

TERM 1

TOPIC: DIGESTIVE SYSTEM

LESSON 1

- Definition of the digestive system
- Meaning of digestion
- Structure of the digestive system
- Functions of each part
- Use of a wall chart is important

Evaluation activity

- 1) What is digestion?
- 2) Why should food be digested in the body?
- 3) Of what importance is the tongue during digestion?
- 4) Draw the digestive system and name:
 - a) The gullet
 - b) Stomach
 - c) Liver
 - d) Pancreas
 - e) Gall bladder
 - f) Duodenum

LESSON 2

- Food and its uses in the body i.e.
 - To produce energy
 - To produce heat
 - To promote good health (prevention of diseases)
 - Help in growth of body cells etc
- Types of digestion
- Peristalsis
- Enzymes and their characteristics

Evaluation exercise

- 1) What is food?
- 2) State any two importance of food to the body.
- 3) Briefly describe the importance of chewing food in the mouth.
- 4) Briefly describe the process by which food is pushed down the gullet and the rest of the alimentary canal.
- 5) What are enzymes?
- 6) Identify any two characteristics of enzymes.

LESSON 3

- How digestion takes place in the following parts.
 - a) Mouth
 - b) Stomach
 - c) Duodenum
 - d) Ileum
 - e) Colon
 - f) Rectum
- Final products of digested food.
- Absorption of digested food.
- Use of digested food in the body.

Evaluation exercise

- 1) Identify the enzymes found in the gastric juice.
- 2) Where does digestion start and end in man?
 - a) Start _____
 - b) End _____
- 3) Which enzyme acts on cooked starch in the mouth?
- 4) What is the final product for:
 - a) Starch
 - b) Proteins
 - c) Fats
- 5) How are the ileum adapted to their function?
- 6) Of what importance is saliva during the digestion of food?
- 7) Identify the glands from which saliva is secreted?
- 8) How are the villi adapted to their function?
- 9) What is the function of pepsin and rennin?
 - a) Pepsin
 - b) Rennin
- 10) Of what importance is the rectum?

LESSON 4

DIGESTIVE DISORDERS, DISEASES AND INTESTINAL PARASITES

- Learners define; digestive disorders, diseases and parasites.
- Through guided discussion, give examples of disorders, diseases of the alimentary canal and intestinal worms.
- Identify the effects of intestinal worms.
- Suggest preventive measures (health habits) for digestive disorders, disease and worms.

Evaluation exercise

- 1) Differentiate between diseases and disorders of the digestive system.
- 2) What are parasites?
- 3) State four examples of each of the following;

- a) Digestive disorders
 - b) Digestive diseases
 - c) Intestinal parasites
- 4) State the effects of intestinal worms to a human body.
 - 5) Identify the intestinal worm spread through eating half cooked meat.
 - 6) Suggest any one way of controlling intestinal worms.
 - 7) Why is it advisable to include roughages and water in one's diet?
 - 8) Atim lost all her molar teeth, which digestive disorder is she most likely to face?

LESSON 5

FOOD TABOOS

- Learners are to state:
 - What a food taboo is?
 - Examples of food taboos.
 - Advantages and disadvantages of food taboos.
- Learners state food taboos in their different cultures.
- Identify good eating habits.

Evaluation exercise

- 1) What is a food taboo?
- 2) Give any two examples of common food taboos.
- 3) Suggest any three disadvantages of food taboos.
- 4) Mention two advantages of food taboos.
- 5) Identify any one food taboo to each of the following people:
 - a) Moslems
 - b) Women in African traditional societies
 - c) Catholics during lent
- 6) Write down three good eating habits.
- 7) State the importance of having good eating habits.

LESSON 6

DEFICIENCY DISEASES

- Learners will state the meaning of deficiency diseases.
- Learners will read a text and identify examples of deficiency diseases.
- Outline the causes of deficiency diseases.
- Signs and symptoms for each deficiency disease.

Evaluation exercise

- 1) What are deficiency diseases?
- 2) Give five examples of deficiency diseases.
- 3) Outline the causes of each of the following deficiency diseases.

- a) Night blindness (keratomatacia)
 - b) Scurvy
 - c) Beri-beri
 - d) Rickets
 - e) Kwashiorkor
 - f) Marasmus
 - g) Pellagra
- 4) Which deficiency disease causes water logging of the tissues?
- 5) Identify any two signs and symptoms of
- a) Kwashiorkor
 - b) Marasmus
- 6) What is the difference between signs and symptoms of a disease?

LESSON 7

TEETH

- Learners will be helped to define dentition.
- Learners will identify the two sets of teeth in mammals.
- Learners will observe and identify the parts of teeth and state their functions.

Evaluation exercise

- 1) Write down the dental formula on an adult human.
- 2) Define the term dental formula.
- 3) How many teeth form the dental formula of the milk teeth?
- 4) Draw a diagram showing the inner parts of a tooth and name:
 - a) Enamel
 - b) Dentine
 - c) Pulp cavity
 - d) Nerves and blood capillaries
- 5) Name the most sensitive part of the tooth.
- 6) Name the mineral salts needed for the growth and strengthening of teeth and bones.
- 7) Of what importance is the cement?
- 8) Besides digestion, identify any two other importance of teeth to a mammal.

LESSON 8

TEETH

- Learners will be able to observe and identify the different types of teeth.
- Learners will draw diagrams to show shapes of different teeth.
- Learners will state the functions of each type of teeth.
- Learners will explain how we can care for our teeth.
- Learners will suggest suitable food for toothless people.

Evaluation exercise

- 1) Name the four types of mammalian teeth.
- 2) Draw the shapes of each of the following types of teeth.

- a) Incisors
 - b) Pre-molars
 - c) Canines
 - d) Molars
- 3) How are the types in (2) above adapted to their functions.
 - 4) Identify the structural difference between canines and molars.
 - 5) State one functional difference between incisors and the pre-molars.
 - 6) State any one way of caring for the teeth.

TOPIC: DIGESTION

LESSON 9

SAMPLE TOPICAL QUESTIONS

- 1) What is digestion?
- 2) What name is given to the chemical substances which speed up digestion?
- 3) Name the digestive juice secreted in the mouth.
- 4) By what process does food move through the gullet?
- 5) Which organ is responsible for the production of bile?
- 6) Which organ in the body is damaged by alcohol?
- 7) Which mineral salt is necessary for good formation of teeth?
- 8) Name the hardest part of the tooth.
- 9) Tom has a dental carry. Every time he rinses his mouth with cold or warm water, he feels much pain. What does that show about the tooth?
- 10) Define the term dental formula.
- 11) How can we prevent dental caries?
- 12) Which deficiency disease causes improper healing of wounds, swelling and bleeding of the gum and bleeding under the skin at joints?
- 13) What causes pellagra?
- 14) Name one foodstuff from which we can get roughages?
- 15) Which vitamin is contained in rice husks?
- 16) The diagram below shows some of the parts of the digestive system. Use it to answer questions that follow.
 - a) Name part labeled:
B _____
G _____
 - b) Identify the two enzymes found in the digestive juice produced by organ marked A.
(i) _____
(ii) _____
 - c) Where in the digestive system does digestion of fats begin?
 - d) Which digestive juice is produced by organ marked F?
 - e) How is the function of part E similar to that of part C?

17) Match the words in group A with those in group B correctly.

A	B
Trypsin	- clots protein in milk.
Lipase	- digests protein to pepticles and pepticles to amino acids.
Amylase	- digests fats to fatty acids and glycerols.
Rennin	- digests cooked starch to maltose

18) State four disorders of the digestive system.

19)a) Name the organ that regulates blood sugars.

b) Name the disease that occurs when one's body is unable to regulate blood sugar.

c) Give two glands that are useful in the digestion of starch.

The diagram below shows a human tooth. Use it to answer question 20.

20)a) Name the part labeled

P _____ Q _____ R _____

b) Which part of the tooth contains nerves and blood capillaries?

c) What term is used to refer to the part of the tooth above the gum?

d) How are the following teeth adapted to their functions?

i) Canine teeth

ii) Molar teeth

TOPIC: ELECTRICITY AND MAGNETISM

LESSON 10

- Learners use their knowledge to define the term energy.

- Outline different forms of energy.
- Learners will be helped to define electricity.
- Give uses of electricity.
- Learners will state the advantages and disadvantages of using electricity.

Evaluation exercise

- 1) What is energy?
- 2) What is the basic unit for measuring energy?
- 3) Besides heat, light and sound, identify three other forms of energy.
- 4) Define the term electricity.
- 5) In three ways, state the importance of electricity in our environment.
- 6) Suggest two advantages and disadvantages of using electricity.
- 7) Electricity today in Uganda is expensive. Briefly explain what government has done to reduce on the consumption of electricity in our homes.

LESSON 11

- Learners will use their knowledge and explain the dangers of using electricity.
- Learners will identify different electrical appliances.
- Learners will name the forms of electricity.
- Learners will differentiate between static and current electricity.

Evaluation exercise

- 1) Moses uses electricity at home. Identify three problems associated to electricity he is most likely to face.
- 2) Give four examples of electrical appliances.
- 3) Identify the two forms of electricity.
- 4) State the difference between current electricity and static electricity.
- 5) What are electric conductors?

LESSON 12

- Learners will be guided to define static electricity.
- Learners will describe how static electricity is formed.
- Learners will explain how lightening and thunder occur in nature.
- Learners will identify the advantages of lighting.
- Learners will be helped to explain how lighting can be controlled.

Evaluation exercise

- 1) What is static electricity?
- 2) How is static electricity produced?
- 3) Briefly explain how lightening and thunder occur in nature.

- 4) Lightening and thunder occur at the same time. Why then do we see lightening before thunder?
- 5) Why is it not advisable to stand under tall trees during storms?
- 6) Identify one advantage of lightening in nature.
- 7) How is the function of lightning and nitrogen fixing bacteria similar in nature?
- 8) Why is it important to install lightning conductors in tall buildings?
- 9) Briefly explain how a lightning conductor works.
- 10) Apart from installing lightning conductors on buildings, how else can we control accidents related to lightning?

LESSON 13

- Learners will be helped to define current electricity.
- Learners will give the two types of current electricity.
- Learners will define direct current and alternating current.
- Learners will identify the sources of current electricity.

Evaluation exercise

- 1) What is current electricity?
- 2) State the two types of current electricity.
- 3) Briefly explain the difference between direct current and alternating current.
- 4) Identify at least two sources of direct current electricity.
- 5) State any two sources of alternating current.
- 6) How has the change of weather in Uganda affected the production of hydro electricity?
- 7) Electricity produced at Nalubaale dam in Jinja is used by somebody in Entebbe. How is it transported to Entebbe?

LESSON 14

- Learners will define an electric circuit.
- Learners will be guided to describe the direction of the flow of current and flow of electrons in an electric circuit.
- Learners will observe and identify the part of an electric circuit.
- Learners will state the importance of each part in an electric circuit.

Evaluation exercise

- 1) What is an electric circuit?
- 2) Name the parts of an electric circuit.
- 3) With the help of a diagram, show the direction taken by the flow of current and the flow of electrons in a simple circuit.
- 4) State the importance of each of the following parts of an electric circuit.
 - (a) Dry cells
 - (b) Wire
 - (c) The bulb
 - (d) Switch
 - (e) Fuse

- 5) How is the work of the switch different from that of the fuse?
- 6) Give any one reason that may lead to the blowing or breaking of a fuse.
- 7) Briefly describe what will happen to the bulb when the switch is closed.

LESSON 15

- Learners will be guided to identify different symbols used in electric circuits.
- Learners will differentiate parallel circuit with series circuit.
- Learners will briefly explain complete and incomplete circuits.
- Learners will state various energy changes in a circuit.

Evaluation exercise

- 1) How is a parallel circuit different from a series of circuit?
- 2) Draw the symbol used to represent each of the following parts of an electric circuit.
 - (a) Battery
 - (b) Light bulb
 - (c) Switch
 - (d) Fuse
- 3) Give any two factors that lead to failure of the bulb to give light when the switch is closed.
- 4) State any two energy changes in an electricity circuit.
- 5) Which form of energy is stored in dry cells?

LESSON 16

CELLS (BATTERIES)

- Learners will be guided to identify the two types of cells i.e. primary and secondary cells.
- Learners will explain the meaning of simple cells and fry cells as examples of primary cells.
- Learners will observe the internal parts of a dry cell, name them and give the importance of each part.
- With examples, learners will explain the meaning of secondary cells.

Evaluation exercise

- 1) Name the two types of cells.
- 2) Briefly explain the meaning of each of the following terms.
 - (a) Electrolyte
 - (b) Anode
 - (c) Local action
 - (d) Cathode
 - (e) Polarization
- 3) Name one fruit that can be used to produce electricity.
- 4) State two disadvantages of using simple cells.
- 5) Give the function of each of the following parts of a dry cell.

- (a) Carbon rod
- (b) Electrolyte paste
- (c) Zinc case

- 6) a) What are secondary cells?
- b) Give two examples of secondary cells.
- c) Which type of energy is stored in a car battery?
- 7) What is the voltage for a dry cell?

