of Irregular Solids

Volume of stone = final volume- initial volume

V of stone = $V_2 - V_1$

Example: A piece of stone weighs 90g. When put in a measuring cylinder, the water level rose from $48cm^3$ mark to $78cm^3$ mark. Find the density of the stone.

Solution

Given: Mass = 90g **Question:** Density =? **Formula:** $D = \frac{M}{V}$

Volume: V1= 48cm^3

V2= 78 cm^3

V of stone = V_2 - V_1 = 78 cm^3 - 48cm^3 = 30cm^3

D = $\frac{M}{V} = \frac{90g}{30cm3}$= 3g/cm^3

16.5 Relative density

Relative density: is the ratio between the density of substance to the density of a given reference material.

Normally, the reference material is **the density of pure water**.

Relative density = $\frac{density\ of\ a\ substance}{density\ of\ water}$

N.B: **i)** Instrument used to measure relative density is called **hydrometer**.

ii) The density of water is 1g/cm^3 or 1kg/m^3.

Example: the density of kerosene is 0.8g/cm^3. If the density of water is 1g/cm^3 , calculate the relative density of kerosene.

Solution

Relative density = $\frac{density\ of\ a\ substance}{density\ of\ water} = \frac{0.8g/cm3}{1g/cm3} = 0.8$

Floating and sinking

i) **Floating:** to remain on the surface of water. The objects which **float** on water surface are **less dense** than water.

ii) **Sinking:** To go down below the surface of water. To become submerged. The objects which **sink** are **denser** than water.

16.6 Application of relative density

The following are some real life applications of relative density:

i) Making the ship hallow reduces its density which help it to float.

ii) It is used to determine the purity of some substances. **Ex: lactometer** is used to measure density of milk to find out if it is pure or water has been added.

iii) The knowledge of relative density is applied to determine the mineral content in a rock. **iv)** It is considered during the design of swimming and diving equipment.

v) Materials used for building the parts of aeroplanes should have a low density. A good example of such material is aluminium.

14.6. Matter and its states

All the things in the pictures above are **examples of matter**. Therefore, anything that occupies space and has mass is referred to as **matter**.

Matter is anything that occupies **space, has mass,** or **weight**. Matter is found in three states, that is **solids**, **liquids** and **gases**.

Matter is anything that takes up space and can be weighed. In other words, matter has volume and mas. Therefore, everything around us such as air, water, schoolbag, houses, trees, stones, even people etc., is made of matter.

Each state of matter has its properties, and these properties are the ones that differentiate them. **Properties of the three states of matter**

Solids

Have a **fixed shape** and **fixed volume**

Particles are **tightly packed** and only **vibrate in place**
Do not flow and are **not easily compressed**

.Liquids

Have **no fixed shape** (take the shape of the container)
. Have a **fixed volume**
. Particles are **close together** but can **slide past each other**
. **Can flow** but are **not easily compressed**

Gases

Have **no fixed shape** or **volume** (They fill the container)
Particles are **far apart** and move **quickly in all directions**
Can flow and are **easily compressed**

14.8. Change of state in water

Practice on boiling water

1. Do the same as Umutoni by putting some water in the casserole with the lid. Heat the water for some time. What happens to the water and the lid when it is boiling?

2. Allow the water to boil for some time. Remove the lid and observe the level of the water. What can you see?

Matter can change from one state to another when **heat is added or removed**. Water is a good example of a substance which easily undergoes those three changes.

1. **Melting:** Change from **Solid** to **Liquid**. Heat is **added** (Example: ice melts to water)
2. **Freezing:** Change from **Liquid to Solid**. Heat is **removed** (Example: water freezes to ice)
3. **Evaporation / Boiling:** Change from **Liquid** to **Gas**. Heat is **added** (Example: water boils to steam, when using sun light to dry clothes after washing)
4. **Condensation:** Change from **Gas** to **Liquid**. Heat is **removed** (Example: steam becomes water, dew forming on grass in the eary morning)

