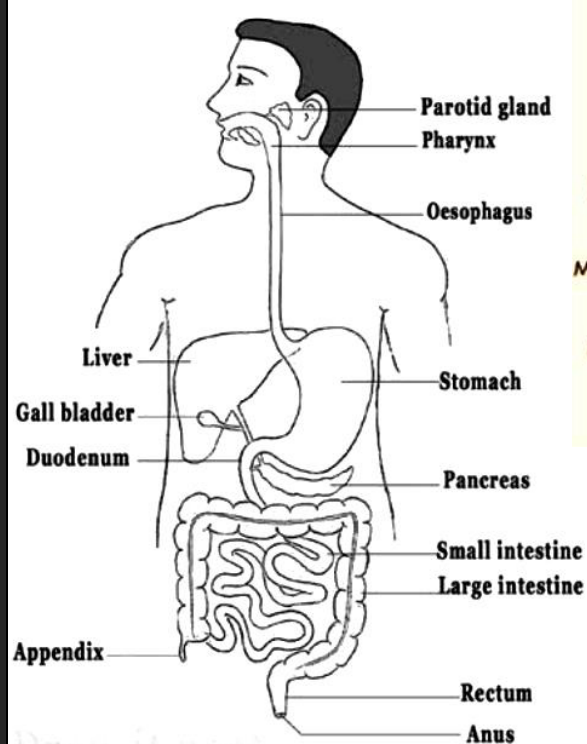


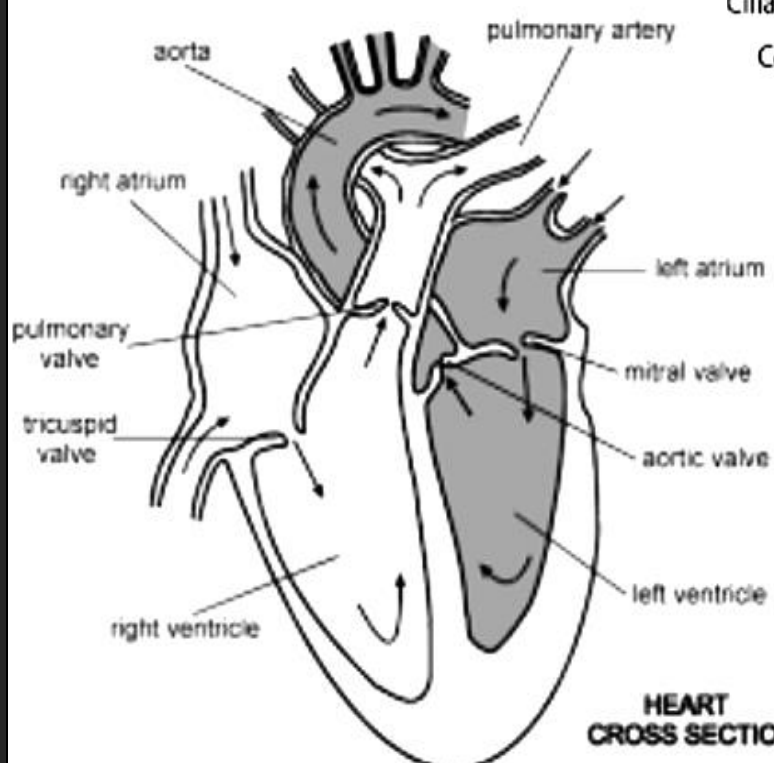
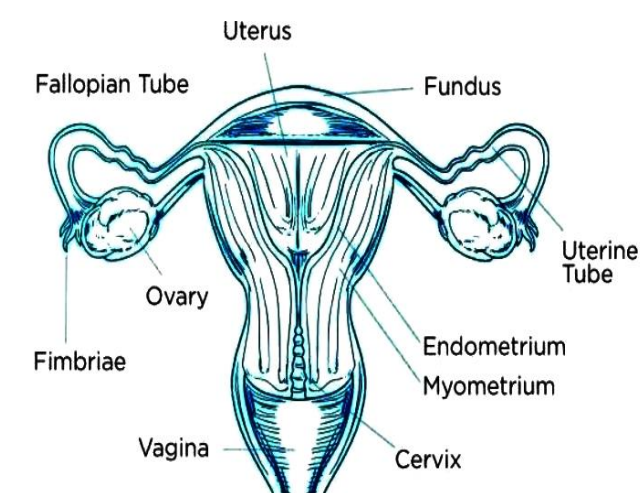
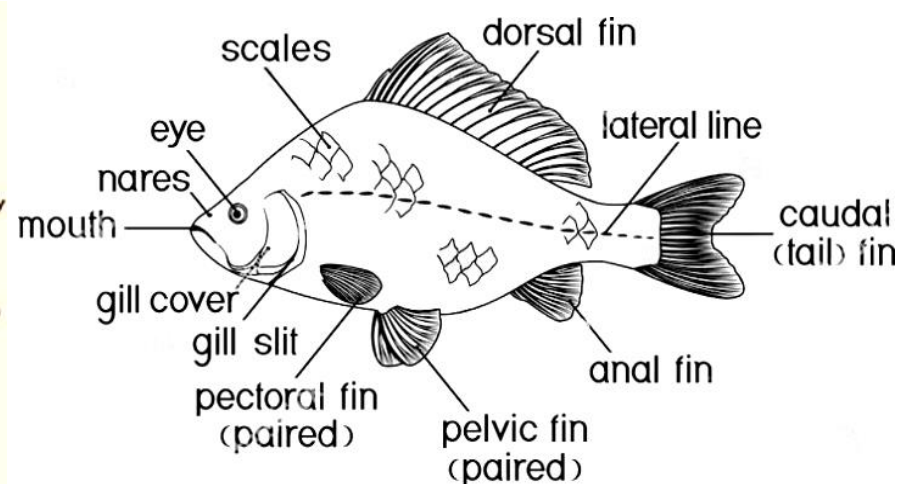
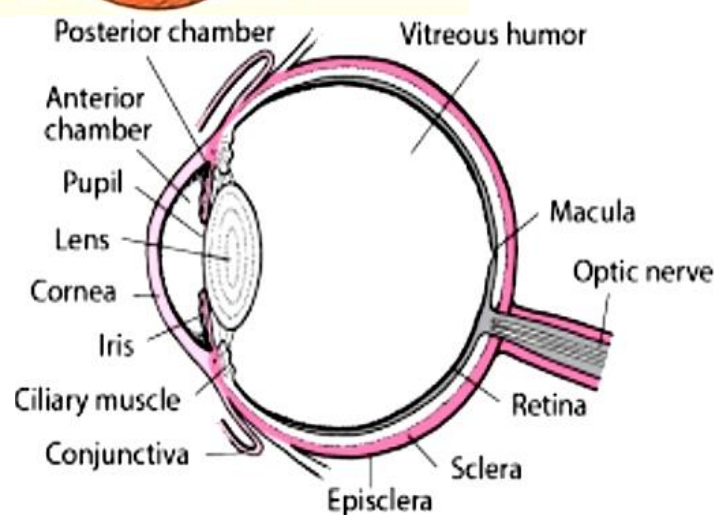
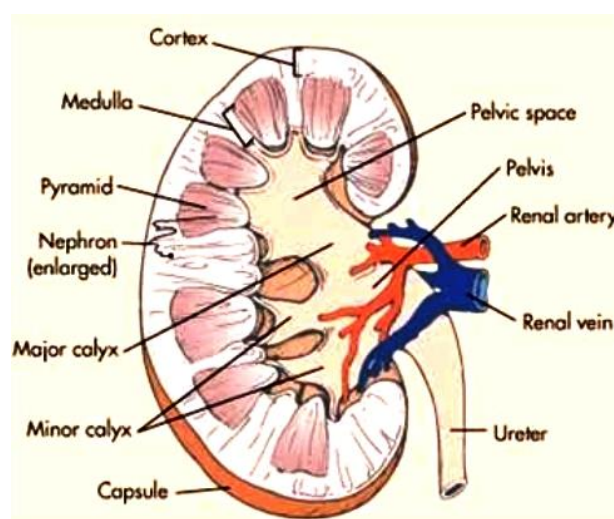