LESSON 17

CONDUCTORS AND INSULATORS

- Learners will define conductors and identify common electric conductors in their environment.
- Learners will define insulators and state examples of insulators in their environment.
- Learners will identify the day to day uses of conductors and insulators.

Evaluation exercise

- 1) What are electric conductors?
- 2) Name any one non-metallic material that is a good conductor of electricity.
- 3) State any three common conductors of electricity.
- 4) Define the term insulators.
- 5) Give four examples of insulators.
- 6) Why is distilled water a bad conductor of electricity?
- 7) Why are electric wires covered with insulators?
- 8) Name two things in our homes that have insulated wires.
- 9) Silver is the best conductor of electricity. Why is copper most preferred in the transmission of electricity in many countries?

LESSON 18

- Learners will set an experiment to explain how a short circuit occurs.
- Learners will define the term "short circuit".
- Learners will state the causes of short circuits.
- Learners will identify the dangers of short circuits and suggest ways of preventing short circuits in electric appliances.

Evaluation exercise

- 1) What is a short circuit?
- 2) State any three causes of short circuits in electric appliances.
- 3) Identify any two dangers caused by short circuits.
- 4) Briefly explain why it is important to have installation of electricity and repair of appliances done by qualified people only.
- 5) Write two ways used to prevent short circuits.

6) Why has the Uganda Electricity Distribution Company failed to transmit hydro-electricity to islands in Lake Victoria?

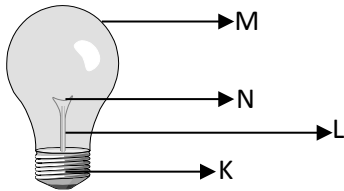
LESSON 19

AN ELECTRIC BULB

- Through observation, learners will identify and name the parts of an electric bulb.
- Learners will state the importance of each part of an electric bulb.
- Learners should identify the gases used in bulbs and their importance.
- Learners will state the reason why a bulb may fail to give light during circuit.

Evaluation exercise

1) The diagram below is of an electric bulb.



(a) Name the part marked

M _____ N _____
K _____ L _____

(b) Which mineral is used to make N?

- 2) Name two gases used in electric bulbs.
- 3) Which part of a bulb produces light?
- 4) Why is the filament of an electric bulb coiled?
- 5) State two factors that may make a bulb fail to give light when a circuit is complete.
- 6) State any two energy changes that take place in the bulb when an electric circuit is completed.

LESSON 20

ELECTRIC TORCH

- Learners will open an electric torch that uses dry cells and name the parts of a torch.
- Learners will be helped to give the function of each part of a torch.
- Learners will assemble the parts of a torch in different ways to help them experiment the way a torch works.

Evaluation exercise

The diagram below shows a torch. Use it to answer questions that follow.

1) Name the part labeled:

A _____

B _____

C _____

D _____

2) State the importance of each of the following parts of a torch.

(a) Reflector

(c) Glass

(b) Cover

3) Suggest any two reasons that may make a torch fail to give out light.

4) Calculate the voltage of a torch that uses two dry cells.

5) Why is it advantageous for a fisherman to use a torch with a plastic casing other than that of a metallic torch?

LESSON 21

- Learners will open electric plugs to sockets and identify the three wires i.e. live wire, neutral wire and earth wire.
- Through guided discussion learners will give the importance of each wire found in sockets.
- Learners will explain how generators, dynamos and motors work.

Evaluation exercise

1) Briefly explain the importance of each of the following wires in plugs and sockets.

(a) Live wire

(b) Neutral wire

(c) Earth wire

2) Why is the live wire always coloured red or brown?

3) Name two devices that convert mechanical energy (kinetic energy) to electricity.

4) How can a generator and a dynamo be made to produce more electricity?

5) Name any one device that changes electricity to kinetic energy (mechanical energy).

6) State any four devices that use electric motors.

7) How does the earth wire help to reduce accidents related to electricity?

8) What is the importance of the electric meter always found on houses with installed electricity?

LESSON 22

MANAGEMENT OF ELECTRICITY IN UGANDA

- Learners will name different boards that are involved in the production and distribution of electricity.

- Learners suggest some of the problems faced by the Uganda Electricity Distribution Company.

Evaluation exercise

- 1) Where in Uganda is hydro-electricity produced?
- 2) Why is electricity passed through transformers before it is sent to houses and industries?
- 3) Name the body responsible for each of the following duties in Uganda.
 - (a) Production of electricity
 - (b) Transmission of electricity to different parts of the country.
 - (c) Distributing and connecting customers to electric poles.
- 4) Give four problems that is faced by the Uganda Electricity distribution Company.

LESSON 23

INTRODUCTION TO MAGNETISM

- Learners will define a “magnet” and “magnetism”.
- Learners will identify magnetic and non magnetic materials.
- Learners will define an alloy and give examples of alloys.

Evaluation exercise

- 1) What is a magnet?
- 2) What force enables a magnet to attract and repel substances?
- 3) Define magnetic materials.
- 4) Write down any two examples of magnetic materials.
- 5) Explain the meaning of the term non magnetic materials.
- 6) Name any two non magnetic materials.
- 7) Briefly define an alloy.
- 8) State two uses of alloys in our environment.

LESSON 24

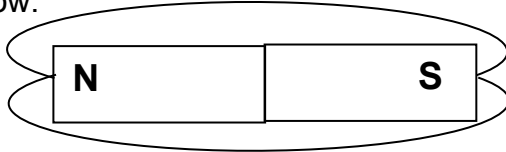
PROPERTIES OF MAGNETS

- Learners will use two bar magnets, iron fillings and a string and set up experiments that will help them discover the properties of magnets.
- Learners will define; magnetic field, magnetic lines and poles.
- Learners will draw different shapes of magnets.

Evaluation exercise

- 1) State any three properties of magnets.
- 2) A freely suspended magnet rests in the north-south direction. Name one machine that works on this principle.
- 3) Define the following terms.

- (a) Magnetic lines
 - (b) Magnetic fields
 - (c) Magnetic poles
- 4) Give one reason why the earth is called a magnet.
 - 5) Draw a diagram showing that a magnet is strongest at the poles.
 - 6) With the aid of arrows, show the direction taken by magnetic lines on the diagram below.



- 7) Draw an illustration to show that like poles repel.

LESSON 25

TYPES OF MAGNETS

- Learners will briefly explain the meaning of temporary and permanent magnets.
- Learners will define natural magnets and artificial magnets, and state examples of each type of magnets.
- Learners will explain the movement of magnetic lines in different shapes of magnets.

Evaluation exercise

- 1) Differentiate temporary magnets and permanent magnets.
- 2) State any two examples of natural magnets.
- 3) Why is the earth called a magnet?
- 4) a) Identify one example of temporary magnet.
- b) Define the term "solenoid".
- c) State two ways in which an electromagnet can be made stronger.
- 5) Name two minerals used to make magnets.
- 6) Draw an illustration to show magnetic lines on a horse shoe magnet.

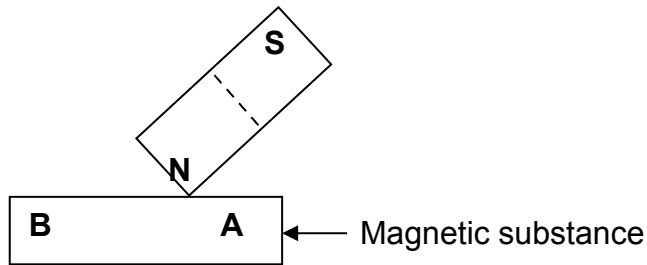
Lesson 26

MAKING MAGNETS

- Learners set up experiments to show how magnets can be made using:
 - (a) Touch/stroke method
 - (b) Induction method
 - (c) Electric method
- Learners indicate poles on the made magnets respectively.

Evaluation exercise

- 1) What is magnetization?
- 2) Give two methods used to make magnets.
- 3) The diagram below show how a magnet is made using the stroke method.
(incomplete diagram)



Which magnetic pole will be achieved by each of labeled points of the magnetic substance after stroking;

A _____ B _____

- 4) The diagram shows the electric method of making magnets.
 - a) What will happen to the nail when the switch is closed?
 - b) Using a letter N indicate the north pole on the nail.
 - c) State any one method that can be used to make the magnet stronger.
 - d) Name two appliances that use an electro magnet.

LESSON 27

MAGNETISATION

- Learners will define demagnetization.
- Learners will discuss and give methods used to destroy magnets.
- Learners will suggest best ways of storing magnets.

Evaluation exercise

- 1) What is demagnetization?
- 2) State three ways of destroying a magnet.
- 3) Why should watches always be kept away from magnets?
- 4) Give two proper storage methods for magnets.
- 5) Why is it not advisable to keep a magnet in the East West direction?
- 6) Kenneth kept his two bar magnets in a box when the south poles are together. What happened to the magnets after a short period?

LESSON 28

USES OF MAGNETS

- Learners will state the importance of magnets in the day to day life.

- Learners will name devices that use magnets in the environment.
- Learners will briefly explain how an electric bell works.
- Learners will relate magnetism with the production of electricity.

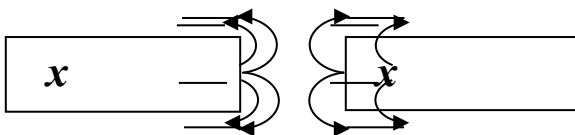
Evaluation exercise

- 1) Identify any two groups of people who find magnets useful to them.
- 2) Identify three uses of magnets in our day to day life.
- 3) How is electricity produced at the generation plant at Jinja?
- 4) Name any three devices that use magnets.
- 5) How does a doctor at Mulago find a magnet useful in his work?

LESSON 29

TOPICAL QUESTIONS

- 1) Identify any one day in which electricity is useful in man's everyday life.
- 2) What is meant by the term static electricity?
- 3) In which way is static electricity different from current electricity?
- 4) Mention any one cause of short circuits in electric installation.
- 5) How is the copper plate in a simple cell related to a carbon rod in a dry cell?
- 6) Identify any one danger of polarization in dry cells.
- 7) What is the voltage of a torch which uses four dry cells each with 1.5V?
- 8) How is the working of a fuse different from that of a switch?
- 9) Give any one way in which lighting is useful to crop farmers.
- 10) Mention any one way in which insulators are useful in the use of electricity.
- 11) Name any one gas that is put in electric bulbs.
- 12) Why is it important to install lightning conductors on tall buildings?
- 13) State any one energy change that takes place in a bulb when an electric circuit is completed.
- 14) Why type of energy is stored in a dry cell?
- 15) Omondi got a new torch as a gift from the teacher. After assembling all the parts properly, he closed the switch but the bulb did not give light. Identify any one reason for the above failure of the bulb to give light.
- 16) Apart from the earth, name any other natural magnet that exist in the environment.
- 17) State the property of magnets that enable use to use a compass.
- 18) How are magnets useful in hospitals?



- 19) What property of magnetism is shown in the diagram above?
- 20) State the energy change which occurs when a generator at the Owen Falls dam produce electricity.

21)a) Lightening and thunder occur at the same time. Why do we see lightning before hearing thunder?

b) Why can't people traveling in a vehicle during a storm be struck by lightning?

c) State any two ways we can use to prevent lightning from causing accidents at school.

22)The diagram below shows a simple circuit. Use it to answer questions that follow.

a) With the help of an arrow, show the direction of current flow on the diagram.

b) What is the importance of a dry cell in the experiment?

c) What is the use of the copper wire in an electric circuit?

d) State any one energy change that will take place in the bulb.

23)The diagram below shows one of the methods used to make magnets.

(a) Which method of magnetization is used above?

(b) What will happen to the iron fillings when the switch is closed?

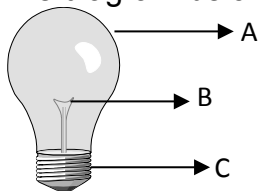
(c) Calculate the voltage being used in the experiment above.

(d) Use arrows to show the direction of current flow in the experiment.

24)a) Name one device that uses electro magnets.

b) Give two methods that can be used to demagnetize a metal.

25)The diagram below shows an electric bulb. Use it to answer questions that follow.



(a) Name the part marked ;

A _____

B _____

(b) What is the use of part C?

(c) Why is part B coiled?

LESSON 30

TOPIC: THE ENVIRONMENT

- With the knowledge about environment learnt in P.6 learners will define the term environment.
- Mention the components of the environment.
- Learners will be helped in defining;
 - (a) Resource
 - (b) Energy resource
- Giving examples of energy resources.
- Classifying energy resources in the environment.
- Defining the different types of energy resources.

Evaluation exercise

1. Define the following terms;

(a) Environment (b) A resource

(c) Energy resources

2. List down any three components of the environment.

3. State any four examples of energy resources in the environment.

4. Define the term renewable resource.

5. List any two examples of renewable and non-renewable resources.

LESSON 31

TOPIC: ENERGY RESOURCES

Learners will be helped in identifying how;

- Soil is a resource
- Fossils are resources
- Rocks and minerals are resources
- The sun is an energy resource
- Water is an energy resource
- Plants and animals are energy resources

Evaluation exercise

- 1) Why is the sun regarded as an energy resource?
- 2) What are fossils?
- 3) State any three values of wind as a resource to man.
- 4) Why are plants considered as energy resources?
- 5) What type of energy can we get from Uranium?

