UPDATE ABOUT PRIMARY AND SECONDARY SEX CHARACTERISTICS

Primary sex changes occur during puberty in adolescents

Primary sex changes are changes that prepare sexual organs for reproduction

Primary sex changes occur due to some hormones called

1. Oestrogen in girls
2. Testosterone in boys.

The difference is

Primary sex changes occur during puberty in adolescents to prepare them for reproduction while primary sex characteristics are present at birth to show an individual's sex.

Examples of primary sex changes are;

- ✓ Production of sperms
- ✓ Production of the ova among others.

Primary sex characteristics are the physical features present at birth that define an individual's sex.

In adolescents, these characteristics continue to develop, become more pronounced hence forming primary sex changes.

Examples of primary sex characteristics include:

1. Presence of testes
2. Presence of epididymis
3. Presence of vas deferens
4. Presence of seminal vesicles
5. Presence of prostate gland
6. Presence of the penis.
7. Presence of ovaries
8. Presence of fallopian tubes
9. Presence of uterus and cervix
10. Presence of the vagina.

NB,

1. Primary sex characteristics are always present at birth (but not in adolescents)

2. Primary sex changes occur during puberty in adolescents. They are meant for reproduction.

Secondary sex characteristics are physical features that occur during puberty to distinguish males from females.

Examples of secondary sex characteristics are caused by hormones called estrogen in females and testosterone in males.

Examples of Secondary Sex Characteristics include;

1. Growth of facial hair
2. Appearance of beard mustache, and sideburns.
3. Deepening of the voice in boys
4. Broadening of shoulders
5. Increase in muscle mass and bone density
6. Growth of pubic hair
7. Growth of hair on the chest
8. Growth of hair under armpits and legs.
9. Enlargement of the penis
10. Enlargement of the testicles
11. Breast development
12. Growth and enlargement of breasts
13. Widening of hips
14. Beginning of the menstrual cycle
15. Softening of skin and hair
16. Smoother skin and hair.

Regarding the differences between Baroaque's examples and other textbooks, it's possible for this important reason;
Updates or revisions

Textbooks, including, **SURE KEY** and **Baroaque**, may have undergone revisions or updates, incorporating new information or perspectives.

Note;

- As Baroaque's textbook was approved by the NCDC, it's likely that the information presented is accurate and aligned with current(updated) educational standards.
- Item setters should stop confusion by stopping asking primary sex characteristics in adolescents because they don't occur in adolescents. What occurs in adolescents are primary sex changes!

UPDATE ABOUT CROPS

Crops can be classified according to a number of criteria;

- ✓ The duration of their lifespan
- ✓ Purpose of growing the crops
- ✓ Parts of the crop used
- ✓ Nutrient value

Based on the length of their lifecycle, crops can be grouped as;

- ✓ Seasonals - grow, yield and die within one season
- ✓ Annuals - grow, yield and die within one year
- ✓ Biennials - grow, yield and die within two years
- ✓ Perennials - grow and yield for many years.

Based on their use;

- ✓ Food crops - grown for food
- ✓ Cash crops - grown for sale

Based on the Part of the crop used;

- ✓ Legumes
- ✓ Cereals
- ✓ Tubers
- ✓ Fibres

Note;

The group of a crop depends on the criteria you use.

For example, beans are legumes (part of the crop used); the same beans is a good crop (considering reason for growing); the same beans is a seasonal / annual crop (based on the length of its lifespan)

UPDATE ABOUT SOUND

Sound

Sound is a form of energy produced by vibrations of a material.

Sources of sound in the environment

- ✓ Action of Radios
- ✓ Action of Motorcars
- ✓ Action of Guitars
- ✓ Action of bells
- ✓ Action of Whistles
- ✓ Humans speaking
- ✓ Birds singing
- ✓ Thunderstorm
- ✓ Blowing wind
- ✓ Action of Rainfall
- ✓ Action of Gun shut
- ✓ Action of drums
- ✓ Action of bow harps
- ✓ Action of panpipes
- ✓ Action of tube fiddles

Sources of sound

Natural sources of sound

Artificial sources of sound

Methods(ways) of storing sound

Mechanical (physical) method

Magnetic method

Electromagnetic method.

Ways of reproducing sound

- ✓ Replaying using computers
- ✓ Replaying using smart phones
- ✓ Replaying using subwoofers
- ✓ Replaying using CD players
- ✓ Replaying using MP3 players
- ✓ Replaying using gramophones
- ✓ Replaying using cassette players.

Importance of sound

- ✓ Helps animals to communicate
- ✓ Helps to provide evidence in coarts of law.
- ✓ Helps to entertain humans.