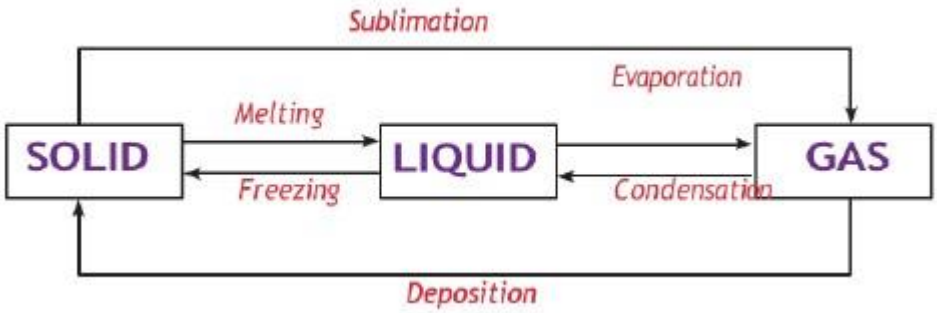
5. **Sublimation:** Change from **Solid** to **Gas**. Heat is **added** (Example: dry ice becomes gas like fog)
6. **Deposition:** Change from **Gas** to **Solid**. Heat is **removed** (Example: frost forming from water vapour)

These changes are **physical changes** meaning that the substance stays the same but changes **state**. The boling point temperature of water is 100_oc while its melting point is 0_oc.

Example: Water vapour changing into snow, this happens inside the freezers at the sides or tops of freezers.

Note: Matter either losses or absorb energy when it changes from one state to another.

These transformations can be summarized as shown in the following diagram.



14.9. Changes in states of water in the water cycle

Processes A, B and C lead to formation of rain during the water cycle. Process A is evaporation of water vapour from water bodies.

Process **B** is **transpiration**. This is the process by which plants lose their water in form of water vapour to the atmosphere.

Process **C** is **Condensation**. This is the process where invisible water vapour changes into visible heavy clouds that leads to formation of rain. The rain droplets form **clouds** which later **precipitate** and reaches to the earth's surface as **rain**.

Precipitation means that the clouds change into water.

Summary:

Water in the water cycle changes between three states: **solid**, **liquid**, and **gas**. These changes happen through different processes:

1. **Evaporation**: Water from rivers, lakes, and oceans changes from **liquid** to **gas** (water vapor) when heated by the sun.
2. **Condensation**: Water vapor cools down in the air and changes from **gas** to **liquid**, forming clouds.
3. **Precipitation**: When water droplets in clouds become heavy, they fall as rain, snow, or hail (liquid or solid).
4. **Freezing**: Water changes from **liquid** to **solid** when it gets very cold (like ice or snow).
5. **Melting**: Ice or snow changes back to **liquid** when warmed.
6. **Sublimation** (less common but important): Ice can change directly from **solid** to **gas** without becoming liquid.

14.10. Transformation of states of matter

The word 'transformation' refers to changing something completely from one state to another.

Some matter can be transformed from solid state to gaseous state directly without undergoing liquid state, this is called **sublimation**. **Example:** solid carbon dioxide into carbon dioxide gas, and when ice turns directly into fog (igihu).
When a gas transforms into a solid without going through the liquid state, it is called **deposition**.
When naphthalene is heated, it changes to liquid at 80°C. Further heating leads to formation of a gas at 140°C. This is called **evaporation, for example**: When using sunlight to dry school uniforms after washing.
The vapour when cooled changes back to liquid naphthalene. This is **condensation,** for example: Dew forming on grass in the early morning or on cold soda. When liquid naphthalene is cooled, it changes back to solid. This is known as **freezing**, **for example**: When you want your food to keep being fresh by putting them in the refrigerator.

HERE'S A **FULL ASSESSMENT SET** BASED ON YOUR **MATERIALS & STATES OF MATTER** CONTENT.

✅ **A. 50 MULTIPLE CHOICE QUESTIONS (MCQs — horizontal format)**

1. Materials can be _____. A) Solids B) Liquids C) Gases D) All of the above
2. Non-metals are generally _____. A) Good conductors B) Poor conductors C) Shiny D) Sonorous
3. Which of the following is a non-metal? A) Copper B) Wood C) Iron D) Silver
4. Metals are usually _____. A) Soft B) Shiny C) Brittle D) Dull
5. Which of these is a metal? A) Glass B) Tin C) Plastic D) Paper
6. Metals are _____ conductors of heat and electricity. A) Poor B) Good C) None D) Sometimes
7. Non-metals _____ easily. A) Bend B) Break C) Conduct D) Shine