LESSON 32

TOPIC: ENERGY RESOURCES FROM PLANTS

- Learners will be helped in identifying energy resources from plants which include wood fuel, biogas and food.
- Listing down various ways of conserving wood.
- Learners will be helped to list down materials use in production of biogas and how to prepare it.
- Stating the role or anaerobic bacteria.

Evaluation exercise

- 1) List down any three energy sources from plants.
- 2) List down any four materials used to generate biogas.
- 3) Name the kind of micro organism which cause decomposition in a biogas digester.

LESSON 33

SAMPLE TOPICAL QUESTIONS

THE ENVIRONMENT

- 1) Define the term "Environment".
- 2) Why are plants regarded as resources in the environment?
- 3) Write down any one component of the environment.
- 4) What is an energy resource in the environment?
- 5) Why is the sun regarded as an energy resource in the environment?
- 6) Besides the sun, name any other two energy resources in the environment.
- 7) What are non-renewable resources in the environment?
- 8) List down any two examples of fossil fuels.
- 9) Write down any one product obtained from crude oil.
- 10) State the value of agro-forestry.
- 11) What is air?
- 12) How can cutting down of forests affect production of hydro-electricity?
- 13) Identify one way how we can control the over-harvesting of wood fuel?
- 14) What are renewable resources?
- 15) Define the term energy.

Section B

- 16)(a) Match items in list A with those in list B.

A	B
Thermal electricity	Uranium
Nuclear electricity	Fossil fuels
Hydro-electricity	Water
Static electricity	Friction

17)(a) List down any three materials that can be used to generate biogas.

b) What role is played by anaerobic bacteria in the biogas digester?

18) List down any two ways of how wood can be conserved.

LESSON 34

TOPIC: CONTROLLING AND MANAGING CHANGES IN THE ENVIRONMENT

- Learners will be helped in defining the term conservation.
- Stating the importance of conservation practices.
- Defining the term environmental degradation.
- Listing down examples of environmental degradation (natural and artificial activities).
- Mentioning measures to control environmental degradation.
- Mentioning effects of environmental degradation.

Evaluation exercise

- 1) Define the terms;
 - a) Conservation
 - b) Environmental degradation
- 2) Write down any four values of conservation practices.
- 3) List down any two natural and artificial causes of environmental degradation.
- 4) Write down any two effects of environmental degradation.

LESSON 35

TOPIC: MEASURES TO CONTROL ENVIRONMENTAL DEGRADATION

- Learners will be helped in defining the term agro forestry.
- Identifying the importance of agro forestry.
- Stating ways of conserving resources from the soil, protecting of wetlands.
- Defining the term bio diversity and identify ways of controlling loss of bio diversity.

Evaluation exercise

- 1) Define the term agro forestry.
- 2) Why farmers practice agro forestry.
- 3) Identify any three ways how wetlands can be degraded.
- 4) State the importance of wetlands in the environment.
- 5) What is a wetland?
- 6) How can we conserve the bio diversity?

LESSON 36

TOPIC: GROWING OF TREES

- Learners will be helped to deliver knowledge from discussions about growing of trees.
- Identifying crops and trees grown by seeds like passion fruits, mvule tree, mahogany, acacia, musizi, ovacado, pine, cypress etc while others by cuttings.
- Selecting of seeds or stem cuttings for growing (qualities).
- Preparing a nursery bed and caring for seedlings (cuttings).
- Identifying ways of controlling tree pests and diseases.

Evaluation exercise

- 1) List down two types of trees grown by;
 - (a) Seeds
 - (b) Stem cuttings
- 2) How is the growing of trees useful to our environment?
- 3) Suggest any two qualities of suitable seeds or cuttings to be grown or planted.
- 4) What is a nursery bed?

LESSON 37

TOPIC: GROWING OF TREES

- Learners will discuss in groups ways of caring for seedlings in a nursery bed.
Weeding, pruning, mulching, staking
- Identifying advantages and disadvantages of the above.

Evaluation exercise

- 1) Define the following terms
 - a) Weeding
 - b) Pruning
 - c) Mulching
 - d) Staking
- 2) How does mulching control soil erosion?
- 3) Identify two ways of controlling tree pests.

LESSON 38

TOPIC: TREE HARVESTING

- Learners will be helped in identifying and describing the various methods of harvesting trees for various uses.
- Defining terms like pollarding, hoping, coppicing.
- Drawing the various methods of tree harvesting.
- Stating various ways/methods of conserving wood.
- Importance of rural electrification.

Evaluation exercise

- 1) List down any three methods of harvesting trees.
- 2) Draw and name the three methods of tree harvesting.
- 3) Identify any four ways of conserving wood.

LESSON 39

TOPIC: ENVIRONMENTAL DEGRADATION

- Learners will be helped to define;
Land fragmentation
- Listing the causes of land fragmentation
- Mentioning the effects of land fragmentation
- Identifying ways of controlling land fragmentation.

Evaluation exercise

- 1) Define the term land fragmentation.
- 2) List down any four causes of land fragmentation.
- 3) How does land fragmentation cause environment degradation?
- 4) Identify any two ways of controlling land fragmentation.

LESSON 40

SAMPLE TOPICAL QUESTIONS

CONTROLLING AND MANAGING CHANGES IN THE ENVIRONMENT

- 1) Define the term “environmental degradation”.
- 2) How does deforestation lead to soil erosion?
- 3) Why is building of many industries in an area dangerous to the environment?
- 4) What is meant by the term environmental conservation?
- 5) Define the term pollutants.
- 6) How are the wetlands important in our environment?
- 7) Name one example of a wetland.
- 8) What is meant by the term wild life?
- 9) Why is it important to conserve wildlife?
- 10) State any one reason why some wildlife species are getting endangered and extinct.
- 11) Suggest any one way how wildlife can be conserved.
- 12) Define the term biodiversity.
- 13) Air is mainly degraded through pollution, name any one way air gets polluted.
- 14) How do natural resources like animals and plants depend on people for survival?
- 15) How can wetlands be protected from destruction?

Section B

- 16)(a) How does terracing help to control soil erosion?

b) List down any three human activities that are likely to cause environmental degradation.

17)(a) What is wetland degradation?

b) Write down any three ways in which wetlands are useful to man.

18)(a) Define the term pollution.

b) Write NEMA in full.

c) Identify any two ways air gets polluted.

19)(a) State any two values of forests to man in the environment.

b) List down any two natural causes of environmental degradation.

LESSON 41

SAMPLE TOPICAL QUESTIONS

GROWING CROPS AND TREES

- 1) Define the term agro forestry.
- 2) Why do people plant trees in their compounds?
- 3) Write down any one quality required of seeds or cuttings to be planted.
- 4) Define the following terms as used in crop husbandry.
 - (a) Plant staking
 - (b) Weeding
 - (c) Pruning
- 5) List down one way of controlling weeds in a garden.
- 6) How does mulching improve soil fertility?
- 7) Give any one disadvantage of mulching.
- 8) Define the term pest.
- 9) How does crop rotation help to control crop pests?
- 10) How are the following crops propagated?
 - (a) Bananas
 - (b) Sweet potatoes
 - (c) Maize
 - (d) Onions
- 11) List down any two crops propagated by grafting.
- 12) State one advantage of pruning crops.

Section B

13)(a) Give two values of agro forestry as a farming practice.

b) State the value of bush fallowing as a farming method.

c) How do trees planted in a school garden prevent soil erosion?

14)(a) State the value of shelter (shade) on a nursery bed.

b) List down any three trees grown by seeds.

15)(a) List down any two activities meant to care for trees in a nursery bed.

b) State any two values of a nursery bed on a school garden.

16)(a) List down any two methods of planting crops.

b) Write down any two reasons why farmers should carry out weeding.

17)(a) List down two methods of harvesting wood.

b) Which method is best for harvesting wood for timber?

c) Why do some fruit trees need pollarding?

18) Match items in list A with those in list B correctly.

A	B
Mealy bug	- Banana
Thrips	- cassava
Moles	- pineapples
Stalk borer	- tobacco
	- maize
	- beans

LESSON 42

TOPIC: POPULATION AND HEALTH CONCERNS

- Learners will be helped to;
 - (a) Define the following terms
 - Population
 - Health
- Listing health concerns in their communities.
- Poor sanitation
- Causes of change in population in an area.
 - High birth rates, low birth rates, mortality rate, migration, population composition and their needs, civil wars etc
- Listing ways of controlling problems caused by poor sanitation.

Evaluation exercise

- 1) Define the following terms.
 - a) Population
 - b) Health
 - c) Population density
- 2) List down any two health concerns in your area.
- 3) Mention one way population growth can be controlled.

4) List down any three diseases caused due to poor sanitation.

LESSON 43

TOPIC: ANTI-SOCIAL BEHAVIOUR

- Learners will be helped in;
- Defining the term anti-social behavior
- Listing examples of anti-social behavior common at:
School
In our community
- Mentioning the causes of anti-social behavior
- Preventive measures of anti-social behavior

Evaluation exercise

- 1) What are anti-social behaviours?
- 2) Write down any three common anti-social behaviours at school.
- 3) How would you prevent your self from anti-social behavior?
- 4) What are the excuses most people give for committing anti-social behavior?

LESSON 44

TOPIC: SMOKING

- Through brain storming and discussion, learners will be helped to define the term smoking.
- State the way smoking is done.
- Identify reasons why people smoke.
- Stating effects of smoking to;
 - (i) Pregnant woman (individuals)
 - (ii) The family
- Listing various ways of avoiding smoking.
- Define the term passive and active smoking.

Evaluation exercise

- 1) What is meant by the term smoking?
- 2) Why do people smoke?
- 3) Mention any three diseases caused due to excessive smoking.
- 4) How does active smoking affect the environment?
- 5) Who is an active smoker?

LESSON 45

TOPIC: ALCOHOLISM

Learners will be helped in;

- Defining the term alcohol.
- Identifying reasons why people drink alcohol.
- Listing down effects of alcoholism to;
 - (i) An individual
 - (ii) Family
 - (iii) The community
 - (iv) The nation
- Suggesting ways of controlling alcoholism.
- Listing down body organs severely damaged by alcohol.

Evaluation exercise

- 1) Define the term alcohol.
- 2) Why do people drink alcohol?
- 3) What is the effect of excessive alcoholism to a pregnant woman?
- 4) List down any two body organisms destroyed by excessive use of alcoholism.
- 5) Write down any two methods of preparing alcohol.

LESSON 47

TOPIC: INADEQUATE FOOD

Learners will be helped to;

- List down causes of inadequate food supply like pests and diseases, bad weather, poverty, big population.
- Identifying food stuffs for various categories of people.
 - (a) Children – more proteins – why to build body tissues.
 - (b) Weight lifters – carbohydrates
- Review on a balanced diet and deficiency diseases.
- Writing down solutions to inadequate food supply (food security).

Evaluation exercise

- 1) Write down any three causes of inadequate food supply in families.
- 2) What food value is suitable for the following categories of people?
 - (a) Carpenter
 - (b) One month old baby

3) Identify any four solutions to inadequate food supply in our communities.

LESSON 48

TOPIC: DRUGS

- Learners will be helped in;
- Defining the following terms: drug abuse, drug misuse, drug dependence and drug addiction.
- Mentioning the examples of commonly abused drugs.
- Identifying effects of drug abuse to the:-
 - a) An individual
 - b) Family
 - c) Community
- Listing preventive measures against drug abuse.

Evaluation exercise

- 1) Briefly explain the following terms;
 - a) Drug abuse
 - b) Drug misuse
 - c) Drug dependency
- 2) Mention any four examples of commonly abused drugs.
- 3) How does drug abuse affect the family?
- 4) Suggest two ways you would help a friend who abuses drugs.

LESSON 49

TOPIC: POOR WATER SUPPLY

Learners will be helped in;

- Identifying uses of water to man and its use in the body.
- Listing various ways water gets contaminated.
- Water associated diseases.
 - (a) Water borne diseases
 - (b) Water contact diseases
 - (c) Water cleaned diseases
 - (d) Water habitat vector diseases
- Identifying prevention and control measures of each water associated disease.

Evaluation exercise

- 1) How is water useful to our bodies?

- 2) Write down any two ways water sources get contaminated.
- 3) Suggest two ways water sources can be protected from getting contaminated.
- 4) List down examples of each water associated disease.

LESSON 50

TOPIC:

- Learners will be helped to identify activities and facilities which promote health in a community.
- Defining health surveys and health data.
- Listing examples of health data and their importance.
- Mentioning duties of a village health committee.

Evaluation exercise

- 1) List down activities which help to promote health in a community.
- 2) Define the following terms
 - (a) Health surveys
 - (b) Health data
- 3) How are health surveys important to the country?
- 4) List down any four duties of a village health committee.