UPDATE ABOUT METHODS OF STORING SOUND

Mechanical Methods of Storing Sound

Storing sound mechanically involves using physical systems that can capture and reproduce sound waves without relying on electronic or digital means.

Here are some notable methods:

1. Phonograph Cylinders

Phonograph cylinders were one of the earliest methods of mechanically storing sound. Sound waves were captured by a diaphragm that vibrated in response to the sound, creating grooves on a rotating cylinder. When played back, a needle would follow these grooves, converting the mechanical vibrations back into sound.

Forexample

- ✓ Vinyl record
- ✓ Tape recording
- ✓ Cassette recording

Give any three advantages of different methods of storing sound.

Advantages of using mechanical (Physical) Method of storing sound (Vinyl Records)

- ✓ Devices lasts long if taken care of
- ✓ Devices produce warm and rich sound
- ✓ No electricity is needed

Advantages of using magnetic Method of storing sound (Tapes and Cassettes)

- ✓ Devices can store a lot of music
- ✓ Sound stored is easy to edit and change
- ✓ Devices are portable and easy to carry
- ✓ Devices are relatively cheap.

Advantages of using electromagnetic Method of storing sound (CDs and DVDs)

- ✓ Devices produce high-quality sound
- ✓ Devices lasts long
- ✓ Devices resists scratches
- ✓ Devices are easy to play and navigate
- ✓ Sound takes up less space on devices.

Some advantages of using one method of storing sound over another.

- ✓ Electromagnetic method devices store more sound than physical method devices.
- ✓ Magnetic method devices store more sound than electromagnetic method devices
- ✓ Electromagnetic method devices produce more quality sound than physical method devices.
- ✓ Electromagnetic method devices are more(durable)resistant to scratches than physical method devices.
- ✓ Electromagnetic method devices are more portable and easier to carry than physical method devices.
- ✓ Magnetic method devices like magnetic tapes store more sound than electromagnetic method devices such as CDs.

Methods of Storing Sound

1. **Mechanical Method**.

This is a method where physical mechanisms like grooves are used to record, store and play back sound.

Examples of devices used in mechanical method

- ✓ Phonograph records (vinyl records)
- ✓ Gramophones

- ✓ Early tape recorders
- ✓ Cylinder records
- ✓ Wire recorder

2. **Magnetic Method**

This is a method where magnetic fields are used to record and store sound.

Examples of devices used in magnetic method

- ✓ Cassette tapes
- ✓ Magnetic tape recorders
- ✓ Hard disk drives (HDDs)
- ✓ Floppy disks
- ✓ Magnetic drum memory

3. **Electromagnetic Method**

This is a method where electromagnetic waves are used to record and store sound.

Examples of devices used in this method

- ✓ CDs (Compact Discs)
- ✓ DVDs (Digital Versatile Discs)
- ✓ Solid-state drives (SSDs)
- ✓ Flash drives
- ✓ Digital audio players (e.g., MP3 players)
- ✓ Blu-ray discs
- ✓ USB drives
- ✓ SD cards
- ✓ Smartphones

Methods of Writing Music

Staff Notation

A visual representation of music using symbols and notes on a staff.

Solfa Notation

A system of representing music using syllables (do, re, mi, etc.) to indicate pitch.

UPDATE ABOUT BONES

Topic: Muscular - Skeletal system)

Types of bones in the human body.

Bones are classified into 5 main types according to their shapes into;

✓Long // short // irregular// flat // sesamoid.

But in most cases only 4 are emphasized.

(Long, short, irregular and flat).

a) Long bones.

In simple language, a long bone is one that has a shaft and two ends.

Or

A long bone is one that has a greater length than width.

Examples of long bones

Femur // Tibia// fibula// humerus// ulna// radius// clavicle (collar bone) //metacarpals// metatarsals// phalanges.

I've seen some teachers here grouping phalanges, metacarpals and metatarsals as short bones, which is actually not correct.

As per this definition of long bones , *metatarsals*, *metacarpals and phalanges* qualify to be grouped under long bones despite their relatively small size compared to other long bones like the humerus, femur, fibula, tibia, radius and ulna.

b) Short bones*

These bones are nearly equal in length and width.

Examples of short bones.

✓ Carpals
✓ Tarsals

Mnemonic for short bones: Short clothes tear.

Implying;

✓ Short ••• for short bones
✓ Clothes ••• Carpals
✓ Tear •••• Tarsals

d) Sesamoid bones

These have a shape of a sesame seed, hence the name sesamoid.

Examples

✓ Patella// kneecap.