8. Iron is used to make _____. A) Jewelry B) Nails and iron sheets C) Coins D) Tin lamps
9. Copper is used to make _____. A) Roofing B) Coins C) Electric wires D) Spoons
10. Gold is commonly used for _____. A) Cans B) Jewelry C) Water pipes D) Electric wires
11. Tin is used to make _____. A) Coins B) Tin lamps C) Jewelry D) Shoes
12. Aluminium is used to make _____. A) Saucepan B) Roofing C) Nails D) Jewelry
13. Painting helps in the maintenance of metals by _____. A) Reducing shine B) Protecting surface C) Increasing density D) Reducing mass
14. Galvanization protects metals by applying _____. A) Copper B) Zinc C) Paint D) Oil
15. Oiling metallic parts reduces _____. A) Mass B) Density C) Friction D) Hardness
16. Density is calculated as _____. A) Volume ÷ Mass B) Mass ÷ Volume C) Mass × Volume D) Volume × Mass
17. Standard unit of density is _____. A) kg/m^2 B) g/cm^3 C) kg/cm^2 D) m^3/kg
18. A densitometer is used to measure _____. A) Mass B) Volume C) Density D) Weight
19. Volume of irregular objects can be measured using _____. A) Ruler B) Measuring cylinder C) Balance D) Thermometer
20. Relative density is the ratio of _____. A) Mass to volume B) Density of substance to density of reference material C) Mass to weight D) Volume to mass
21. Hydrometer is used to measure _____. A) Mass B) Relative density C) Volume D) Weight
22. An object floats in water if its density is _____. A) Greater than water B) Equal to water C) Less than water D) Infinite
23. An object sinks in water if its density is _____. A) Less than water B) Equal to water C) Greater than water D) Zero
24. Matter is anything that _____. A) Occupies space B) Has mass C) Both A and B D) Neither A nor B
25. Solids have _____ shape and volume. A) Fixed B) Variable C) Only shape D) Only volume
26. Particles in solids _____. A) Flow B) Vibrate in place C) Move freely D) Compress easily
27. Liquids take the shape of their _____. A) Own B) Container C) Neighboring object D) Gas
28. Liquids have _____ volume. A) Fixed B) Variable C) None D) Infinite
29. Particles in liquids _____. A) Are far apart B) Slide past each other C) Vibrate in place D) Cannot move
30. Gases have _____ shape and volume. A) Fixed B) Variable C) Only shape D) Only volume
31. Particles in gases _____. A) Are tightly packed B) Move quickly in all directions C) Do not move D) Slide past each other
32. Boiling is a change from _____. A) Solid to liquid B) Liquid to gas C) Gas to liquid D) Liquid to solid
33. Freezing is a change from _____. A) Liquid to solid B) Solid to liquid C) Gas to liquid D) Solid to gas

34. Melting is a change from _____. A) Liquid to solid B) Solid to liquid C) Gas to liquid D) Liquid to gas

35. Evaporation occurs when _____.
A) Heat is removed B) Heat is added C) Pressure increases D) Mass decreases

36. Condensation occurs when _____.
A) Gas turns to liquid B) Liquid turns to gas C) Solid turns to liquid D) Solid turns to gas

37. Sublimation is a change from _____. A) Solid to gas B) Liquid to gas C) Gas to liquid D) Liquid to solid

38. Deposition is a change from _____. A) Gas to solid B) Solid to gas C) Liquid to gas D) Liquid to solid

39. The boiling point of water is _____. A) 0°C B) 50°C C) 100°C D) 212°C

40. The melting point of water is _____. A) 0°C B) 50°C C) 100°C D) 212°C

41. During water cycle, process A (evaporation) changes water from _____ to _____.
A) Gas to liquid B) Liquid to gas C) Solid to liquid D) Solid to gas

42. Transpiration is the process by which _____. A) Water evaporates from land B) Plants release water vapor C) Clouds form D) Rain falls

43. Condensation in water cycle forms _____. A) Snow B) Clouds C) Evaporation D) Sunlight

44. Precipitation occurs when _____. A) Water evaporates B) Clouds form C) Water droplets fall from clouds D) Ice melts

45. Ice melts to water during _____. A) Freezing B) Melting C) Evaporation D) Condensation

46. Water freezes to ice during _____. A) Freezing B) Melting C) Boiling D) Condensation

47. Ice can change directly to gas during _____. A) Melting B) Freezing C) Sublimation D) Deposition

48. Gas can change directly to solid during _____. A) Sublimation B) Deposition C) Evaporation D) Melting

49. Matter absorbs or loses _____ during state changes. A) Mass B) Energy C) Volume D) Shape

50. Naphthalene changes from solid to liquid at _____°C. A) 80 B) 100 C) 140 D) 0

☑ B. 30 OPEN QUESTIONS

1. Define material.
.....

2. Give two examples of non-metals
.....

3. Give two examples of metals.
.....

4. State two properties of metals.
.....

5. State two properties of non-metals.

   .....

6. List three uses of iron.

   .....