**SUREKEY EXAMINATIONS BOARD**  
**PRIMARY SEVEN SUPER SERIES**  
**2023**  
**INTEGRATED SCIENCE**  
**OFFICIAL MARKING GUIDE**

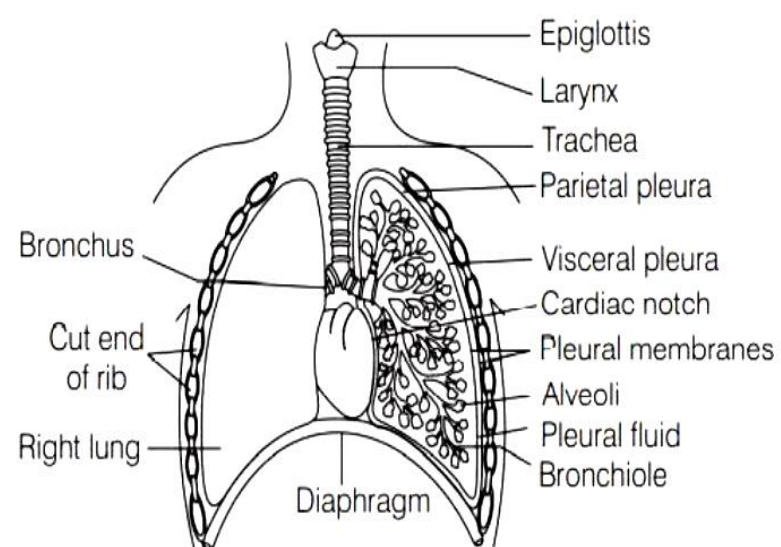
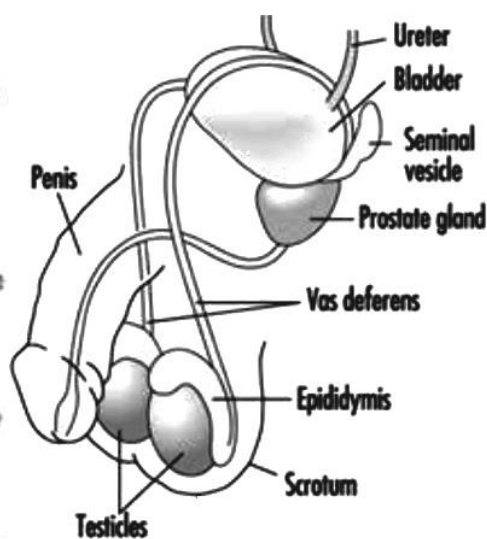
**PREPARED BY:**  
**Human digestive system**



Draw it neat



**HEART  
CROSS SECTIC**



**Diagrammatic view of human respiratory system**  
(sectional view on the left side)

## SECTION A: 40 MARKS

1. Name the type of thermometer that uses both mercury and alcohol.  
 ✓ **Six's thermometer / Minimum and Maximum thermometer.**  
 (*Reject: maximum thermometer / minimum thermometer*)  
Advise: take learners through the concept of temperature and its measurements.
2. Which vector spreads sleeping sickness to people?  
 ✓ **Tse-tse fly.**  
Advice: guide learners on the following areas;
 