These develop under tendons, that is why in most cases, they are ignored or not mentioned as a type of bones.

So this type is in most cases IGNORED! that's why we mostly talk about 4 types of bones.

c) **Flat bones**

These have a flat shape and broad surface.

Examples

✓ Scapula // shoulder blade

✓ Sternum// breastbone

✓ Ribs

✓ Cranium // Cranial bones.

e) **Irregular bones**

Examples

✓ bones of the spine//vertebral column// backbone// vertebrae

✓ hip bones// pelvis

✓ Facial bones (or maxilla, mandible)

✓ Ossicles (stapes, malleus, incus)

JOINTS

Joints are places where two or more bones meet in the human body

Types of joints

These are different classifications of connections between two or bones in the human body.

Types of joints in the human body

✓ Movable joints

✓ Immovable joints.

1. Movable joints

These are types of joints that allow movements in the human body.

Examples (types) of movable joints

Pivot joints

Allow rotation of axis on atlas bones

Hinge joints

(Allow 180°movement/allow movements in one plane)

Gliding joints

Allow short bones to slide over each other

Ball and socket joints.

Allow 360°movement/allow movements in three planes

Immovable joints

These are types of joints that allow no movement in the human body.

Examples of immovable joints

Suture joints.

These are immovable joints found between skull bones.

Importance of joints in the human body

- ✓ Make the human body flexible
- ✓ Supports body movement .

Facts about sources of food and places where we get food from.

What are Sources of Food?

These are producers of original food.

Examples of sources of food

- ✓ Plants
- ✓ Animals
- ✓ Fungi.

They provide original food.

What are places Where We Get Food?

These are areas where food is obtained.

Examples of places where we get food from

- ✓ Farms
- ✓ Gardens
- ✓ Markets
- ✓ Stores.
- ✓ Shops
- ✓ Supermarkets
- ✓ Butcher shops

UPDATE ABOUT POLLINATION

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

Types of pollination

1. Self pollination

Self pollination is the transfer of pollen grains from anthers to the stigma of the same flower or another flower on the same plant.

2. Cross pollination is the transfer of pollen grains from anthers of one flower to the stigma of another flower on plants of the same kind.

Chlorophyll

Chlorophyll is the green pigment found in plants.

Uses

Chlorophyll absorbs sunlight energy for making glucose (food).

Sunlight provides energy needed by plants to make glucose(food).

Water combines with carbon dioxide to make glucose (food).

Importance of pollination

- ✓ Allows fertilization in plants to take place.
- ✓ Facilitates plants to produce seeds and fruits

UPDATE ABOUT ALLOYS

Simple mnemonics for common alloys.

BRASS

Brave zebras came.

Meaning;

* Brass = Zinc + Copper

BRONZE

Brown tigers came. // Brown colored tins.

Meaning;

Bronze = Copper + Tin

STEEL

Strong ices never crack.

Meaning;

Steel= Iron + Nickel + Copper

SOLDER

Some tins leak

Meaning;

* Solder = Tin + Lead

DENTAL AMALGAM

Many teeth chew

Meaning;

Dental amalgam= Mercury+ Tin + Copper+ Silver

UPDATE ABOUT STEMS

STEMS

What is a stem?

A structure that provides support and connection between roots and leaves.

Types of stems

✓ Aerial stems

✓ Underground stems

1. Aerial stems

Aerial stemsare plant stems found above the ground.

Examples of aerial stems

Upright(erect) stems

They are common in plants such as

✓ Maize plants

✓ Mvule plants

✓ Orange plants

Weak stems / Climbing stems / Clasping stems.

They are common in plants such as

✓ Cowpeas
✓ Cucumbers
✓ Beans
✓ White yams

Underground stems

Underground stems are plant stems found underground (in the soil).

Examples of underground stems

1. Rhizomes

These are horizontal underground stems with nodes capable of growing into new plants

Examples of rhizomes

✓ Ginger

✓ Tumeric

✓ Zoysia

Stem tubers

These are swollen underground stems with stored food.

Examples of stem tubers

✓ Cocoyams

✓ Irish potatoes

Corms

These are short, vertical underground stems with stored food.

Examples of Corms

✓ Gladiolus

✓ Crocus

Bulbs

These are underground small stems with swollen fleshy leaves.

Examples of bulbs

✓ Onions

✓ Garlic

✓ Tulips

Explain how male circumcision reduces the risks of getting HIV/AIDS?

✓ It hardens the glans which makes the penetration of HIV into blood difficult.

✓ It reduces injuries during sexual intercourse

✓ It removes the foreskin, where HIV can accumulate and enter the bloodstream.