LESSON 51

TOPIC: DEMOGRAPHY

Learners will be helped to;

- Define the term demography and its value to the nation.
- Defining immunization, its importance, methods of administering vaccines and identifying childhood infant killer diseases and other immunisable diseases.
- Identifying the importance of a child health card.

Evaluation exercise

- 1) What is meant by the term demography?
- 2) How is demography important to a nation like Uganda?
- 3) Define the following terms;
 - (a) Immunization
 - (b) Vaccine
- 4) Why should we carry out immunization of infants?
- 5) List down any two ways vaccines are administered to infants.
- 6) Why is it important to immunize on schedule.
- 7) State the importance of a child health card to a doctor.

LESSON 52

TOPIC: PRIMARY HEALTH CARE

- Learners will be helped in defining the following terms.
- Listing down elements of Primary Health Care.
- Identifying ways of informing and educating people on health matters.

Evaluation exercise

- 1) Define the term "Primary Health Care".
- 2) List down the elements of PHC
- 3) How would you quickly inform members of the community about a disease outbreak in an area?
- 4) How can a P.7 candidate participate in PHC?
- 5) Which element of PHC helps to:
 - (a) Control the infant killer diseases
 - (b) Control deficiency diseases

LESSON 53

TOPIC: CHILD TO CHILD PROGRAMME

- Learners will be helped in;
- Defining the term child to child programme.
- Identifying the values of child to child activities.
- Listing down activities involved in child to child programme.

Evaluation exercise

- 1) What is meant by child to child programme?
- 2) Why do we have child to child programme?
- 3) Draw and name the symbol used to represent the child to child programme.
- 4) List down any three activities involved in child to child programme.

LESSON 54

SAMPLE TOPICAL QUESTIONS

- 1) What is meant by the term population?
- 2) List down any one example of health concern in your family.
- 3) Identify one way population increase can be controlled.
- 4) Define the term sanitation.
- 5) How is a latrine useful in a home?
- 6) Why is it important to drain away all stagnant water around homes?
- 7) Who is a juvenile?
- 8) Define the term juvenile delinquency.
- 9) Suggest any one cause of delinquency.

- 10) How is water important to our bodies?
- 11) What are water borne diseases?
- 12) Why is filtration considered not best method of preparing drinking water?
- 13) Give one example of water habitat vector disease.
- 14) Identify the main problem of inadequate food supply in a family.
- 15) Define the term health surveys.
- 16) List down any four ways in which a P.7 pupil can improve sanitation at school.
- 17)(a) Define the term anti-social behaviour
b) List down any three examples of anti-social behaviour
- 18)(a) Write down any three diseases which can break-out in home due to poor sanitation.
b) Suggest how you would control the spread of the above diseases.
- 19)(a) Which water borne disease can be controlled by immunization?
b) List down any three ways in which water sources get contaminated.
- 20)(a) What is meant by PHC
b) Write any two elements of PHC.
c) Which element of PHC helps us to control infant childhood killer disease?

LESSON 55

TOPIC: LIGHT

- Learners will be guided to define light.
- Learners will identify different sources of light.
- Learners will define and give examples of natural sources of light.
- Learners will define and give examples of artificial sources of light.
- Learners will define and give examples of the following;
 - (a) Luminous sources of light (direct)
 - (b) Non luminous sources of light (indirect)
 - (c) Incandescent bodies
- Learners will state the uses of light.

Evaluation activity

- 1) What is light?
- 2) What is a source of light?
- 3) Name the two main types of sources of light.
- 4) In three ways, explain how radiation affects us when we stand in sunshine.
- 5) Briefly state the difference between luminous and non luminous sources of light.
- 6) Write down any four uses of light in everyday life.

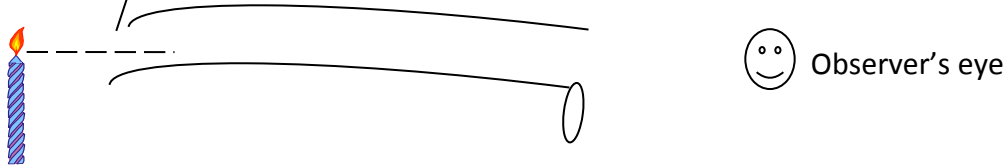
LESSON 56

TRANSMISSION OF LIGHT (HOW LIGHT TRAVELS)

- Learners will be guided to explain how light travels by helping them to realize how we are able to see objects.
- Learners carry out experiments on transmission of light.

Evaluation activity

- 1) Identify any two things you will need in order to see.
- 2) Briefly explain how light travels from the source.
- 3) In the space below, draw well labeled diagrams to show that light travels in a straight line.
- 4) (a) A pupil bent a plastic/rubber tube as shown in the diagram below. What do you think will happen to the observer at the other end of the tube?



- b) Give a reason for your answer in 4(a) above.

LESSON 57

RAYS AND BEAMS OF LIGHT

- Learners will be helped to give the meaning of rays and beams of light.
- Learners will draw and name a ray of light.
- Learners will define, name and draw different beams of light.
- Learners will explain the effects of light on different materials.
- Learners will be guided to define the terms; opaque objects, transparent objects and translucent objects.
- Learners will state any two cases where opaque objects can be of use to man.

Evaluation exercise

- 1) What is meant by “ray of light”?
- 2) Define the term “beam”.
- 3) Name the following beams.
 - (a) A beam of light rays starting from different points of the source of light that do not meet.
 - (b) A beam of light whose rays merge from a point and spread out from each other.
 - (c) A beam of light in which the rays start from different points of the source of light but meet at a focal point.
- 4) By use of diagrams, show and name the three different types of beams.
- 5) Define the following terms
 - (a) Transparent materials
 - (b) Translucent materials
 - (c) Opaque objects
- 6) What happens to light when its passed through a translucent material?
- 7) Illustrate diagrammatically the behaviour of light rays of passed through:

- (a) Transparent objects
- (b) Opaque objects
- (c) Translucent objects

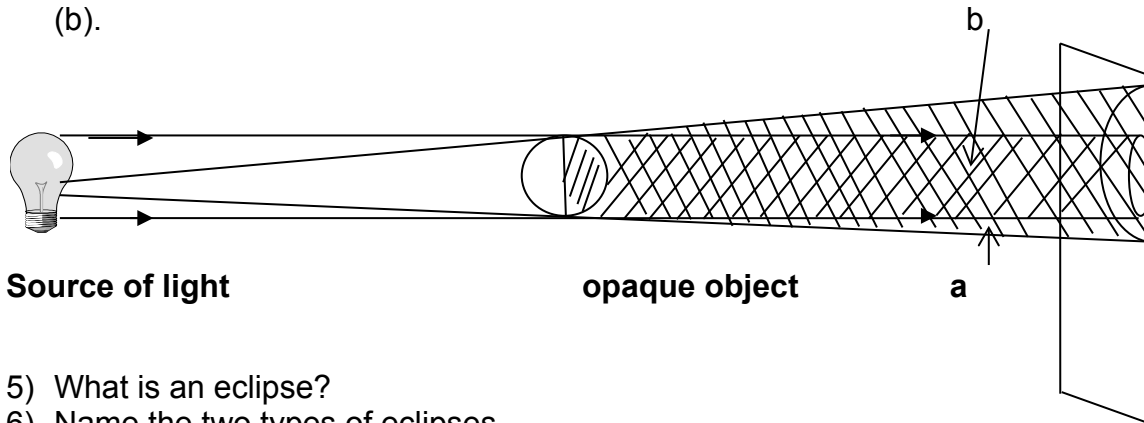
LESSON 58

SHADOWS AND HOW THEY ARE FORMED

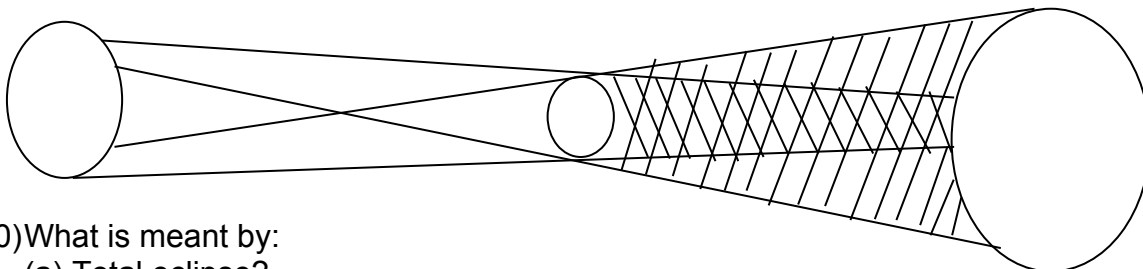
- Learners will be led to define shadows.
- Learners will name the different types of shadows and explain their formation.
- Learners will state the characteristics of each type of shadow.
- Learners will define eclipse, identify the types of eclipse and draw well labeled diagrams showing the types of eclipse.

Evaluation activity

- 1) Define the term shadow.
- 2) Name the two types of shadows.
- 3) Briefly explain how shadows are formed.
- 4) The diagram below shows the formation of shadows. Name the parts named (a) and (b).



- 5) What is an eclipse?
- 6) Name the two types of eclipses.
- 7) Briefly explain how the types of eclipses you have named in number 6 above are formed.
- 8) By use of a well labeled diagram, show the lunar eclipse.
- 9) Below is a diagram showing the solar eclipse. Name the moon, sun and the earth.



- 10) What is meant by:
 - (a) Total eclipse?

(b) Partial eclipse?

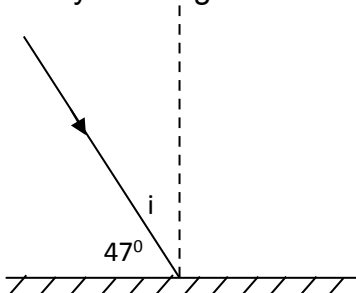
LESSON 60

REFLECTION OF LIGHT

- Learners will be helped to define reflection of light.
- Learners will draw and label a diagram showing reflection of light.
- Learners will state the laws of reflection of light.
- Learners will solve problems concerning reflection (calculations about reflection).

Evaluation activity

- 1) Define the term reflection of light.
- 2) Name the three types of reflection of light.
- 3) Draw and name the following types of light reflection.
 - (a) Regular reflection
 - (b) Perpendicular reflection
 - (c) Irregular (diffuse) reflection (scattered reflection).
- 4) Define the following terms as used in reflection of light on plane mirrors.
 - (a) Normal ray
 - (b) Incident ray
 - (c) Reflected ray
 - (d) Angle of incidence
 - (e) Angle of reflection
 - (f) Glancing angle
 - (g) Emergent angle
 - (h) Plane mirror
- 5) Using a well labeled diagram, show all the parts you have defined in 4 above.
- 6) What causes reflection of light?
- 7) Study the diagram below and answer the questions that follow.



LESSON 61

- (a) Complete the diagram to show
 - i) the reflected ray
 - ii) angle of reflection and
 - iii) emergent angle
- (b) What is the relationship between the angle of incidence and angle of reflection?
- (c) Calculate the size of angle i .

FORMATION OF IMAGES ON PLANE MIRRORS

- Learners show (draw) illustrations to show reflection on plane mirrors.
- Learners state the characteristics of images formed in plane mirrors.
- Learners mention some of the uses of plane mirrors in everyday life situations.
- Learners draw curved mirrors, state their effects on light and state their uses.

Evaluation exercise

- 1) What is an image?
- 2) By using a well labeled diagram, show reflection on a plane mirror.
- 3) What are plane mirrors?

- 4) When do we use plane mirrors in everyday life situations. (site 3 examples)
- 5) How are virtual images different from real images?
- 6) Identify any two situations where curved mirrors may be of use.
- 7) In the space below, draw a diagram to show the effect of a concave mirror to a beam of light.
- 8) Write down any two characteristics of images formed in a plane mirror.
- 9) NB: Teacher to draw any shape and pupils show how it can be reflected.

LESSON 62

LENSES

- Learners will be led to define lenses.
- Learners will identify some of the optical instruments which use lenses.
- Learners will draw, name and define (describe) different lenses and state their uses.
- Learners will explain the effect of different lenses on light. (Use of diagrams to show how light rays behave when passed through different types of lenses is necessary).

Evaluation activity

- 1) What is a lens?
- 2) Name any three optical instruments commonly used in our environment.
- 3) In the space below, draw and name the following types of lenses.
 - (i) Biconcave lens
 - (ii) Plano convex lens
 - (iii) Convex meniscus
 - (iv) Biconvex lens
 - (v) Plano concave lens
 - (vi) Concave meniscus
- 4) By use of diagrams, show the behaviour of a beam of light when passed through the following lenses.
 - (a) Concave lens
 - (b) Convex lens
- 5) In the space below, draw diagrams of a concave and convex lenses showing the behaviour of light rays. In each case, show the; focal length, focal point, principal axis and optical centre.

LESSON 63

REFRACTION

- Learners will be helped to define refraction.
- Learners will briefly explain when light is made to bend.
- Learners will state the laws of refraction.
- Learners will state the effects of refraction of light.
- Learners will conduct experiments about refraction of light.
- Learners will draw diagrams to show refraction i.e. apparent depth and real depth.
- Learners will define mirages and explain their effects to man.