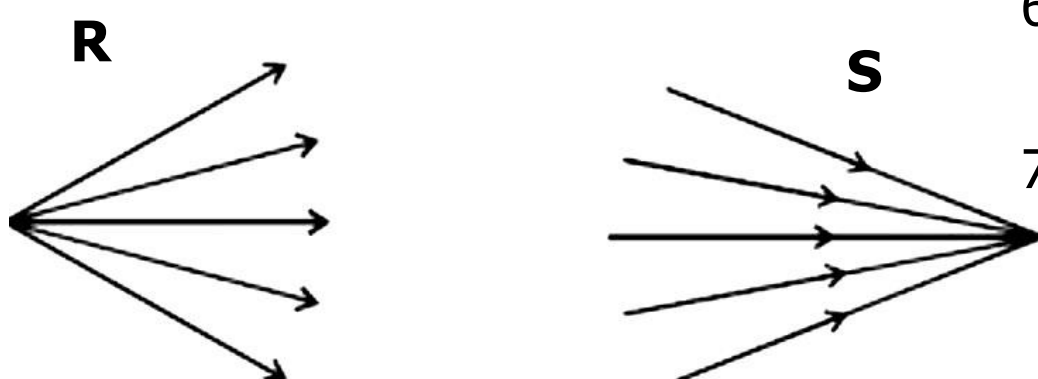
➤ Causes of sleeping sickness. ➤ Signs and symptoms of sleeping sickness.	➤ Control of tse-tse flies. ➤ Sketch a tse-tse fly trap for learners.
--	--
3. State any **one** way of promoting physical exercises among chickens in a poultry house.  
 ✓ **Provide perching materials/perches.**  
 ✓ **Hanging green vegetables in the coop.**  
Advice: revise with learners;
 

➤ <i>Incubation (an incubator)</i> ➤ <i>Farm records</i>	➤ <i>Poultry vices</i> ➤ <i>Breeds of chicken.</i>
---	---
4. Write down any **one** activity done by an individual to promote good health lifestyle.  

✓ <b>Feeding on a balanced diet.</b> ✓ <b>Doing regular physical exercises.</b> ✓ <b>Having enough rest and sleep.</b>	✓ <b>Avoid smoking and alcoholism.</b> ✓ <b>Observing proper personal hygiene.</b> ✓ <b>Going for regular medical checkups.</b>
--	---
5. Which group of mammals have blubber in their bodies?  
 ✓ **Sea mammals / cetaceans.**  
Advice: help learners to know;
 

➤ <i>Uses of blubber to sea mammals.</i>	➤ <i>Groups of mammals.</i>
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The diagram below shows two beams of light. Use it to answer questions **6** and **7**.

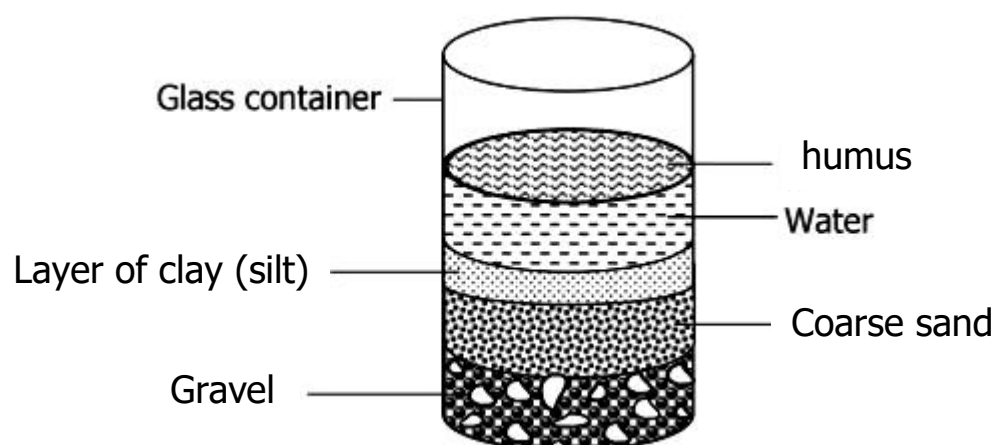


6. Name the beam of light marked **R**.  
 ✓ **Divergent beam / diverging beam.**
7. What type of lens is used to make rays move as shown in **S**?  
 ✓ **Convex lens / Converging lens.**

Advice: guide learners on these concepts;

- |  |  |
|--|--|
| ➤ <i>Eclipse</i><br>➤ <i>Formation of images in plain mirrors.</i><br>➤ <i>Effects of refraction.</i><br>➤ <i>Shadows</i><br>➤ <i>Lenses</i> | ➤ <i>Reflection.</i><br>➤ <i>Rain-bow</i><br>➤ <i>Depth.</i> |
|--|--|

8. State any **one** method a farmer can use to control inbreeding in sheep.  
✓ **Castration // Artificial insemination // Cross breeding // Line breeding // Upgrading**
9. Why does a housefly die when its abdomen is dipped in water for a long time?  
✓ **Water closes its spiracles.**
10. In which way does overgrazing lead to soil erosion?  
✓ **It leaves the top soil bare exposing it to flowing water or strong wind.**  
**Advice:** demonstrate the components of soil using a diagram. i.e;