✓ It reduces the presence of anaerobic bacteria under the foreskin, which can increase the risk of HIV transmission.

a scientific perspective, the correct term is "weaning babies" or "babies being weaned."

Weaning

Weaning is the gradual introduction of semi solid foods to a baby at 6 months and above.

✓ It is done while reducing breast milk or formula intake.

✓ It is done to prevent deficiency diseases among infants

Note

✓ So, weaning babies accurately describes infants undergoing this transition.

✓ "Weaned babies," on the other hand, would imply that the weaning process is already complete.

Vulnerable groups of people

Groups of people who need special care (and diet.)

<u>Examples of groups of people who need special care (and diet)</u>

- ✓ Weaning babies
- ✓ Breastfeeding women
- ✓ Breastfeeding babies
- ✓ Invalids
- ✓ Convalescents
- ✓ Elderly
- ✓ The lame
- ✓ The sick people
- ✓ The blind
- ✓ Pregnant (expectant) women
- ✓ Premature babies

Note

✓ People with special needs also need special care and therefore they are vulnerable groups of people too.

✓ However all people with special needs are vulnerable people but not all vulnerable people are people with special needs.

Making and displaying posters about PIASCY messages.

Singing songs about PIASCY messages.

Reciting poems about PIASCY messages.

Performing short skits or plays about PIASCY messages

Composing written pieces that reflect PIASCY messages

Engaging in debates that promotes PIASCY messages.

Guiding and counseling fellow school children to understand and apply PIASCY messages.

Developing games or quizzes that reinforce PIASCY messages.

Qn; State the reason why a frog is regarded as an amphibian.

Correct response:

✓ A frog lives both on land and in water.

Reject:

✓ A frog moves by leaping/hopping.

*Explanation;

The word "amphi" means both then "bian" means life.

So, "amphibians" means "living both lives", which refers to animals that live both in water and on land such as frogs, toads newts, salamanders and caelians.

ENZYMES

Enzymes are chemical substances that speed up chemical digestion

Chemical digestion is carried out by enzymes.

Characteristics of digestive enzymes

✓ They are protein in nature

✓ They are catalysts//speed up chemical digestion

✓ They are specific in digestive actions

✓ They are destroyed by high temperature

✓ They work under either alkaline or acidic environment

✓ Enzymes carry out their work straight away from the mouth, stomach and ileum(duodenum).

Enzymes such as

Mouth

Ptyalin(salivary amylase)* digests carbohydrates (chemically in the mouth)

Stomach

✓ Pepsin digests proteins (chemically in the stomach)

Duodenum (first part of the ileum)

✓ *Trypsin* digests proteins (chemically in the duodenum)

✓ *Pancreatic amylase* digests carbohydrates (chemically in the duodenum)

✓ Pancreatic lipase digests fats (chemically in the duodenum) etc.

Weeds

Weeds are unwanted plants in the garden.

Reject

Weeds are plants growing where they are not wanted.

Weeding

Weeding is the removal of unwanted plants in the garden.

Reject

Weeding is the removal of plants growing where they are not wanted.

Advice and explanation* Know what to teach and when to teach it

When do we talk about weeds?

✓ During crop growing.

What makes plants to be weeds?

✓ Plants growing by themselves

✓ Plants growing within the intended grown plants to compete with sunlight, carbon dioxide etc.

Where is the competition between intended grown plants and unintended grown plants take place?

✓ In the well prepared garden.

Is weeding a crop growing practice?

✓ Yes

Where are crop growing practices carried out?

✓ In the garden.

How do we call those unintended growing plants plants in the garden?

✓ Weeds

Do we want those unintended growing plants in the garden?

✓ No

How do we call those unwanted plants in the garden?

✓ Weeds.

Therefore, since weeding is taken as one of crop growing practices;

✓ Weeding is carried out a crop growing practice in the garden.

Note

✓ Any removal of unintended growing plants in a place is not necessarily a crop growing practice.

✓ It is called a crop growing practice only if it is carried out in the garden.

Energy

Energy is the ability to do work

*Forms of energy

Sound energy

✓ Form of energy produced by vibrations of a material.

Recorded and Stored through

✓ Mechanical (physical) method

Mechanical energy

✓ Form of energy a body has due to its position or movement.

Types of mechanical energy

✓ Potential energy

Form of energy a body has due to its height or position at rest.

✓ Kinetic energy

Form of energy a body has due to its movement.

Light energy

✓ Form of energy that enables humans/animals to see.

Heat energy.

✓ Form of energy that flows from a hot point to a cold point.

Electrical energy

✓ Form of energy produced by electrical charges.