Evaluation exercise

- 1) What is meant by refraction of light?
- 2) When does light bend?
- 3) By use of a well labeled diagram, show the behaviour of a pencil placed in a glass half way filled with water.
- 4) Write down the laws of refraction.
- 5) Identify any three effects of refraction of light.
- 6) What causes mirages?
- 7) How are mirages dangerous to man?
- 8) In which way does refraction of light differ from reflection of light?

LESSON 64

THE PINHOLE CAMERA AND PHOTOGRAPHIC CAMERA

- Learners are helped to define a pinhole camera.
- Learners will state the characteristics of images formed on a pinhole camera.
- Learners will state the difference between the images formed on a pinhole camera and plane mirror.
- Learners will draw diagrams showing the formation of images on a pinhole camera.
- Learners draw, label and state the functions of the parts of a hand (photographic) camera.
- Learners state the characteristics of images formed on a hand camera.
- How are the images formed on a pinhole camera similar to those formed in a hand camera?
- Write down three characteristics of images formed on a hand camera.

LESSON 65

THE HUMAN EYE

- Learners will be helped to draw and label the parts of a human eye and give the functions of each part. They will also state the characteristics of the images formed on the human eye.
- Learners will compare the parts of the human eye with those of a hand camera.
- Learners define the term eye defects and give examples of such defects.
- Learners draw diagrams of different eye defects and also show how such defects can be corrected.

Evaluation activity

- 1) In the space below draw a diagram of a human eye and label the following parts.

(i) Lens	(iv) Blind spot	(vii) Suspensory ligament
(ii) Pupil	(v) Fovea	(viii) Cornea
(iii) Optical nerve	(vi) Retina	(ix) Iris
- 2) Give the functions of the following parts of the human eye.
Lens , Iris, Fovea, Retina, Optical nerve, Pupil.
- 3) Name three eye defects.

- 4) How can one correct the eye defects you have named in 3 above?
- 5) Define the following terms:
 - (a) Myopia (short sightedness)
 - (b) Hypermetropia (long sightedness)
 - (c) Pressbyopia (astigmatism)

LESSON 66

EYE DISEASES

Using the knowledge acquitted in primary six about communicable diseases of the eyes,

- Learners are led to name some of the common eye diseases known to them.
- Learners explain how some eye diseases can be treated and prevented.
- Learners will explain how they can care for their eyes.

Evaluation activity

- 1) Identify some of the common eye infections and in each case name the causes.
- 2) Name any vector borne eye diseases.
- 3) In three ways, explain how eye diseases can be treated and prevented in our community.
- 4) In three sentences, explain how one can care for his or her eyes.

LESSON 67

DISPERSION OF LIGHT BY A GLASS PRISM

- Learners are helped to define “dispersion of light.”
- Learners define the term “spectrum”.
- Learners draw a well labeled diagram showing light dispersion.
- Learners explain the formation of a rainbow.
- Learners are helped to group the colours of light (primary, secondary, tertiary and neutral colours)
- Learners state the importance of colours.

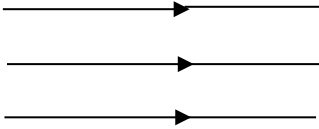
Evaluation activity

- 1) Define the term “light dispersion”.
- 2) By use of a well labeled diagram, show the spectral colours.
- 3) What is a spectrum?
- 4) Name the seven spectral colours.
- 5) Name the four classes of colours of light.
- 6) Write down at least five importance of colours.

TOPICAL QUESTIONS

Section A

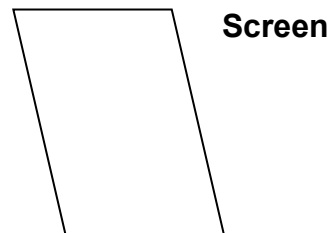
- 1) What is light?
- 2) Name one natural source of light.
- 3) Using a well labeled diagram, show that light travels in a straight line.
- 4) The diagram below is of a beam of light, name it.



- 5) Name the materials which do not allow any light to pass through them.
- 6) Explain the formation of the solar eclipse.
- 7) How is a shadow formed?
- 8) Calculate the size of the angle of reflection given that the angle of incidence is 52° .
- 9) Write down the three laws of reflection.
- 10) How are images formed on a pinhole camera different from images formed on a plane mirror.
- 11) Name the lens used to correct short sightedness.
- 12) What causes long sightedness?
- 13) By using a well labeled diagram, show the behaviour of light rays when they are passed through a concave lens.
- 14) Write down one characteristic of images formed on a pinhole camera.
- 15) Which part of the camera has a similar function as the retina of the human eye?
- 16) What advice would you give to a friend of yours who is short sighted?
- 17) Name the eye disease cause by Chlamydia.
- 18) How is river blindness spread?
- 19) Define the term "dispersion of light".
- 20) Why does the red colour appear first among the spectral colours?

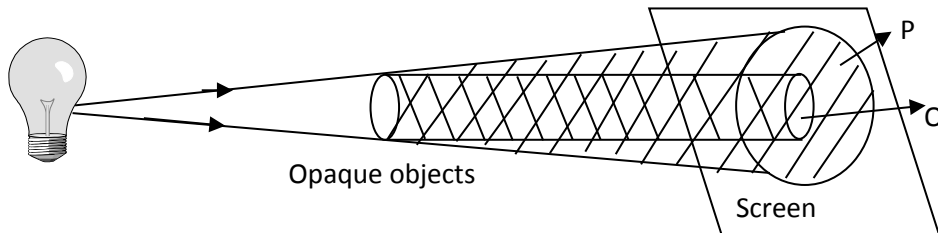
Section B

- 21) The diagram below shows an opaque object which was placed in front of a burning candle and a shadow was formed on the screen. Answer the question below.



Candle **opaque object**

- (a) What is meant by “opaque objects”?
 - (b) Draw the shadow of the object on the screen.
 - (c) When is a shadow formed?
 - (d) What is the meaning of the following terms;
 - (I) Translucent objects
 - (II) Transparent objects
 - (e) Give at least two examples of each of the following:
 - (i) Transparent objects
 - (ii) Translucent objects
- 22) The diagram below shows a shadow of an object in front of a lit bulb. It has formed the shadow on the screen. Use it to answer the following questions.

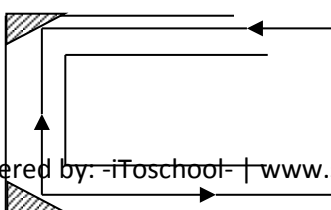


- (a) Name the parts of the shadow marked with letters P and Q.
 - (b) What is meant by the following:
 - (i) Solar eclipse
 - (ii) Lunar eclipse
 - (c) By use of well labeled diagrams, show the following:
 - (i) The eclipse of the sun
 - (ii) The eclipse of the moon
 - (d) What do you understand by the following:
 - (i) Partial eclipse
 - (ii) total eclipse
- 23) The diagram below shows a pinhole camera. The image of the object has been formed on the screen.



candle

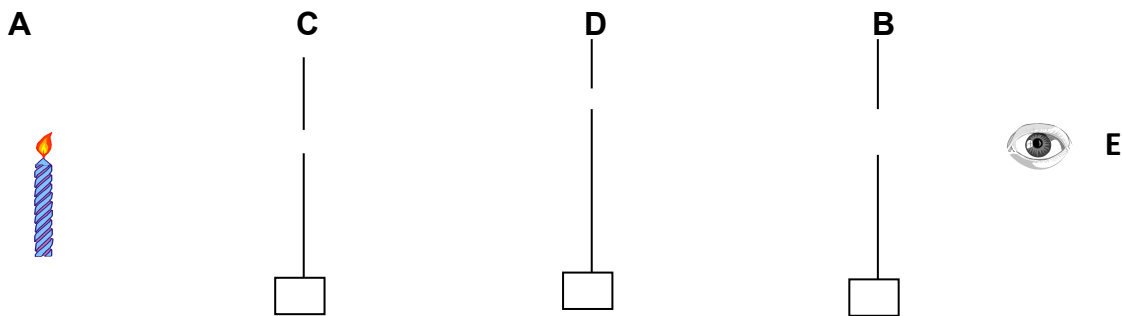
- (a) Complete the diagram sensibly by drawing the image as it appears on the screen of the pinhole camera.
 - (b) Give three characteristics of images formed on a pinhole camera.
 - (c) Compare the images formed on a pinhole camera and those formed on a plane mirror.
 - (d) How are the images formed on a pinhole camera similar to those formed on a film of a hand camera?
- 24) Below is a diagram of an instrument used in science. Answer the questions that follow: **(incomplete diagram)**





Peter's eye (B)

- (a) How is Peter at position B able to see the object at position A?
 - (b) What type of mirrors are used in the above instrument?
 - (c) What name is given to the instrument shown in the diagram above?
 - (d) Give one situation where this instrument is used.
 - (e) On what principle does the above instrument work?
- 25) In the diagram below, B, C and D are cardboards with small holes as shown. A student at E is trying to see the light at A through the holes.



Source of light

- (a) Will the observer at E see the light rays from the candle at A?
 - (b) Give a reason to support your answer in (a) above.
 - (c) What advice would you give to the observer at E such that he can be able to see the light at A?
 - (d) What does the above experiment suggest about light?
- 26) The diagram below is of a ray of light passing through a glass block.



- (a) Complete the diagram by drawing the missing rays.
- (b) Name the light ray marked Z.
- (c) Besides Z, which two other rays would appear in the above diagram?
- (d) Indicate by use of letter R the position of the angle of refraction.

TOPIC: SEXUALLY TRANSMITTED DISEASES

LESSON 70

Write STD, STI and VD in full

- Learners are helped to write STDs, STIs and VDs in full.
- Learners are helped to define STDs.
- Learners will give examples of STDs e.g. gonorrhoea, causes, signs and symptoms and how they can be prevented or treated.

Evaluation activity

- 1) Write the following in full.
 - a) STDs
 - b) STIs
 - c) VDs
- 2) How are VDs transmitted?
- 3) State the meaning of the term STDs.
- 4) What causes gonorrhoea?
- 5) Briefly explain how gonorrhoea is spread from an infected person to a healthy one.
- 6) Write down any two signs and symptoms of gonorrhoea in each of the following:
 - a) Males
 - b) Females
- 7) Briefly explain in four ways how one (you) can prevent the spread of STDs like gonorrhoea.

LESSON 71

SYPHILLIS

- Learners are helped to state the cause of syphilis.
- Learners will state the signs and symptoms of syphilis which occur at the following stages.
 - a) Primary stage (between 2 – 5 weeks)
 - b) Secondary stage (5 weeks – several years)
 - c) Tertiary stage (5 years – 20 years)
- Learners define congenital syphilis.
- Learners will explain how the disease can be prevented.

Evaluation activity

- 1) What germ causes syphilis?
- 2) Write down at least two signs and symptoms that show up in males and females who have syphilis at the following stages.
 - a) Primary stage (between 2 – 5 weeks)
 - b) Secondary stage (5 weeks – several years)
 - c) Tertiary stage (5 years – 20 years)
- 3) Write down at least three effects of congenital syphilis in children.
- 4) How can the spread of syphilis be prevented.
- 5) Why is syphilis called an STD?

LESSON 72

CHANCROID AND AIDS

- Learners are helped to name the germs that cause
 - a) AIDS
 - b) Chancroid
- Learners will write down the signs and symptoms of chancroid.
- Learners will state how the spread of chancroid can be prevented.
- Learners will write AIDS in full giving the meaning of each letter.
- Learners will explain how the disease is spread, its cause and the blood cells it attacks.
- Learners will identify the groups of people who are at risk of acquiring AIDS.
- Learners will write down the signs and symptoms of AIDS.
- Learners will explain how an AIDS victim can be managed and cared for.
- Learners will define counseling, give the reasons for counseling, name the organisation which offer counseling services to AIDS victims and state how AIDS can be controlled or prevented.

Evaluation activity

- 1) Name the germs that cause
 - a) Chancroid
 - b) AIDS
- 2) Write the following in full:
 - a) HIV
 - b) AIDS
- 3) Which blood cells are mainly destroyed by HIV germs?
- 4) Identify two types of counseling.
- 5) Why is it advisable to screen blood before transfusion?
- 6) Name three groups of people at risk of getting AIDS.

LESSON 73

OTHER SEXUALLY TRANSMITTED DISEASES

- Learners are helped to identify other STDs.
- Learners will name some genital infestations.
- Learners will state general ways of preventing and controlling STDs.

Evaluation activity

- 1) Besides syphilis, AIDS and gonorrhoea, name at least three other STDs.
- 2) Name at least two genital infestations.
- 3) In four ways, explain how we can control and prevent the spread of Sexually Transmitted Diseases.