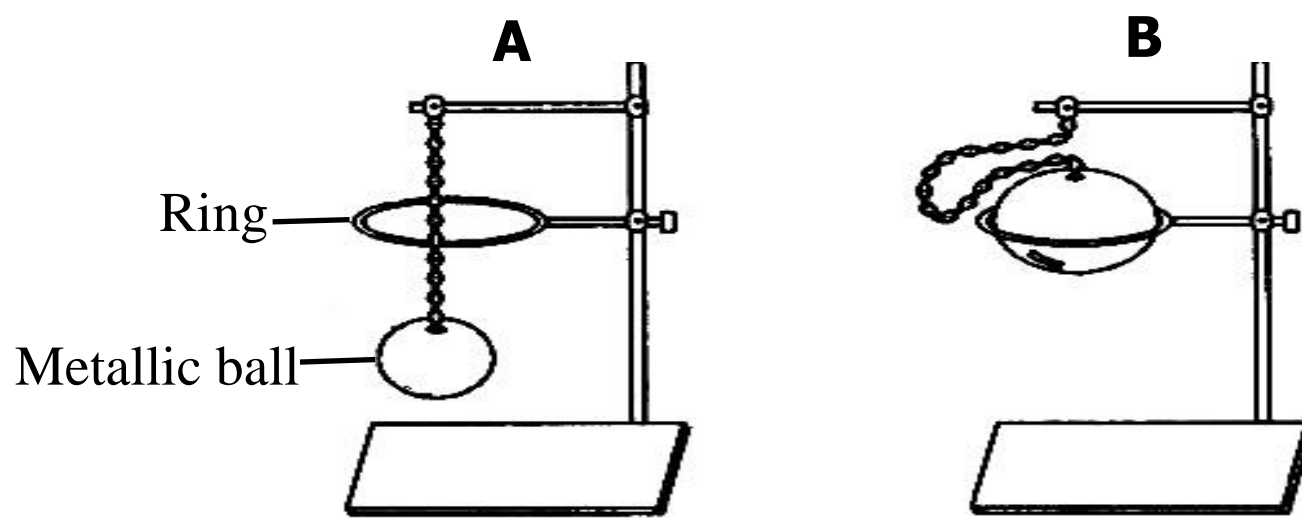


- **Importance of humus in the soil.**  
➤ **Soil erosion as a concept.**
- **Fertilizers.**  
➤ **Crop rotation (demonstrate how it works)**
11. How does a flying bee produce sound?  
✓ **By vibration of its wings when flapped rapidly // by rapid flapping of its wings.**
12. Which immunisable disease is spread through having unprotected sex with an infected person?  
✓ **Hepatitis B (Reject hepatitis alone)**
13. State the difference in structure between canine teeth and incisor teeth.  
✓ **Canine teeth have sharp and pointed crowns while incisor teeth have sharp and chisel shaped / flat crowns**  
✓ **Canine teeth are pointed while incisor teeth are flat.**  
**Advice:**  
➤ **Draw the human tooth and show its parts**  
➤ **Show different shapes of teeth, function and adaptation**
14. Give any **one** way in which weeds affect crop production.  
✓ **Weeds hide crop pests**  
✓ **Weeds spread diseases to crops**  
✓ **Weeds compete with crops for sunlight, space and nutrients.**  
  
**(Reject weeds lower crop yields // Damage crops)**  
**Advice**  
➤ **Revise common weeds and how to control them**



15. Why do earthworms come out of the soil after it has rained?  
 ✓ To get enough oxygen for respiration  
Advice guide learners to understand;  
 ➤ Importance of soil to an earthworm ➤ Importance of earth worms to soil  
 ➤ Why an earth worm dies when oil or salt is poured on its body  
 ➤ Groups of worms  
 ➤ Why an earth worm is an invertebrate
16. Which health condition in human beings is caused by eating undercooked meat?  
 ✓ Tapeworm infestation / Tape worm infection  
 Reject; tape worms or worm infection  
 ➤ Advice: Revise extensively the concept of intestinal worms

The diagram below shows an experiment on how heat affects matter. Use it to answer question **17** and **18**.



17. Why does the metallic ball fail to pass through the ring as shown in **B**?  
 ✓ Due to expansion caused by heating
18. State the effect of heat on matter demonstrated by the experiment shown above.  
 ✓ Solids expand when heated // metals expand when heated // Heat causes expansion of metals/solids
19. Give any **one** way of recycling wastes in the environment.  
 ✓ Plastic materials are used to make toy cars, water tanks and hand bags  
 ✓ Old car tyres are used to make sandals  
 ✓ Polythene papers are used to make kites  
Reject  
 ✓ Used for growing flowers  
 ✓ Used as feeding troughs  
 ✓ Used for carrying materials  
 ✓ Used for fermenting alcohol  
 ✓ Used as laying nests
- These are ways of reusing wastes*
- Advice: guide learners to differentiate between recycling wastes and reusing wastes in the environment  
 ➤ Reusing wastes is putting a waste material into a better alternative uses in its current state

➤ *Recycling wastes refers to making reusable materials from wastes. Here, the waste material is changed from its current state to make a new product from it*

20. State any **one** way in which termites benefit from soil.

- ✓ Termites use soil as their habitat
- ✓ Termites use soil as their source of food
- ✓ Termites get air for breathing from soil
- ✓ Soil provides protection to termites
- ✓ Soil provides breeding grounds to termites

21. How are fangs useful to poisonous snakes?

- ✓ Fangs are used for protection // for injecting venom into an enemy

22. State any **one** sign of malnutrition in children.

- ✓ Retarded growth // Body weakness // Chronic tiredness // Low body immunity // Loss of body weight // Dullness // stunted growth

Advice: guide learners to understand deficiency diseases

23. What piece of advice would you give to a crop farmer in order to avoid gap filling in the garden?

- ✓ To carry out seed selection // to sort seeds before planting // to first plant seeds in a nursery bed e.g tomatoes, cabbage, pepper and carrots

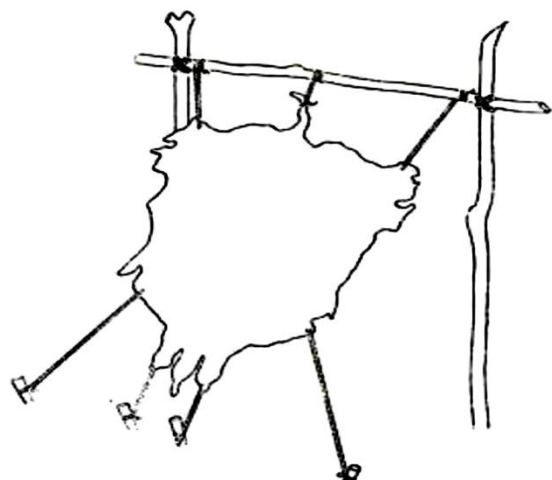
24. Apart from filtering blood, give any **one** other function of the kidneys in the human body.