Commonly flows through electric conductors

Magnetic energy.

✓ Form of energy that enables magnets to attract magnetic materials.

✓ Earth and lodestone* are examples of natural substances possessing magnetic energy.

✓ U shaped magnets, Electromagnets, bar magnets , induced magnets and needle magnets are examples of artificial temporary or permanent substances possessing magnetic energy.

Characteristics of forms of energy

They make work possible(enables us to do work)

They can be changed from one form to another.

Honey honey honey

Honey is a sweet viscous fluid made by worker bees using nectar from plant flowers.

How is honey useful to people?

Source of carbohydrates to people such builders, farmers etc.

✓ Due to fact that it is rich in fructose and glucose.

Used in making drugs for cough.

Used to sweeten tea.

Bees are well known for their ability to produce sweet fluid called honey.

Honey harvesters usually harvest honey during daytime.

Reason

There is enough sunlight to allow visibility of honeycombs and broods.

Most worker bees are out of the hive looking for honey making raw materials.

Methods of harvesting honeycombs from the hive.

Traditional method

Here fire is used to harvest honeycombs from the hive.

Modern method

Here smoke is used from an instrument called a smoker... calming bees making it easy to harvest honeycombs from the hive.

After harvesting honeycombs from the hive,

We again harvest honey from those honeycombs.

Methods of extracting honey from honeycombs

Spinning (centrifugation) method

✓ Here an instrument called a centrifuge is used to spin the honeycombs, extracting honey from it using centrigal force.

Floating the wax method

Here honeycombs are crushed and heated in a container, causing melting of wax to float on top of honey.

✓ This leads to easy separation.

✓ It involves using heat.

3. Pressing honeycombs method.*

✓ Here honeycombs are squeezed or pressed using a press or piece of cloth to force honey out.

Honey can last longer without going bad after being harvested from the honeycombs.

Reason

Honey has low moisture/water content.*

✓ Bacteria need water to grow and reproduce. But since honey has low water content,

✓This prevents bacterial growth that would have caused honey contamination and going bad.

Honey has a high sugar content.*

✓ High sugars cause a great demand for water from bacteria,

✓ This forces water in bodies of bacteria to draw out hence failing to survive.

Honey is acidic in nature.

✓ This prevents bacterial growth that would have caused it to go bad.

Honey contains hydrogen peroxide.

✓ It is a natural antiseptic that preserves honey by preventing bacterial growth that would have caused honey to go bad.

In four sentences Briefly describe steps P7 children take to wash utensils

- ✓ Pour water in the washing container.
- ✓ Apply soap in the washing sponge and scrub utensils well.
- ✓ Rinse the utensils to remove soap and lather.
- ✓ Dry utensils with a towel and place them in the rack.

That learner missed some important information from you.

As a teacher, you should have begun by helping the learner to differentiate types of roots and types of root systems.

Whereas the types of roots are True roots and False roots (Adventitious roots), types of root systems are taproot system and fibrous root system.

A taproot being the only true root grows from the radicle of a seed.

Fibrous roots are false roots and they grow from the base of the stem of a plant.

A funnel is cone shaped regular object used for channeling liquids.

Importance of a funnel in our daily life

Shop keepers

- ✓ Helps in pouring cooking oil in small bottles without spilling
- ✓ Helps in pouring fruit juice in small bottles without spilling.
- ✓ Helps in filling containers with flour or sugar.
- ✓ Helps in filling containers with liquid soap.

Meteorologists

- ✓ Helps in pouring the collected amount of rainwater received in an area into the measuring cylinder in a rain gauge.

- ✓ Transferring water samples from one container to another for analysis.
- ✓ For collecting and measuring snowfalls

Doctors and nurses

- ✓ For measuring and mixing drugs accurately

Science labs

- ✓ Helps in measuring chemicals accurately
- ✓ Helps in transferring chemicals/solutions/samples between test tubes
- ✓ Used in filtration method of separating mixtures

Chefs and cooks

- ✓ Helps in pouring cooking oil into small bottles

Petrol sellers

- ✓ Helps in pouring Petrol into vehicles without spilling

Crop farmers

- ✓ Helps in pouring pesticides into a knapsack sprayer without spilling.
- ✓ Helps in pouring seeds or fertilizers into containers

Brewers

- ✓ Helps in transferring beer between containers.

You tell them that whenever you say *M.SALAH* , it's an abbreviation which stands for diseases that a affect the circulatory system.