LESSON 74

TOPICAL QUESTIONS

- 1) What are STDs?
- 2) Name one Sexually Transmitted Disease caused by a virus.
- 3) What causes AIDS?
- 4) Briefly explain how an AIDS victim is different from an HIV positive person.
- 5) Which blood cells are mainly affected by the HIV germs?
- 6) What causes gonorrhoea?
- 7) Write down any two signs of gonorrhoea in males.
- 8) Briefly explain why it is important for pregnant women to go for HIV tests.
- 9) Why is AIDS the most dangerous disease today?
- 10) Besides tetanus, which other infection is a newly born baby likely to get through the umbilical cord if it is not cut with a sterile knife or razor blade?
- 11) What is the best way of preventing all sexually transmitted diseases among school children?
- 12) What causes candidiasis?
- 13) What is wrong with a sexually transmitted disease patient treating himself?
- 14) Name the STD what causes pus discharge from the penis or vagina.
- 15) Which venereal disease causes blindness in babies?

Section B

- 16)(a) Name any three Sexually Transmitted Diseases.
b) Besides getting STDs, mention one other problem associated with pre-marital sex in teenage girls.
- 17)(a) Write HIV in full.
b) Write down any three ways through which one can acquire AIDS.
- 18)(a) Identify any three social activities that are more likely to contribute to the acquisition of AIDS.
b) Why is it important for a couple to go for HIV test before marriage?
- 19)(a) Define the term counseling?
b) Name any types of counseling in HIV/AIDS management.
c) Why should an HIV/AIDS victim be counseled?
- 20) Besides using condoms, write down any four other ways in which the spread of STDs can be controlled.
- 21)(a) Why is syphilis called an STD?
b) Name any three dangerous problems caused by syphilis.
- 22)(a) Name two dangerous problems caused by gonorrhoea if it is not treated in time.

b) Identify the diseases which have the following signs or symptoms.

- i) Painful urination in males
- ii) Painless sores or (chancre) on the penis.

TOPIC: MARRIAGE

LESSON 75

- Learners are helped to define marriage.
- Learners state the reasons (purpose) for marriage.
- Learners are helped to mention the qualities that should be put in consideration when choosing a partner for marriage.
- Learners state different types of marriages.

Evaluation activity

- 1) What is marriage?
 - 2) Write down three reasons why people marry.
 - 3) Before marriage, it is important for one to make a proper choice of a marriage partner. Write down five qualities that should be considered when choosing a partner for marriage.
 - 4) (a) Name the type of marriage which is presided over by either CAO, Town clerk or Gombolola (county) chief.
- b) Besides the above type of marriage, name two other types of marriage.
- c) Which type of marriage is strictly monogamous?
- d) How is customary marriage different from civil marriage?

LESSON 76

RESPONSIBILITIES OF A FATHER/MOTHER

- Learners will give the responsibilities of each of the following members in a home.
 - a) Father
 - b) Mother
- Learners will state the disadvantages of parenthood outside marriage.
- Learners will mention the problems faced by;
 - a) Both young father and mother (young parents)
 - b) Problems faced by young mothers (teenage pregnancy)

Evaluation activity

- 1) Write down three roles of each of these parents in a home.
 - a) A father
 - b) A mother

- 2) State three disadvantages of parenthood outside marriage.
- 3) Write down three problems faced by both young father and mother (young parents).
- 4) Mary got pregnant at the age of 14 years. Suggest any four problems she is likely to face.
- 5) Who is a mother?

LESSON 77

DIVORCE

- Learners are helped to tell the meaning of “divorce” in marriage.
- Learners state the causes of divorce in homes.
- Learners list the cases where a couple will be recommended for divorce e.g. adultery.
- Learners will write down disadvantages of divorce.

Evaluation activity

- 1) Define the term “divorce” in marriage.
- 2) State three causes of divorce in a home.
- 3) Suggest any two cases where a couple would be recommended for divorce.
- 4) Write down three disadvantages of divorce.

LESSON 78

A FAMILY

- Learners are helped to define the term family.
- Learners name different types of families giving advantages and disadvantages of each of them i.e.
 - a) Nuclear family
Its advantages and disadvantages
 - b) Extended family
Its advantages and disadvantages
 - c) Foster family
Its advantages and disadvantages
 - d) Institutional family e.g. Sanyu babies home.

Evaluation activity

- 1) What is a family?
- 2) Write down any three different types of families.
- 3) Define the following types of families.
 - a) Nuclear family
 - b) Foster family
 - c) Extended family
 - d) Institutional family
- 4) Write down any three advantages of having a nuclear family.

- 5) Write two disadvantages of having an extended family.
- 6) Give one example of an institutional family found in Kampala District (Uganda).

LESSON 79

GOOD FAMILY RELATIONSHIP

- Learners are helped to explain the importance of having a good family relationship.
- Learners state the roles of a father in a family.
- Learners state the roles of a mother.
- Learners state the roles of children in a family.
- Learners are helped to state the problems associated with frequent birth (multigravida).

Evaluation activity

- 1) Of what importance is a good family relationship in the upbringing of a family's children?
- 2) Write down any three roles of the following people in a family.
 - a) A father
 - b) A mother
 - c) Children
- 3) Write down any three problems associated with having frequent births.

LESSON 80

FAMILY BUDGETING

- Learners are helped to define the term "budget" or "budgeting".
- Learners will write down the four different types of budgets.
- Learners will state the advantages and disadvantages of each type of budget system.

- Learners will be helped to state the components of a budget.
- Learners will state the advantages of budgeting.

Evaluation activity

- 1) Define the term budgeting or a budget.
- 2) Write down any three types of budgets.
- 3) How is a handout budget different from an allowance budget?
- 4) Write down any two disadvantages of a joint control budget.
- 5) Write down any three components of a budget.
- 6) Write down four advantages of budgeting to a family.

LESSON 81

TOPICAL QUESTIONS

- 1) (a) What is marriage?
 - b) Write down any three reasons why people marry.
- 2) Write four factors one would put into consideration when choosing a partner for marriage.
- 3) (a) Write down any two types of marriage.
 - b) Which type of marriage is strictly monogamous?
 - c) Define the term cohabiting.
- 4) State any four responsibilities of a mother and family in a home.
- 5) (a) Who are young parents?
 - b) Write down any three problems faced by young parents.
- 6) State at least four disadvantages of parenthood outside proper marriage.
- 7) (a) Define the term “divorce” in marriage.
 - b) Write down any two conditions which may lead to divorce in marriage.
 - c) Write down one disadvantage of divorce in marriage.
- 8) (a) Define the term “a family”.
 - b) Write down three different types of families.
- 9) (a) What is a nuclear family?
 - b) Write down any two advantages of having a nuclear family.
 - c) Write down one disadvantage of a nuclear family.
- 10)(a) How is an extended family different from a nuclear family?
 - b) Write down one advantage of living in an extended family.
 - c) Suggest two disadvantages of living an extended family.
- 11)(a) Write down at least two roles of each of the following members of a family:
 - i) a father
 - ii) a mother
 - iii) a child
 - b) Write down the composition of an extended family.
- 12)(a) Define an allowance type of budget.
 - b) Write down any three components of a family budget.
- 13)Write down any four advantages of budgeting in a family.

14) Write down at least two advantages of each of the following budget.

- a) Hand out budget
- b) Joint control budget

TOPIC: ESSENTIAL DRUGS AND DRUG DEPENDENCE

LESSON 82

- Learners will be helped to define the following terms:
 - a) Drugs
 - b) Vaccines
 - c) Medical drugs
 - d) Essential drugs
- Learners will state the reasons for administering medical drugs.
- Learners will state the qualities of laboratory manufactured drugs.
- Learners will write down examples of laboratory manufactured drugs.

Evaluation activity

- 1) What is a drug?
- 2) Define medical drugs.
- 3) Write down any three reasons for giving medical drugs.
- 4) What is a vaccine?
- 5) Write down at least two effects of essential drugs to the body if properly used.
- 6) Essential drugs are manufactured both in laboratory and traditionally. Write down at least five qualities of laboratory manufactured drugs.
- 7) Why is it dangerous to buy drugs that are sold in any retail shops in your village?
- 8) Write down any four examples of laboratory manufactured drugs.
- 9) What is the danger of two people suffering from the same disease sharing the same dose?
- 10) Write down any two vaccines that are administered to children to prevent them from getting immunisable diseases caused by viruses.

LESSON 83

- Learners are helped to define traditional drugs.
- Learners will state the characteristics of traditional drugs.
- Learners will give examples of traditional drugs.
- Learners will state the meaning of drug prescription, explain why drugs should be prescribed and mention the advantages of drug prescription.

Evaluation activity

- 1) Define traditional drugs.
- 2) Write down at least four characteristics of traditional drugs.
- 3) Write any two examples of traditional drugs.
- 4) Define the term "prescription of drug".
- 5) Write down any three advantages of drug prescription.
- 6) Briefly explain why drugs should be prescribed before being used.

7) Who prescribes drugs?

8) What is the danger of taking drugs which are not prescribed?

LESSON 84

STORAGE OF DRUGS

- Learners will be helped to write down some of the conditions under which drugs should be properly stored.
- Learners will state the dangers of buying drugs from shops and markets.
- Learners will be guided to define drug misuses and state the different ways in which drugs are misused.

Evaluation exercise

- 1) Write down any two conditions under which drugs can be best stored.
- 2) Write down at least three dangers of buying drugs from shops.
- 3) What is drug misuse?
- 4) Write down any three ways in which drugs can be misused.

LESSON 85

DRUGS OF DEPENDENCE

- Learners are helped to define “drugs of dependence”.
- Learners state the reasons why people abuse drugs.
- Learners name the commonly abused drugs.
- Learners will identify the problems caused by drugs of dependence.
- Learners will explain how drugs of dependence can be avoided.

Evaluation activity

- 1) What is drug dependence?
- 2) How is drug dependence different from drug abuse?
- 3) What is the difference between drug abuse and drug misuse?
- 4) Write down at least four commonly abused drugs in Uganda.
- 5) Marijuana is also called bhang or cannabis. Besides eating and drinking the drug, how else can it be abused?
- 6) Mirra is also called khat or mairungi. Which part of the plant is chewed in order to obtain the drug’s effect?
- 7) Write down any four problems caused by drug dependence.
- 8) Write down any three ways in which drug dependence can be avoided in society.

LESSON 86

SAMPLE TOPICAL QUESTIONS

- 1) Mary bought some drugs from a shop in her village and took them. How dangerous is that to her health?
- 2) Why should medical drugs be prescribed before use?
- 3) Drug misuse is the use of a drug without the proper doctors' advice. Suggest one way in which a drug can be misused.
- 4) Name the poisonous drug found in tobacco.
- 5) Define "drug dependence".
- 6) What is drug addiction?
- 7) Why is it advised to store drugs out of reach of children?
- 8) Musa bought kerosene (paraffin) and a soda bottle and forgot it on the dining table. What possible accident do you think can result from such carelessness in case he lives with children?
- 9) In relation to the above question, what should Musa have done to avoid such an accident?
- 10) Name any one example of an alcoholic drink.

Section B

11)(a) What are traditional drugs?

b) In three ways, explain how traditional drugs are different from laboratory manufactured drugs.

12)(a) What is a drug?

b) How are laboratory manufactured drugs different from traditional drugs? (write three ways).

13)(a) What are vaccines?

b) Name the vaccines administered against the following diseases.

i) Tuberculosis

ii) Diphtheria

iii) Haemophilus influenza B

14)(a) Write down any two dangers of living with a parent who smokes tobacco cigarettes.

b) How is smoking dangerous to the health of that individual who smokes? (write two dangers).

15)(a) Who is an alcoholic?

b) Write down two disadvantages of depending on alcohol by an individual.

c) How does alcohol dependency affect the family?

16) In four ways explain how drug dependence can affect a society.

17) Write down any four problems caused by excessive drug dependence by a family member e.g. a father.

TOPIC: THE CIRCULATORY SYSTEM

LESSON 87

- Using the knowledge acquired about this topic in both primary five and six, the learners will be guided to:
 - a) Revisit their lower primary work about the circulatory system.
 - b) Discuss in groups the given sub topics about the circulatory system.
 - c) Answer the given topical questions.

Evaluation activity

- 1) Which blood cells are responsible for body defence?
- 2) Looking at red and white blood cells in a microscope, what difference would you notice?
- 3) Which device in everyday life has a similar function as a mammalian heart?
- 4) Which side of the heart handles deoxygenated blood?
- 5) Name the blood vessel that carries blood to all body parts from the heart.
- 6) Why is the left side of the heart made of thicker muscles than the right side?
- 7) How are valves similar to the kink of a clinical thermometer in function?
- 8) What is the physical difference between a vein and an artery?
- 9) How are arteries different from veins in terms of function?
- 10) What is the function of the aorta?
- 11) What type of blood moves from the kidney to the vena cava?
- 12) Name the smallest blood vessels in the human body.
- 13) Name the iron substance in blood that helps it to transport oxygen.
- 14) In the space below, draw diagrams to show the difference between a vein and an artery.
- 15) How is the function of the pulmonary artery different from a pulmonary vein?