- ✓ Kidneys regulate the amount of water in the body
- ✓ Kidneys regulate the level of salts in the body
- ✓ Kidneys help in the production of red blood cells
- ✓ Kidneys excrete urine from the body

Advice: take learners through;

- The structure of the kidney
- Diseases and care for the above excretory organs

The diagram below shows a method of preserving hides from cattle. Use it to answer questions **25** and **26**.



25. Name the method of preserving hides shown above.

- ✓ Suspension drying

26. State any **one** advantage of preserving hides using the method above.  
 ✓ It is cheap to use // it keeps the skin flat when dried // it is easy to use (*prevents folding / creases on the skin*) // it keeps the skin clean
27. Why do people sometime put ash on a burning charcoal stove during cooking?  
 ✓ To reduce heat from charcoal // to conserve heat in the jiko // to limit the supply of oxygen on the burning charcoal  
Advice: revise the following areas with learners
- formation of charcoal
  - dangers / effects of using charcoal
  - ways of conserving wood fuel
  - other examples of wood fuel
28. Why is it not advisable to burst blisters on the burnt or scalded part of the skin?  
 ✓ Bursting blisters may cause wounds leading to germ infection  
 ✓ It exposes wounds to germs.  
Advice: help learners to understand;
- What a burn or scald is
  - Causes of burns and scalds
  - Examples of wet heat and dry heat
  - Why is not advisable to put the following on a burnt or scalded part
 

❖ Salt	❖ Cow dung or soil
❖ Sugar	❖ Cooking oil
  - First aid for burns and scalds
  - Why the above first aid is given
  - How to control burns and scalds
29. State any **one** way in which hairs in the nose are important during breathing.  
 ✓ The hair trap dust // the hair filter air // the hair clean air // the hair trap germs // the hair trap foreign bodies
30. Which property of magnets enables a doctor to remove iron bits from the eyes of a victim?  
 ✓ Magnetism can pass through non magnetic materials  
Advice: take learners through;
- An electric bell
  - Methods of making magnets
  - Destroying magnets
  - Uses of magnets
  - Demonstrations on properties of magnets
31. Apart from movement, give any **one** other reason why bacteria are grouped among living things.  
 ✓ They feed // reproduce // respire // excrete // breathe // respond to stimuli

32. A cuboid has its length 8cm, width 2cm and height 4cm. How much space does the cuboid occupy?

$$\begin{aligned}\text{Volume} &= \text{Length} \times \text{Width} \times \text{Height} \\ &= 8\text{cm} \times 2\text{cm} \times 4\text{cm} \\ &= 54\text{cm}^3\end{aligned}$$

The cuboid occupies  $54\text{cm}^3$

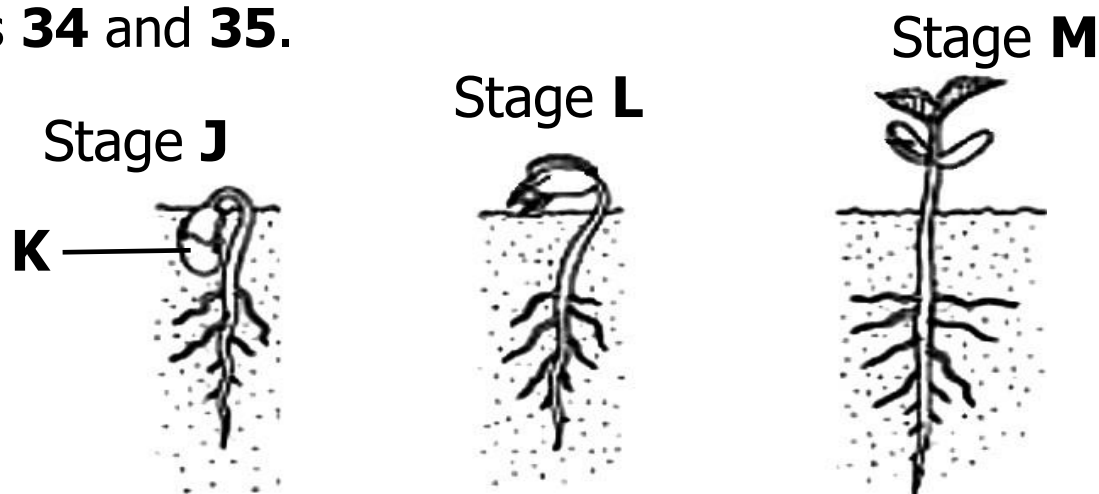
33. How is local salt important to a crop farmer?

✓ Local salt is used as pesticide

*(Reject: it is used as fertilisers / used to make compost manure)*

**Advice:** Discuss the concept of local salt

The diagram below shows stages of a germinating seed. Use it to answer questions **34** and **35**.