M- Malaria

S- Sickle cell disease

A- AIDS

L- Leukaemia

A- Anaemia

H- Haemophilia

Believe me, your children won't write for you Diphtheria or Diarrhoea in exams as a disease of the circulatory system. They can always remember M.SALAH as diseases of the circulatory system

Roots

Tap roots(primary roots) and fibrous roots are not types of roots.*

Types of roots are two namely;

True roots

False roots(adventitious roots).

(a) True roots are types of roots which develop from the radicle.

Examples of true roots;

Tap roots(primary roots).

Note

Fibrous roots are not examples of true roots.

Reason

They don't develop from the radicle.

When a monocot seed germinates, the root that develops from the radicle breaks off at some stage.

Thereafter, fibrous roots develop. They develop at the base of the stem.

If you uproot one plant with fibrous roots, you will observe that these roots grow from the base of the stem of that plant.

(b) False (adventitious) roots*

These are types of roots which develop from other parts of the plant but not radicle.

Examples of false (adventitious roots)

- ✓ Prop roots
- ✓ Clasping roots
- ✓ Stilt roots
- ✓ Fibrous roots
- ✓ Buttress roots etc

Note

- ✓ Fibrous roots as we have seen, they develop from the base of the stem.
- ✓ This explanation makes fibrous roots to be false (Adventitious roots).
- ✓ Therefore, taproots(primary roots) are the only example of true roots.
- ✓ Tap roots(primary roots) are examples of true roots (which develop from the radicle)

While

✓ tap root system

✓ fibrous root system

are types of root systems.

A tap root system is composed of

1. A main root also called tap root (primary root)

2. Small branching roots from the main root. They are called lateral roots//secondary roots.

State any one reason why farmers dock their sheep.

Accept.

✓ To prevent flystrikes

✓ To keep the sheep clean

Reject. To allow easy mating.

State any two advantages of docking sheep.

It allows easy mating in ewes.

How?. It exposes the vulva to the ram

It enables the sheep to grow fat.

How? It allows proper distribution of fats in the body.

It maintains the hygiene of sheep.

How? It prevents soiling of dung on the tail.

PREPARED BY THE SCIENCE DOCTOR AT ST PAUL'S PS IGORORA IN CONJUNCTION WITH CALE SANTOS THE HEAD OF SCIENCE NCDC,0784032119//0779937837//0753091192.0

SAMPLE CHALLENGING AREAS IN SCIENCE THAT ARE COMMONLY SHARED BY COLLEGUES

1. Why does convection occur in liquids and gases ?
    - ✓ ***Their molecules move freely when heated.***
2. Name any two methods used to separate mixtures of different densities.
    - ✓ ***Separating funnel method.***
    - ✓ ***Decantation method.***
3. Name the method used to separate mixtures of different boiling points.
    - ✓ ***Fractional distillation method.***
4. Define food poisoning.
    - ✓ ***Food poisoning is an illness caused by eating contaminated food.***
5. Give any two biological ways of controlling weeds in the garden.
    - ✓ ***By planting cover crops.***
    - ✓ ***By grazing livestock on weeds.***
6. What are narcotic drugs?
    - ✓ ***Narcotic drugs are drugs that cause addiction after long use.***
7. Why does water exist in all the three states of matter?
    - ✓ ***Its physical properties change with change in temperature.***
8. State the importance of harrowing land.
    - ✓ ***It enables water infiltration.***
9. Why does a stone reach the ground faster than a feather?
    - ✓ ***A stone has less air resistance than a feather.\\ a feather has more air resistance than a stone.***
10. What does the amount of water displaced by a sinking object equal to?
    - ✓ ***Volume of the object.***
11. What does the amount of water displaced by a floating object equal to?
    - ✓ ***Weight of the object.***
12. How does density affect objects?
    - ✓ ***It causes floating or sinking of objects.***
13. In four sentences explain how you can separate a mixture of salt and sand. ***mnemonic(PAFE)***
    - ➢ ***Put the mixture in a clean container.***
    - ➢ ***Add water and stir the mixture.***
    - ➢ ***Filter off the sand and get the filtrate.***
    - ➢ ***Evaporate the filtrate to its dryness to obtain salt.***
14. In four sentences, explain how you can separate a mixture of salt, iron filings and sand.
    - ➢ ***Use a magnet to remove the iron filings.***
    - ➢ ***Pour water into the mixture and stir to dissolve salt.***
    - ➢ ***Filter the mixture to remove sand.***
    - ➢ ***Evaporate the solution to its dryness to get salt.***
15. In four sentences, describe how you can make local salt.
    - ➢ ***Get dry banana peelings and burn them to get ash.***