Section B

16)(a) In which part of the body are platelets made?

b) Give the functions of the following blood components.

i) Platelets

ii) Red blood cells

iii) White blood cells

17)(a) By use of well labeled diagrams, show the difference between a white blood cell and red blood cell.

b) Write down one functional difference between a vein and an artery.

c) Write down one structural difference between (**qn incomplete**).

18) Study the diagram below and answer the questions that follow: (**human heart**)

- a) Name the parts of the heart labeled M, L, B, K, N, X, Y and Z.
 - b) The heart has got three valves. Name them.
 - c) The four main blood vessels attached to the heart.
- 19) Write down any four substances transported by blood.
- 20) Name any four substances found in blood plasma.
- 21) State four functions of blood.
- 22) (a) Give two ways in which blood defends the body against infection of disease.
- b) There are three places in the body where white cells are made. Name them.

TOPIC: SIMPLE MACHINES AND FRICTION

LESSON 88

Introduction of machines

- Learners will define machines.
- Through guided discussion, learners will explain how machines simplify work.
- Learners will explain different terms used in machines and carry out simple calculations about work, force and power.

Evaluation exercise

- 1) What is a machine?
- 2) State any two advantages of using machines at work.
- 3) Name four types of simple machines.
- 4) What is work?
- 5) Find the work done by a man who pushes Wheelbarrow using a force of 80 Newtons through a distance of 9 meters.
- 6) Find the work done by a boy who pushes a load of 75kg through a distance of 15 metres.

- 7) What distance will be covered by a man who uses 30 Newtons to do work of 900 joules?
- 8) Calculate the force needed to push a log through a distance of 50 metres using 600 joules.

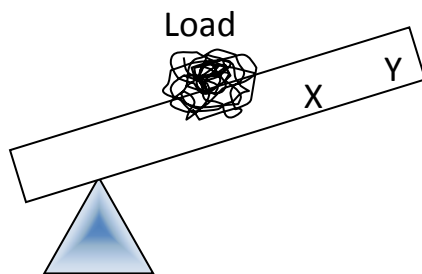
LESSON 89

LEVERS

- Learners will observe and name various simple machines that belong to the second class levers.
- Learners will draw machines in the second class levers.
- Learners will give advantages of using second class levers and identify places where they are applied.

Evaluation activity

- 1) Draw any four simple machines that belong to the second class lever.
- 2) What is the main characteristic of all second class levers?
- 3) State any two uses of second class levers.
- 4) Give any one advantage of using second class levers.
- 5) The diagram below shows a crow bar.



- a) Use letter F to indicate the fulcrum of the diagram.
- b) Of the two points X and Y, where should one apply effort to use less effort?

LESSON 90

LEVERS

- Learners will name various examples of machines that belong to the third class levers.
- Learners will draw machines in the third class levers indicating the position of effort, fulcrum and load on each material.
- Learners will state advantages of using 3rd class levers.
- Carry out simple calculations of levers.

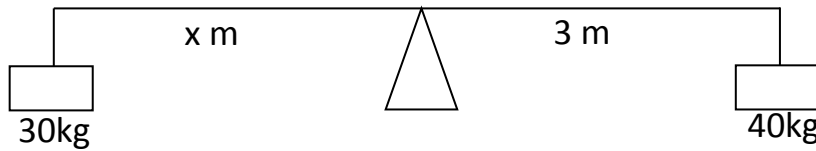
Evaluation exercise

- 1) Draw four machines in the third class levers and indicate the position of load, pivot and effort on each.
- 2) Give one difference between machines in the first class lever and third class levers.
- 3) Identify one disadvantage of using machines in the third class levers.

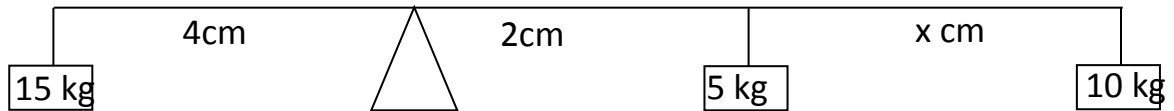
4) State the law of levers.

5) Find the value of x .

(a)



(b)



6) A boy and a girl balance on a see-saw. A boy weighs 30kg and sits 60cm from the pivot while the girl who weighs 45kg sits x cm from the pivot. Find the distance x in cm.

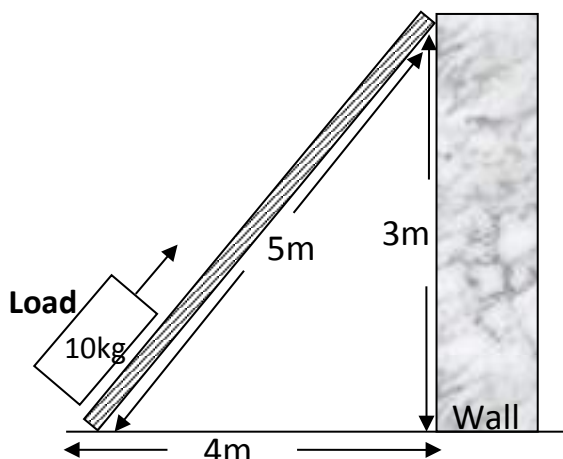
LESSON 91

INCLINED PLANE (SLOPES)

- Learners will define inclined planes and give common examples of slopes.
- Learners will draw illustrations showing applications of inclined planes in daily life.
- Learners will give advantages of using inclined planes.
- Learners carry out simple calculations about inclined planes i.e. work, distance of load and effort and MA.

Evaluation exercise

- 1) Give any four examples of inclined planes.
- 2) With illustrations, give two examples of how man has applied the idea of inclined planes to simplify work.
- 3) State any one advantage of using inclined planes to do work.
- 4) The diagram below shows an inclined plane being used to do work.



If a man pulls the load to the top of the wall;

- a) What distance will have been moved by:
 - i) the load
 - ii) effort
- b) Calculate the work done when one pulls the load to the top of the wall.
- c) What is the mechanical advantage of the machine shown in the diagram above?
- d) What should the man do in order to use less effort to lift the load?

LESSON 92

LEVERS

- Learners will define levers.
- Learners will classify levers into the three classes with examples.
- With the help of illustrations, learners will give the characteristics of first class levers and state where they are applied in life.

Evaluation activity

- 1) Define the term levers.
- 2) State the three classes of levers.
- 3) Name three simple machines that belong to the first class levers.
- 4) What is the major characteristic of first class levers?
- 5) Define the following terms:
 - a) Fulcrum
 - b) Effort
 - c) Load-arm
 - d) Load
 - e) Effort-arm
- 6) Where are first class levers found in use in our daily life?
- 7) State two advantages of using first class levers.

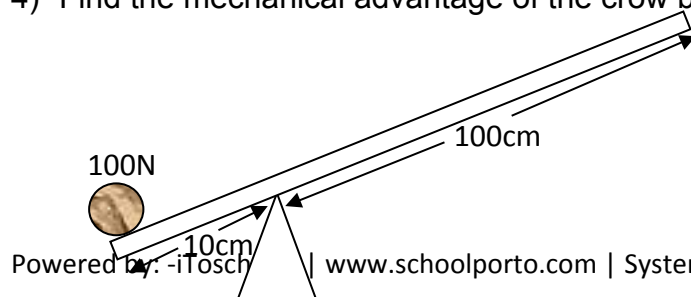
LESSON 93

SIMPLE MACHINES

- Learners will be guided to define “mechanical advantage” and carry out simple calculation of the mechanical advantage for different machines.
- Learners will define the term efficiency of a machine and explain why most machines are not 100% efficient.
- Learners define the term velocity ratio and carry out simple calculations about velocity ratio.

Evaluation exercise

- 1) Define the following terms used in machines:
 - a) Mechanical advantage
 - b) Efficiency of a machine
 - c) Velocity ratio
- 2) Why are most machines not 100% efficient?
- 3) Calculate the mechanical advantage of a machine lifting a load of 30kg using an effort of 30N.
- 4) Find the mechanical advantage of the crow bar below.



- 5) What should be the load if the mechanical advantage of a machine is 2.5 and uses an effort of 30N?

LESSON 94

WEDGES/DOUBLE INCLINED PLANE

- Learners will define wedges and give examples of wedges commonly in use.
- Learners will state uses of different wedges and advantages of using wedges.
- Learners will identify different ways man applies wedges in daily life.

Evaluation exercise

- 1) Why are wedges called double inclined planes?
- 2) Identify three examples of wedges.
- 3) How do double inclined planes simplify work?
- 4) Draw and name two examples of wedges.
- 5) Give two uses of wedges in our daily life.

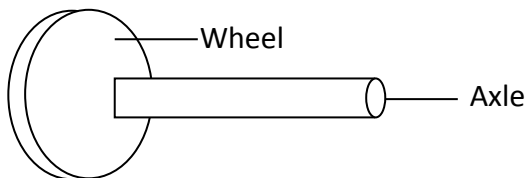
LESSON 95

SCREWS, WHEELS AND AXLE

- Learners will define screws and give examples of screws in use.
- Learners will state the uses of screws in daily life.
- Learners will explain how wheels and axles work and give uses of wheels and axle in daily life.
- With the help of illustrations learners will explain how gear wheels and belt drives work.

Evaluation exercise

- 1) What is a screw?
- 2) Give two examples of screws that are commonly used in daily life.
- 3) State any two uses of screws.
- 4) The diagram below shows wheels and axles.



Use letter E to indicate the position where effort is applied on the machine above.

- 5) Name any four machines that use wheels and axles.
- 6) Write two uses of gears and drive belts.
- 7) If gear wheel A has 40 teeth and wheel B has 20 teeth, how many revolutions will wheel B turn when wheel A turns B?

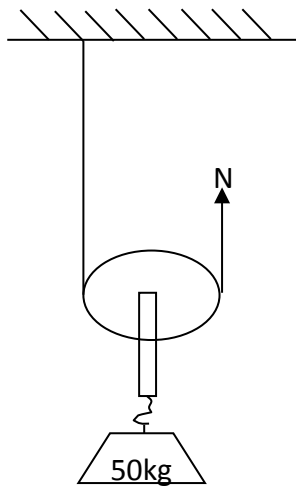
LESSON 96

PULLEYS

- Learners will be guided to explain how a single movable pulley works.
- Learners state the characteristic of a single movable pulley.
- Learners carry out simple calculations about single movable pulleys.

Evaluation exercise

- 1) How is a single movable pulley different from a single fixed pulley?
- 2) State two advantages that a single movable pulley has over a single fixed pulley.
- 3) The diagram below is of a pulley system. Use it to answer questions that follow.



- a) Name the pulley shown in the diagram.
- b) Find the amount of force applied at N to overcome the load.
- c) If the load is to be lifted 18 metres high, what distance will the effort string move?
- d) Calculate the mechanical advantage of the pulley above.

- 4) Calculate the work done by a man lifting a load of 30kg to a scaffold 8 metres high using a single movable pulley.

LESSON 97

PULLEYS

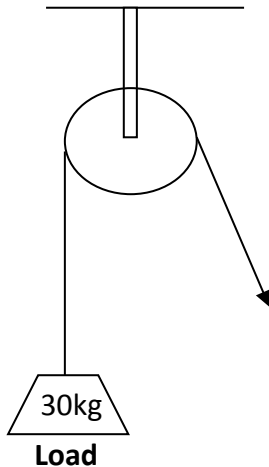
- Learners will define pulleys and name the parts of a pulley system.
- Learners will be guided to explain how a single fixed pulley works.
- Learners will state characteristics of a single fixed pulley and carry out simple calculations about single fixed pulleys.

Evaluation exercise

- 1) What is a pulley?
- 2) Of what importance is the groove in a pulley system?

- 3) State any two uses of pulleys in daily life.
- 4) Name two forces that one will overcome when using a single fixed pulley.

- 5) The diagram below shows a single fixed pulley. Use it and answer questions that follow.



- a) Use letter E and indicate the position where effort is applied.
- b) The mechanical advantage of a single fixed pulley is 1. Find the effort needed to rise the load above.
- c) If the load is to move through a distance of 8m high, what distance will the effort move?
- d) Calculate the work that will be done when a man lifts a load of 30kg through a distance of 10m using a single fixed pulley.
- e) What is the advantage of using such a pulley?

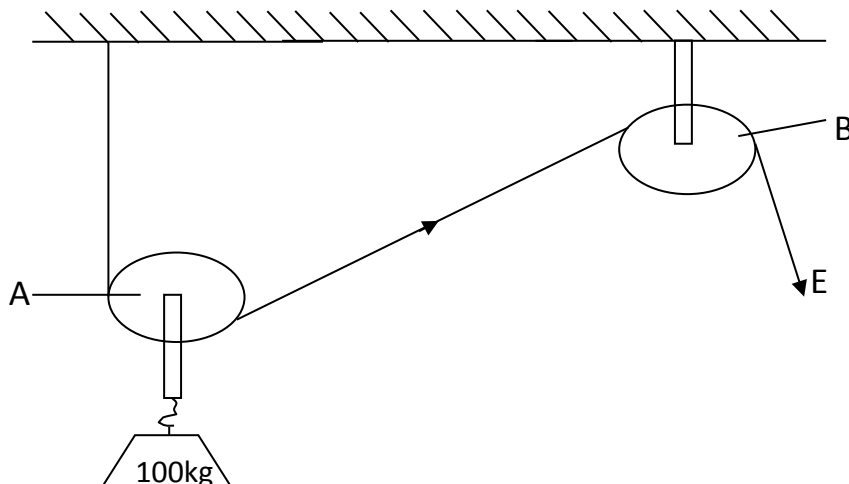
LESSON 98

PULLEYS

- Learners will be guided to explain how different types of pulleys can be arranged to make a block and tackle system.
- Learners will explain how a block and tackle works and carry out simple calculations about a block and tackle system.