34. Name the part marked **K** on the seedling.

✓ cotyledon

35. Why is part marked **K** useless at stage **M**?

✓ Stage M has developed foliage leaves to make food for the seedling

**Advice:** take learners through the following areas

- |                |                  |               |
|----------------|------------------|---------------|
| ➤ Onions       | ➤ Transpiration  | ➤ Pollination |
| ➤ Rhizome      | ➤ Photosynthesis | ➤ germination |
| ➤ Tuber plants | ➤ Leaves         |               |

36. In which way does painting protect metallic tools from rusting?

✓ Paint blocks the supply of oxygen and moisture to the metal // paint prevents direct contact of oxygen and water with the metal

**Advice:** Extensively revise rusting as a concept

37. Which system in human beings is responsible for transporting materials in the body?

✓ The circulatory system

**Advice:** give learners hints on;

- The structure of the human heart
- Components of blood and their functions
- Blood vessels especially structures
- How to increase the volume of blood in the body

38. State any **one** way in which proteins are important to the elderly people.

✓ Proteins help to repair worn out body tissues

✓ Proteins help to replace worn out body cells in their bodies  
(Reject: proteins build their bodies / proteins promote their body growth / proteins repair their worn out body cells)

39. Give any **one** way in which health education is important to people.

- ✓ Teaches people ways of promoting sanitation
- ✓ Makes people aware of ways of controlling certain diseases
- ✓ Educates people on the importance of immunization
- ✓ Creates awareness on the dangers of drug abuse
- ✓ Sensitises people on how to improve personal hygiene

40. Apart from fracture, give any **one** other disorder that affects the muscular skeletal system.

- ✓ Sprains // strains // dislocation // cuts // bone deformation // myotonia // muscle atrophy // prolapse

Advice: Discuss joints // muscles and bones in your correction

## SECTION B: 60 MARKS

Questions **41** to **55** carry four marks each.

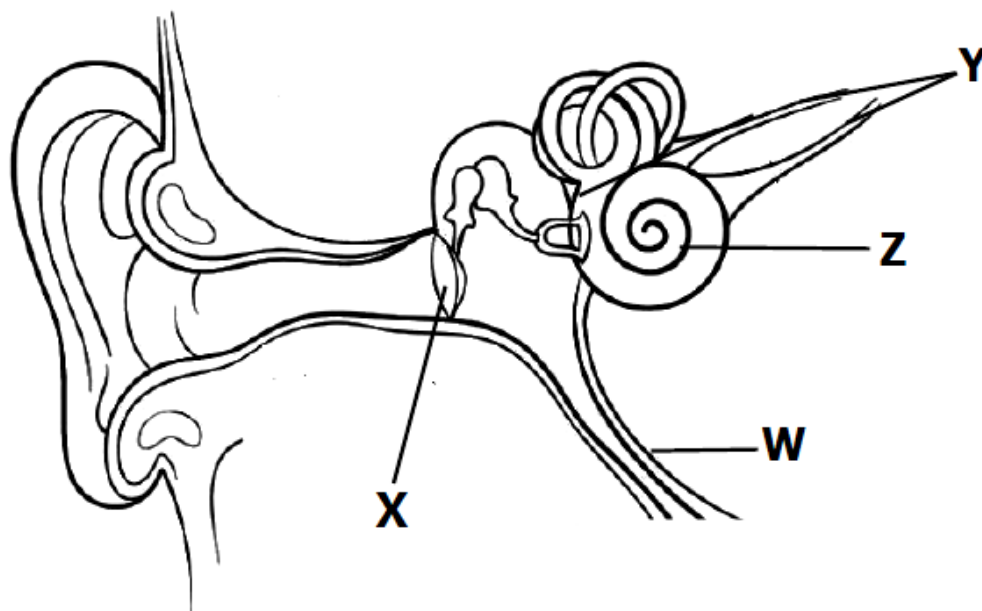
41. a) Name the component of soil that;

- i) **humus**
- ii) **organism // rock particles**

b) State any **two** advantages of crop rotation.

- ✓ Controls of crop pests
- ✓ Controls the growth of weeds
- ✓ Controls crop diseases
- ✓ Improves soil fertility
- ✓ Controls soil erosion

42. The diagram below shows the human ear. Study and use it to answer the questions that follow.



a) Name the parts marked **X** and **Z**.

- i) **X** - ear drum / tympanum / tympanic membrane
- ii) **Z** - cochlea



- b) State the function of the part marked **Y** on the human ear.  
 ✓ Transmits nerve impulses to the brain for interpretation  
 ✓ Transmits electrical signals to the brain.
- c) Which part equalizes air pressure inside and outside the ear?  
 ✓ **Part W (Reject: eustachian tube)**  
**Advice:** advise learners to always answer diagram questions basing on the given diagram.

43. a) Apart from an onion, name any **one** other example of a bulb.  
 ✓ **garlic // shallots // spider lily**
- b) What type of root system does an onion plant develop?  
 ✓ **Fibrous root system**
- c) In which way are fleshy leaves important to an onion?  
 ✓ **Fleshy leaves store food for an onion**
- d) State any **one** way in which an onion can be propagated.  
 ✓ **Planting the bulb // planting seeds**

44. In the table below, part **A** shows farm records and part **B** shows their importance.

<b>Part A: farm records</b>	<b>Part B: importance</b>
Breeding records	Show the amount of feeds given.
Production records	Show equipment used on the farm.
Inventory records	Show reproduction, birth or death rates.
Feeding records	Show yields of farm produce.