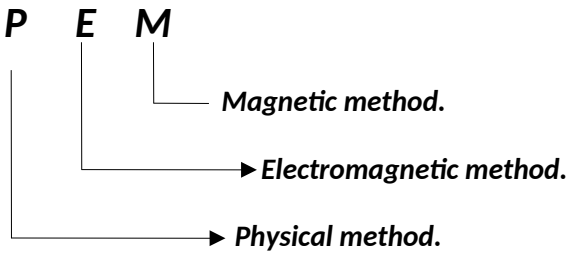
- ***Put ash into a clean container and dissolve it with some little water***.
- ***Filter to obtain a salt solution.***
- ***Evaporate the solution to its dryness to get salt crystals.***

16. In four sentences, explain how you can make a simple electric circuit.
    - ***Get a dry cell, a small bulb and wires.***
    - ***Connect one wire from the positive end of the dry cell to the bulb.***
    - ***Attach another wire from the bulb to the negative end of the dry cell.***
    - ***Ensure all connections are tight and the bulb will give out light.***
17. Define the following terms.
    - ***Transpiration.***
        - ***Is the process by which plants lose water in form of water vapour into the atmosphere.***
    - ***Germination.***
        - ***Is the development of a seed into a seedling.***
    - ***Photosynthesis.***
        - ***Is the process by which plants make their own food called starch.***
    - ***Dehydration.***
        - ***Is the condition when the body lacks enough water.***
    - ***Balanced diet.***
        - ***Is a diet that contains all food values in their right amounts.***
    - ***Heat.***
        - ***Is the form energy that flows from a hotter point to a colder point***.
18. Why do arteries have thick walls?
    - ***To withstand the pressure of blood flowing through them.***
19. Why are ventilators placed above the doors and windows in a living house?
    - ***To let out warm air which is less dense than the cold air.***
20. Why are doors and windows placed at the lower levels in a living house?
    - ***To let in cold air which is denser than warm air.***
21. Why does a stone sink in water?
    - ***A stone is denser than water.***
22. Why does a leaf float on water?
    - ***A leaf is less dense than water.***
23. Why is sand soil used for making glasses?
    - ***Sand soil contains silica.***
24. Why is clay soil used for making ceramics?
    - ***Clay soil is sticky when wet and hard when dry.***
25. Give any two signs that show that a tuber is ready for harvesting.
    - ***Yellowing of leaves.***
    - ***Drying of the leaves.***
    - ***Cracks in the soil around the tuber.***
26. Which borne disease leads to internal bleeding?
    - ***Dysentery.***

27. Why is water regarded as a universal solvent?
    - ***Water dissolves all solutes.***
28. Name the component of air needed by plants for:
    i) Making starch ***> carbon dioxide.***
    ii) Making proteins ***> nitrogen.***
    iii) Respiration ***> oxygen***.
29. State the units in which temperature is measured.
    - ***Degrees Celsius.***
    - ***Degrees Fahrenheit.***
30. Why is a moth able to pollinate flowers at night?
    - ***A moth has a strong sense of smell to detect scent from flowers.***
31. How are flowers able to be pollinated by a moth at night?
    - ***By the help of the scent produced.***
32. Why is a housefly, butterfly, tsetse fly, mosquito, bee said to undergo complete metamorphosis?
    - ***The larva is totally different from the adult in structure and function.***
33. Why is a cockroach, cricket, grasshopper said to undergo incomplete metamorphosis?
    - ***The larva resembles the adult in structure and function.***
34. How do the following practices cause demagnetization?
    - Heating the magnet ***> it disorganizes magnetic domains.***
    - Hammering a magnet ***> it disorganizes magnetic dipoles.***
35. How does circumcision reduce risks of contracting HIV?
    - ***It makes the fore head of the penis hard for HIV to penetrate.***
36. How does gonorrhea infection increase the chances of contracting HIV?
    - ***It creates sores on the sexual organs through which HIV enters.***
37. Why are couples advised to go for gonorrhea treatment together?
    - ***To prevent re-infection.***
38. Why is space left in a bottle when filling it with soda?
    - ***To leave room for an increase in volume when soda freezes.***
39. Why does a bottle of soda break when kept in a refrigerator for a long time?
    - ***Due to expansion of soda inside it.***
40. Why is shearing of sheep done during dry season?
    - ***There is enough sunshine to keep the sheep warm***.
41. State any two reasons for docking sheep.
    - ***To keep the sheep clean.***
    - ***To prevent flystrikes.***
42. State the advantages of docking sheep.
    - ***It allows easy mating in ewes.***
        - ***How >.. It exposes the vulva to the ram.***
    - ***It enables the sheep to grow fat.***
        - ***How >.. it allows proper distribution of fats in the body.***
    - ***It maintains the hygiene of the sheep.***