Evaluation exercise

- 1) State one advantage of using a block and tackle over single pulleys.
- 2) Name two machines that use block and tackle system.
- 3) The diagram below shows a block and tackle system. Use it to answer questions that follow.



a) Name the type of pulley labeled:

A _____ B _____

b) What effort (E) is needed to lift the load in the diagram.

c) What is the mechanical advantage of the system above?

d) One wanted to lift the same load using less effort. What advice would you give him?

LESSON 99

FRICTION

- Learners will define the term “friction”.
- Learners will explain different types of friction.
- Learners will state the properties of friction.
- State advantages and disadvantages of friction in the environment.
- Learners will suggest ways of increasing and reducing friction.

Evaluation exercise

- 1) What is friction?
- 2) How is static friction different from dynamic friction?
- 3) Define the term viscosity.
- 4) Write down any three ways friction is useful to man.
- 5) Give two disadvantages of friction in the environment.
- 6) State the importance of treads on tyres and shoe soles.
- 7) Identify any two methods used to reduce friction in moving parts of machines.
- 8) Nyabendo always pours oil on brake pads of his bicycle. Of what disadvantage is this practice?

LESSON 100

SAMPLE TOPICAL QUESTIONS

- 1) What is a machine?
- 2) How do machines simplify work?
- 3) Name the kind of machine in which a stiff rod turns on a pivot.
- 4) Identify one common feature of all machines under first class levers.
- 5) Define the term fulcrum.
- 6) Why are most machines not 100% efficient?
- 7) Give any one use of wedges in our daily life.
- 8) Draw and name one example of wedges.
- 9) Give two examples of screws used in daily life.
- 10) State one advantage that a single movable pulley has over a single fixed pulley.
- 11) Okumu pushed a wheel barrow using a force of 25 Newtons for a distance of 17 metres. Calculate the work done by Okumu.
- 12) Give any one use of pulleys at your school.
- 13) Kabale is one of the most hilly areas of Uganda. Why are roads in Kabale constructed in a spiral form around hills?

14) Residents of Katwe are fond of pouring used lubricants on road surfaces. Of what danger is this practice to the road users in that area?

15) What is the importance of spikes put on sports shoes?

16)(a) Draw a simple machine in the first class lever and show the following parts.

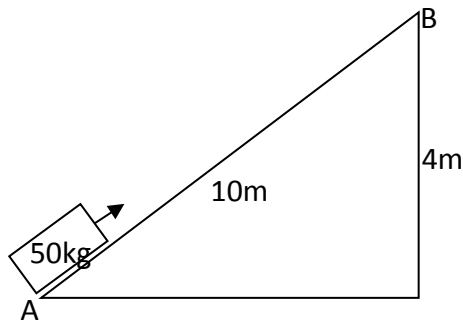
i) Pivot

ii) Load

iii) Effort arm

b) Why are scissors and pliers called double levers?

17) Below is an inclined plane on which Musa is pulling a load of goods.



a) What is the distance moved by the load?

b) If Musa carried the load from point A to B, what was the work done?

c) What should Musa do to do his work with less effort?

d) State any one use of screws.

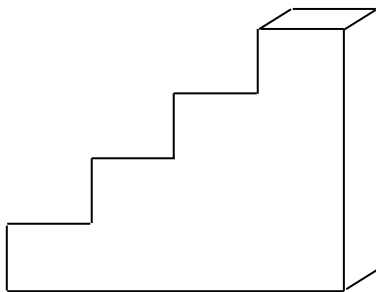
18) Name four types of simple machines.

19)(a) Why are tarmac roads constructed with rough surfaces?

b) Give two methods used to reduce friction in moving parts of machines.

c) How was friction force useful to the early man?

20) The diagram below shows a simple machine.



a) Name the kind of machine in the diagram.

b) What is the advantage of using the machine shown?

c) Name two tools which belong to the same group with that one in the diagram.

LESSON 101

INTRODUCTION TO THE RESPIRATORY SYSTEM

- Learners will define the term respiration.
- Learners will describe different types of respiration and products for each type.
- Learners will differentiate breathing and respiration.

Evaluation exercise

- 1) Define the term respiration.
- 2) Where in man does respiration take place?
- 3) Name one useful product of respiration in our body.

- 4) State two waste products of respiration.
- 5) How is aerobic respiration different from anaerobic respiration?
- 6) Give one difference between breathing and respiration.
- 7) Which gas is produced during respiration in man?
- 8) What is the importance of respiration to man?

LESSON 102

PARTS OF RESPIRATORY TRACT

- Learners will observe the structure and name parts/organs of the respiratory system.
- Learners will state the function of each organ of the respiratory system.
- Learners will be helped to explain the breathing mechanism and gaseous exchange in man.

Evaluation exercise

- 1) Why is it not advisable to breathe through the mouth?
- 2) Draw a diagram showing the respiratory system and name the following parts?
 - a) Trachea
 - b) Bronchus
 - c) Air sac
- 3) State any one functional difference between hair and mucus in the nose and the epiglottis.
- 4) Where in man does gaseous exchange take place from?
- 5) State the importance of the rings of cartilage.
- 6) Which process helps in the exchange of gases in the alveoli?
- 7) What happens to the diaphragm during inspiration?
- 8) The air we breathe in has high oxygen content and the air we breathe out has a high level of Carbondioxide. Why the air expired found to have high percentage of Carbondioxide.

LESSON 103

DISEASES AND DISORDERS OF THE RESPIRATORY SYSTEM

- Learners will name diseases that attack the respiratory system.
- Learners will categorise respiratory diseases according to their causative agents and mode of transmission.
- Learners will suggest lifestyles that help to maintain the proper working of the respiratory system.

Evaluation exercise

- 1) Name any four diseases that affect the respiratory system of man.
- 2) How does tobacco smoking affect the respiratory system?
- 3) Give any two childhood immunisable diseases that affect the respiratory system.

- 4) (a) What are hereditary diseases?
- b) Name one hereditary disease of the respiratory system.
- 5) How is whooping cough spread from one person to another?
- 6) Apart from man, name any other animal that is affected by pneumonia.
- 7) Suggest any two living habits that can help to improve and maintain the lungs in good health conditions.

LESSON 104

SAMPLE TOPICAL QUESTIONS

- 1) What is respiration?
- 2) Why do we breathe faster when we are scared?
- 3) What is fermentation?
- 4) By what process does oxygen enter the blood?
- 5) Where in man does the exchange of gases take place?
- 6) What happens to the diaphragm when we breathe out?
- 7) State any two uses of the hair in the nose.
- 8) Give the function of the pleural fluid produced by the pleural membrane.
- 9) Name the muscles found between the ribs.
- 10) Mukasa is a known tobacco smoker in Kalangala. What health problem is Mukasa most likely to get in the near future?
- 11) The diagram below shows gaseous exchange in the alveoli. Use it to answer questions that follow.

a) Name the blood vessel labeled:

A _____

B _____

b) Which process aids gaseous exchange in the alveolus?

- 12) The diagram below shows the respiratory system. Use it to answer questions that follow.

a) Name the part marked:

O

Q

R

b) State the importance of part P.

LESSON 104

TOPIC: THE EXCRETORY SYSTEM

- Learners are guided to define the term excretion.
- Learners state the examples of different excretory organs and their excretory products.
- Learners draw, label and state the functions of different parts of the skin.
- Learners state the uses of the skin.
- Learners name different skin diseases, their causes and how they can be treated or controlled.

Evaluation activity

- 1) Define the term excretion.
- 2) Name any four excretory organs and their excretory products.
- 3) Draw the skin and label the following parts:
 - a) Cornified layer
 - b) Grannular layer
 - c) Malpighian layer
 - d) Sweat glands
- 4) Give the function of the sweat duct.
- 5) Why does sweat taste salty?
- 6) Name the substance in the skin which protects tissues from the strong rays of the sun.
- 7) Name the substance of the skin which determines skin colour.
- 8) (a) State three principle functions of the skin.
b) Give one other function of the skin.
- 9) (a) Name the two main layers of the skin.
b) Name the layer of the fats under the dermis.
c) Give the function of that layer you have named in (b) above.
- 10)(a) Give four excretory products from a human being.
b) Name any four skin diseases and their causes.

LESSON 105

THE KIDNEYS

- Learners are helped to draw and label correctly the parts of the kidney and give functions of each part.
- Learners describe a kidney and draw a diagram to show the position of kidneys in the human body.
- Learners identify and name the diseases of the kidney.
- Learners explain how to care for one's kidneys.

Evaluation activity

- 1) State the function of the kidney.

- 2) Which blood vessel brings excretory products to the kidney?
- 3) Draw a diagram of a kidney and label the following parts.
 - a) Cortex
 - b) Medulla
 - c) Pyramid
 - d) Ureter
 - e) renal artery
 - f) renal vein
 - g) pelvis
- 4) In which part of the kidney does filtration take place from?
- 5) What is the function of the following parts of the kidney:
 - a) Ureter
 - b) Cortex
 - c) medulla
 - d) renal vein
- 6) Write down any three diseases of the kidney.
- 7) Why do we urinate more often on rainy days than we do on sunny days?
- 8) In which part of the body is urine stored?
- 9) How can one ensure proper health and functioning of the kidney?
- 10) How many kidneys has a normal human being?

LESSON 106

THE LUNGS

- Learners are helped to draw and label the diagrams showing the respiratory system.
- Learners describe the location of the lungs in the human body.
- Learners draw, label and state the functions of the different parts of the lungs.
- Learners name the diseases of the lungs and respiratory system.
- Learners explain how to care for one's lungs.

Evaluation activity

- 1) What is respiration?
- 2) Give the three products of respiration.
- 3) Why do we breathe faster when we are scared?
- 4) Draw the diagram of a human respiratory system and name the following parts:
 - a) Air sacs (alveoli)
 - b) Bronchi
 - c) Trachea
- 5) Write down any three diseases that affect the respiratory system.
- 6) In three ways, explain how one can ensure good health and maintenance of his or her respiratory system.

LESSON 107

THE LIVER

- Learners are helped to describe the colour, location (position) and general functions of the liver.
- Learners name the diseases of the liver.
- Learners explain how different disease of the liver can be prevented/controlled.

Evaluation activity

- 1) Write down four functions of the liver.
- 2) Where in the liver is the bile juice stored?
- 3) Name the blood vessel that carries digested food from the ileum to the liver.
- 4) Name any two diseases of the liver.
- 5) Which blood cells are destroyed in the liver?
- 6) What food value can one obtain from eating liver?
- 7) How can one prevent liver infections?

LESSON 108

SAMPLE TOPICAL QUESTIONS

THE EXCRETORY SYSTEM

- 1) Define the term excretion.
- 2) Which part of the kidney filters blood during excretion process?
- 3) How is the kidney similar to the skin in terms of function?
- 4) Name the pigment in the human skin which determines its colour.
- 5) Which layer of the skin contains blood vessels and nerve cells?
- 6) Which blood vessel supplies blood and digested food materials to the liver from small intestines?
- 7) State the main function of the liver.
- 8) Name the water borne disease which attacks the liver.
- 9) Why are lungs regarded as both excretory and respiratory organs?
- 10) Define the following terms;
 - a) Respiration
 - b) Breathing
- 11) What happens to the diaphragm during inspiration?
- 12) Name one non infectious disease of the respiratory system.
- 13) Why do we urinate more often on a rainy day than we do on a sunny day?
- 14) Name the substance in the skin which protects tissues from strong rays of the sun.
- 15) Apart from excretion, what is the other importance of sweating?
- 16) State one habit which can improve the efficiency of the skin and other body systems.

Section B

- 17) Match items in list A with list B correctly.

A	B
Nitrogenous compounds	-lungs
Water vapour and CO_2	- liver
Sweat	- skin
Bile pigment	- kidney

18)(a) What is the main function of the kidney in the excretory system?

b) Draw and show the position of the kidneys in the human body.

19)(a) Write down any two functions of the human skin.

b) List down any two diseases of the human skin.

20) Draw and indicate the following parts on the respiratory system.

a) Air sacs

b) Diaphragm

c) Trachea

21)(a) Why is it important to breathe through the nose not the mouth?

b) State any two ways how the air sacs are adapted to their function.

22)(a) By what process does oxygen enter the blood?

b) Why is the trachea made of cartilage ring?

c) List down any two infectious diseases of the lungs.

The end