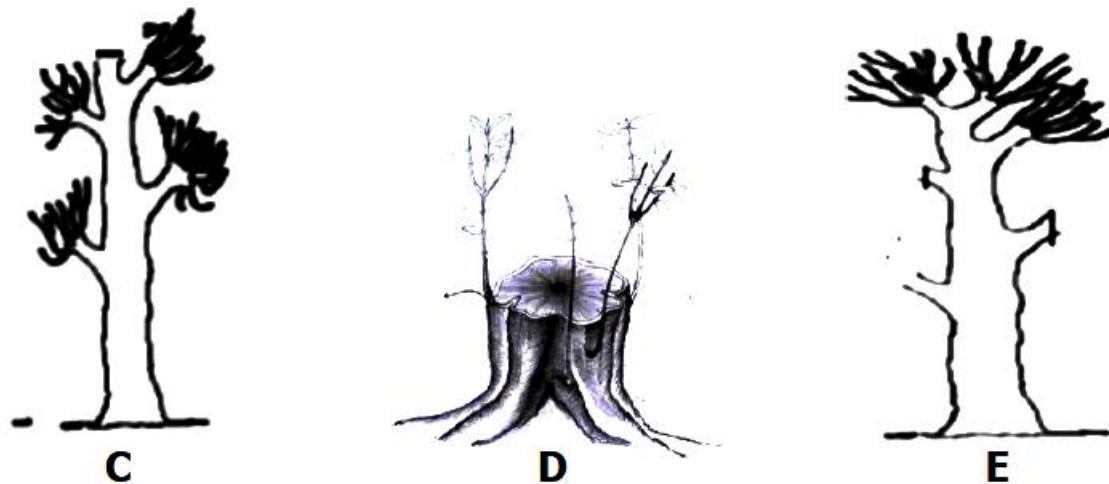
Use the importance in part B of the table above to match the farm records below.

- i) **Show reproduction, birth or death rates**  
 ii) **Show yields of farm produce**  
 iii) **Show equipment used on the farm**  
 iv) **Show the amount of feeds given**
45. a) Give any **one** reason why an ostrich is unable to fly.  
 ✓ **An ostrich has weak and small wings compared to its body size**  
 ✓ **An ostrich has a lot of bone marrow which makes it heavier to fly**
- b) Apart from an ostrich, write down any **one** other example of a flightless bird.  
 ✓ **Penguin // kiwi // cassowary // rhea // emu**

- c) In which **two** ways are birds different from fish?
- ✓ Birds move by flying or running while fish move by swimming // birds use wings or legs to move while fish use fins to swim in water
  - ✓ Birds breathe through lungs while fish breathe through gills
  - ✓ Birds have feathers on their bodies while fish have scales on their bodies
  - ✓ Birds are warm blooded while fish are cold blooded
  - ✓ Birds entirely live on land while fish entirely live in water
  - ✓ Birds undergo internal fertilisation while most fish undergo external fertilisation
  - ✓ Birds use ears for hearing while fish use lateral line for hearing

46. a) Name the physical process by which;
- i) steam changes to water **condensation**
  - ii) butter changes to cooking oil **melting**
- b) Give any **one** factor that affects the rate of evaporation.
- ✓ Amount of heat // temperature // surface area // speed of wind // humidity
- c) How does a blanket protect the person against coldness at night?
- ✓ A blanket prevents heat loss from the body  
(reject: *a blanket keeps the body warm*)

47. The diagram below shows different methods of harvesting trees. Study and use it to answer the questions that follow.



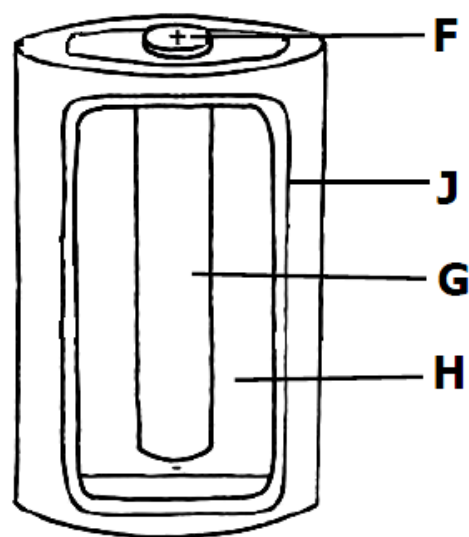
- a) Name the methods of harvesting trees marked **C** and **E**.
- i) **C** - pollarding
  - ii) **E** - lopping
- b) Which method is suitable for harvesting trees for timber?
- ✓ Method D // D (Reject Coppicing)
- c) State any **one** advantage of harvesting trees using the method marked **C**.
- ✓ encourages thicker growth of side branches
  - ✓ helps to increase yields of fruit trees
48. a) What type of change is fermentation?

✓ **Chemical change**

- b) Apart from alcohol, write down any **two** other substances obtained by fermentation.
- ✓ **Yoghurt // compost manure // biogas // carbon dioxide // biofuels // cheese**
  - ✓ **butter**
- c) Give any **one** way in which alcohol is used in hospitals.
- ✓ **Used to clean medical equipment // used to disinfect wounds**
  - ✓ **Used to sterilise medical equipment // used to clean an area on the skin where an injection is to be taken // used to as sanitizer to kill germs on hands**  
*(Reject used to make sanitizers)*

49. a) Name the germ that causes gonorrhoea.
- ✓ **bacteria**
- b) State any **one** sign or symptom of gonorrhoea.
- ✓ **Pain in the lower belly**
  - ✓ **Discharge of pus from the vagina or penis**
  - ✓ **Blockage of the oviduct**
  - ✓ **Blindness in the newly born babies**
  - ✓ **Pain when passing out urine**
  - ✓ **Mild fever**
  - ✓ **Difficulty in passing out urine**
  - ✓ **Swelling in one knee**
- c) Apart from gonorrhoea, give any **one** other example of a sexually transmitted disease that affects the reproductive system.
- ✓ **Syphilis // trichomoniasis // candidiasis // genital herpes // genital warts // chancroid. *(Reject: HIV/AIDS/ AIDS)***
- d) How best can school children avoid the contraction of sexually transmitted diseases (STDs)
- ✓ **By abstaining from premarital-sex**