- ***How >.. it prevents soiling of dung on the sheep's tail.***

43. What causes marasmus?
    - ***Lack of all food nutrients in ones diet.***
44. State any two biological methods of controlling pests.
    - ***By rearing dogs to chase away monkeys.***
    - ***By rearing cats to eat rats.***
45. Why is a stretcher not put in a first aid box?
    - ***A stretcher is too big to fit in a first aid box.***
46. Why is alcohol used for measuring minimum temperature in a six's thermometer?
    - ***Alcohol has a low freezing point.***
47. Name the type of teeth which is not present in milk set of teeth.
    - ***Premolar.***
48. Mention the three methods of storing sound.



49. State the methods used to write pieces of music notes
    - ***Solfa notation***
    - ***Staff notation***
50. Name the types of bacteria
    - ***Useful bacteria***
    - ***Harmful bacteria***
51. Give the examples of stem tubers
    - ***Irish potatoes***
    - ***Cocoyams***
52. Why does an inflated balloon burst when left under sunshine for too long?
    - ***Due to expansion of air inside the balloon***
53. State the role of the following materials during photosynthesis
    - ***Chlorophyll- to trap sunlight***
    - ***Sunlight- to provide energy needed for photosynthesis***
    - ***Carbon dioxide- combines with water to make starch***
    - ***Water- combines with carbon dioxide to make starch***
54. State the role of the following materials during germination
    - ***Warmth- provides the required temperature for germination***
    - ***Oxygen – for respiration***
    - ***Water – softens the testa***
      -Dissolves food in the cotyledon

55. Why is the filament of an electric bulb coiled?
    - ✓ ***To increase electrical resistance***
    - ✓ ***To occupy the smaller space in the bulb***

56. SAMPLE MNEMONICS TO SIMPLIFY THE TEACHING OF INTEGRATED SCIENCE

- ❖ **For beef breeds of cattle(CHAAGA)**

C- Charolais
H- Hereford
A- Aberdeen angus
A- American beef master
G- Galloway
A – American Brahman

- ❖ **For exotic breeds of rabbits (CRANCED)**

C- Californian
R- Rex
A- Angora
N- New zealand white
C- Chinchilla
E- Earlop
D- Dutch

- ❖ **For dairy breeds of goats(TASA)**

T- Toggenburg
A- Alpine
S- Saanen
A- Anglo Nubian

- ❖ **For cold blooded vertebrates(FAR)**

F - Fish
A- Amphibians
R- Reptiles

- ❖ **For groups of vertebrates(MR BAF)**

M- Mammals
R- Reptiles
B- Birds
A- Amphibians
F- Fish

- ❖ **For groups of invertebrates(WAM)**

W- Worms
A- Arthropods
M- Molluscs

- **For groups of arthropods(MICA)**

M- Myriapods

I- Insects

C- crustaceans

A- Arachnids

- **For examples of arachinids(SMiTS)**

S- Scorpion

Mi-Mites

T- Ticks

S- Spider

- **For characteristics of arthropods(JESM)**

J- Jointed legs

E- exoskeleton

S- segmented body

M- moulting

- **For diseases of the circulatory system(SHALAM)**

S- Sickle cells

H- Haemophilia

A- Anaemia

L- Leukaemia

A- AIDS

M- Malaria

- **For tick borne diseases(HEAR)**

H- Heart water disease

E- East coast Fever

A- Anaplasmosis

R- Red water diseases

- **For speed of sound(WHAT)**

W- Wind

H- Humidity

A- Altitude

T- Temperature

- **For conditions of germination(WOW)**

W- Warmth

O- Oxygen

W- Water

- **For fungal diseases(CARD)**

C- Candidiasis

A-Athlete's foot

R- Ringworm

D- Dhobi itch

- **For agents of pollination(WIB)**

W- Wind
I-Insects
B-Birds

- **For protozoan poultry diseases**

Can - Coccidiosis
Brian – Black head
Party (protozoan)

- **For viral poultry diseases**

Nice - Newcastle
Black – Bird flu
Girls- Gumboro
Fear - Fowl pox

- **For vitamin deficiency diseases**

Nathan – Night blindness
Buys - Beriberi
Pink - Pellagra
Shirts - scurvy
Rarely –Rickets

Give any two types of roots
✅**True roots**
✅**False roots**
reject ❌**Tap roots**
❌**fibrous roots .**

Give any two types of stems.
✅**Aerial tems**
✅**Underground stem**

You can supplement, comment and adjust. I stand to be corrected
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