7. What is the use of copper?

   .....

8. Give one use of gold and silver.

   .....

9. List two methods to maintain metals.

   .....

10. Define density.

    .....

11. Write the formula for density.

    .....

12. What is the unit of density?

    .....

13. Explain how to measure volume of an irregular object.

    .....

14. Calculate density if mass = 200g, volume = 50cm^3.

    .....

15. Define relative density.

    .....

16. Give one instrument used to measure relative density.

    .....

17. Why do objects float or sink in water?

    .....

18. What is matter?

    .....

19. List three states of matter.

    .....

20. Give two properties of solids.

    .....

21. Give two properties of liquids.

    .....

22. Give two properties of gases.

.....

23. What happens when water boils?

.....

24. What happens when water freezes?

.....

25. Explain sublimation with an example.

.....

26. Explain deposition with an example.

.....

27. Describe evaporation in the water cycle.

.....

28. Describe condensation in the water cycle.

.....

29. What is precipitation?

.....

30. Why does matter absorb or lose energy during state changes?

.....

☑ C. 10 MATCHING QUESTIONS

Column A	**Column B**
1. Non-metal	A. Used for nails, roofing, hoes
2. Metal	B. Poor conductor of heat and electricity
3. Iron	C. Good conductor of heat and electricity
4. Copper	D. Used for wires and water pipes
5. Gold	E. Used for cans and lamps
6. Tin	F. Used for jewelry
7. Aluminium	G. Used for saucepans
8. Density	H. Mass ÷ Volume
9. Hydrometer	I. Measures relative density
10. Boiling	J. Liquid to gas

✅ D. 20 TRUE OR FALSE QUESTIONS

1. Materials can be solids, liquids, or gases. _____
2. Metals are poor conductors of heat and electricity. _____
3. Non-metals are generally soft and brittle. _____
4. Copper is used for coins and water pipes. _____
5. Galvanization protects iron with zinc coating. _____
6. Painting protects metals from corrosion. _____
7. Density = Mass ÷ Volume. _____
8. Densitometer measures density. _____
9. An object sinks if it is less dense than water. _____
10. Relative density compares a substance to water. _____
11. Solids have fixed shape and volume. _____
12. Liquids have fixed shape but no fixed volume. _____
13. Gases have no fixed shape or volume. _____
14. Sublimation is solid to gas change. _____
15. Deposition is gas to solid change. _____
16. Evaporation occurs when heat is removed. _____
17. Water boils at 100°C. _____
18. Ice melts at 0°C. _____
19. Matter absorbs or loses energy during state changes. _____
20. Transpiration is evaporation of water from plants. _____

✅ E. 20 CHOOSE FROM BRACKET QUESTIONS

1. Metals are usually _____ (hard / soft).
2. Non-metals are poor _____ (conductors / insulators).
3. Copper is used to make _____ (wires / iron sheets).
4. Tin is used to make _____ (cans / jewelry).
5. Density = _____ (Mass ÷ Volume / Volume ÷ Mass).

6. Standard unit of density is _____ (g/cm^3 / g/m^3).
7. Hydrometer measures _____ (mass / relative density).
8. Objects float if their density is _____ (less / greater) than water.
9. Solids have _____ shape (fixed / variable).
10. Liquids take the shape of the _____ (container / themselves).
11. Gases can be _____ easily (compressed / uncompressed).
12. Boiling changes water from _____ to _____ (liquid to gas / solid to liquid).
13. Freezing changes water from _____ to _____ (liquid to solid / solid to gas).
14. Melting is a change from _____ to _____ (solid to liquid / liquid to solid).
15. Condensation changes _____ to _____ (gas to liquid / liquid to gas).
16. Sublimation is _____ to _____ (solid to gas / liquid to gas).
17. Deposition is _____ to _____ (gas to solid / solid to gas).
18. Water boils at _____°C (100 / 0).
19. Ice melts at _____°C (0 / 100).
20. Transpiration is the release of water vapor by _____ (plants / animals).

☑ F. 10 COMPLETE THE SENTENCE QUESTIONS

1. Materials are things we use every day such as _____.
2. Non-metals are usually _____ and _____.
3. Metals are usually _____ and _____.
4. Painting and galvanization help to _____ metals.
5. Density is the ratio of _____ to _____.
6. Relative density compares a substance's density to _____.
7. Solids have _____ shape and _____ volume.
8. Liquids take the shape of _____ but have _____ volume.
9. Sublimation is a change from _____ to _____.
10. Deposition is a change from _____ to _____.