50. The diagram below shows a dry cell. Study and use it to answer the questions that follow.



- a) Name the parts marked **G** and **J**.
- i) **G** - carbon rod
  - ii) **J** - Zinc can
- b) State the function of the substance found in the part marked **H** in the dry cell above.
- ✓ It conducts electricity in the dry cell
- c) Which terminal does part marked **F** represent on the dry cell above?
- ✓ Positive terminal
51. a) Write down any **two** chemicals used to treat water.
- ✓ Chlorine // fluorine // calcium chloride // potassium permanganate // iodine  
(Reject: Water guard // sodium chloride)
- b) State any **one** disadvantage of using chemicals to treat water.
- ✓ Chemicals are expensive to buy
  - ✓ Chemicals add unpleasant smell to water
  - ✓ Chemicals add taste to water
  - ✓ Chemicals may add colour to water
- c) Give any **one** use of distilled water to people.
- ✓ For mixing drugs in hospitals
  - ✓ Used in laboratories in precise experiments
  - ✓ For cleaning medical equipment
  - ✓ Put on drips used in hospitals
  - ✓ Used to maintain lead-acid batteries
  - ✓ Used to clean sensitive electronics



52. The list below shows organisms in the environment. Study and use it to answer the questions that follow.

**mouse, bacteria, locust, grass**

a) Construct a food chain using the list of organisms above

✓ **grass → locust → mouse → bacteria**

b) Identify the secondary consumer from the list above.

✓ **Mouse**

c) What is the role of bacteria on the list above?

✓ **Bacteria decompose organic matter from grass, locust and mouse**

✓ **Bacteria carry out decomposition**

d) State what would happen to the locusts if grass was removed from the list.

✓ **Locusts would starve and die // locusts would reduce in number**

53. a) Apart from killing germs in food, give any **one** other function of hydrochloric acid during digestion.

✓ **Stops the action of salivary amylase**

✓ **Provides acidic conditions for pepsin and rennin to work**

✓ **Activates the action of pepsin and rennin**

✓ **Denatures proteins for pepsin to work upon them**

b) Which structures in the ileum make it suitable for food absorption?

✓ **villi**

c) Mention any **one** role played by enzymes during digestion of food.

✓ **Enzymes speed up digestion**

✓ **Enzymes help to break down food**

✓ **Enzymes change food from one form to another**

d) State any **one** habit that can help to prevent the disorders of the digestive system.

✓ **Feeding on food rich in roughages**

✓ **Chewing food properly before swallowing**

✓ **Eat food which is enough in each meal**

✓ **Eat small amount of food at a time**

✓ **Drink water after eating food**

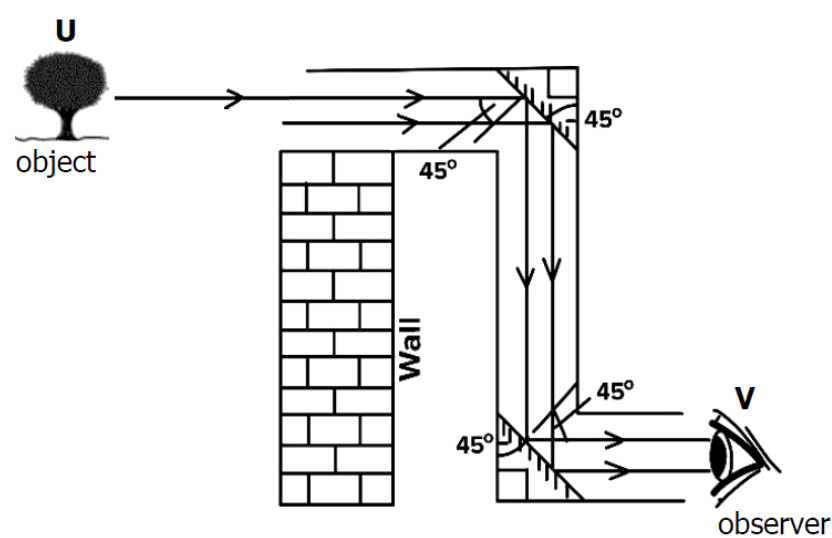
54. a) Write down any **two** activities done by Young Farmers Clubs in a school.

- ✓ Establishing woodlots
- ✓ Bird watching
- ✓ Constructing aquariums
- ✓ Organising field trips to other agricultural centres
- ✓ Encouraging environmental conservation
- ✓ Teaching people modern methods and technology of farming
- ✓ Organising agricultural debates
- ✓ Tree planting
- ✓ Growing crops
- ✓ Rearing animals
- ✓ Caring for crops in the garden

b) State any **two** ways in which Young Farmers Clubs are important in schools.

- ✓ They help learners to acquire farming skills
- ✓ They supplement school diet through growing crops
- ✓ They boost learner's interests in farming
- ✓ They enable learners get better farming methods
- ✓ They equip learners with knowledge of caring for crops
- ✓ They encourage conservation of the environment
- ✓ They help school children learn how to keep records

55. The diagram below shows an optical instrument. Study and use it to answer the questions that follow.



a) Name the optical instrument shown above.

- ✓ **periscope**

b) On which principle does the optical instrument above work?

- ✓ **Reflection of light / light can be reflected**

*(Reject: light travels in a straight line)*

c) How is the observer at point **V** able to see the object at point **U**?

- ✓ **By reflection of light through the plane mirrors**

- d) State any **one** way in which the optical instrument above is useful to people.
- ✓ Used by soldiers in trenches to see their enemies
  - ✓ Used by spectators to watch a match over the heads of the crowd
  - ✓ Used by submariners to view ships on the surface of the sea
  - ✓ Used to see around corners

ADVICE:

Help learners to revise other optical instruments like;

- Magnifying glass
- Lenses
- Plane mirrors

[illegible]