1

(a) i. Chromosomes are thread-like structures that is made up of DNA and proteins.

ii. 1. To determine the paternity.
2. To diagnose genetic disorders
3. To identify individuals.

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(b). i. 1. Helium
2. Argon
3. Neon

ii. For an element to react it must have unpaired electron to undergo bonding but noble gases has fully filled outer shells with all electrons paired.

(c)(i) Post harvest loss refers to the reduction in the quality or quantity of a crop after it has been harvested.

ii.
1. The use of proper drying techniques to reduce moisture content.
2. The use of appropriate packaging materials to protect cereals from damage during transportation.
3. They store cereals in well ventilated and pest-proof containers to prevent infestation

(d) i. An inductor is an electronic component that stores electric charges through a circuit.

1 d ii.
1. To generate electricity.
2. To dry crops and clothes.
3. To heat water.

Q2

(a) Stem tubers — Ro Yam, ~~Irish potato~~ cocoyam.

Root tubers — Cassava, ~~cocoyam~~ Irish potato

Legumes — beans, groundnut

(b) (i) Saponification is the process by which fat and oil react with an alkali to form Soap and glycerol.

(ii) ~~Saponification~~ — Hardening soap
— Improve texture
— Reduce Lather

(c) (i) Refex action is an involuntary and a quick movement in response to a stimulus.

(ii) Jerking of a knee
- Heartbeat
- blinking of eye
-

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(d) The law of conservation of energy is that the energy is neither ~~created~~ created nor destroyed but transformed from place to another.

Q2(Dii)

(ii) $v^2 = u^2 + 2gs$

$v = \sqrt{u^2 + 2gs}$

$v = \sqrt{0^2 + 2(10)(10)}$

$v = \sqrt{200}\ m/s$

$v = 14.14\ m/s$

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(iii) For archeological

Q3

9i)
- Mutation
- Genetic Recombination.
- Gene flow
- Aneuploidy
- Polyploidy
- Euploidy
- Crossing over.

ii)
- Causes changes in the genetic make-up
- It gives an organism an advantage over others.
- It also causes hybrid vigo.

Bi

(α) The tracle winds are a pattern of winds that are found in bands around the earth's equatorial region.

β) A storm is a strong wind usually accompained by rain, snow and at times lightening and thunder which occur as a result of the meeting of air masses at low pressure.

Bii

Speed = $2.0 \times 10^2 ms^{-1}$

Time = 30mins
= 1800 sec.

distance = speed x Time.
= $2.0 \times 10^2 \times 1800$
= 360,000 m.

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3C

i) Radioisotopes are element with unstable nuclei which undergo nuclear reaction to release radiation.

ii)
- For curing cancer
- For sterilization
- For electrical energy
- To determine the age of fussil fuels.

3D

- The udder of the animal enlarges
- The teats become waxy in appearance
- The belly becomes distended and drops.
- The vulva becomes relaxed or mucus discharged.
- The animal may separate itself from the rest of the herd.

Q4. An organic functional group is an atom or group of atoms or bond in an organic compound that determine the general characteristics of a compound.

4aii α. $HCOOH$ — esters

β. $CH_3CH(OH)CH_3$ — alkanol

γ. CH_3CHCH_2 ⟶ alkene

4bi Biological method; by using dogs to catch the rodents in the farm

Chemical method; by spraying or dusting seeds with the appropriate chemical to kill rodents.

bii. α type of soil is important to ensure there is nutrient available and good soil properties for the lettuce plant.

β. Accessibility to site enables the farm to transport inputs to the farm and also carry the lettuce from the farm to the market.

γ. Topography of the land helps the farm use the right practices to prevent erosion and run-offs on the farmer.

4c. Personal hygiene is the practice of making an individual look clean and healthy

ii. Bad body odour
Tooth decay
Bad breath
skin diseases

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4c. An electromagnet is a magnet produced from passing an electric current through a coil of wire. The magnetic field is only generated when current flows through the wire and disappears when the current is off.

i. electromagnets are used in the motors of electric fans

ii They are used in speakers to create sound by vibrating a diaphragm

iii. They are used in electric door bells.

Question 6

Q6 a) (i) Static electricity is produced through friction between two objects, resulting in the transfer of electrons from one object to another, creating an imbalance of electric charges.

(a) (ii) 1. Solar power

2. Wind power

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(b) (i) 1. Salivary glands

2. Gastric glands

3. Pancreatic glands

(b) (ii) 1. Salivary glands - Saliva (amylase and lipase enzymes)

2. Gastric glands - Gastric juice (pepsin and hydrochloric acid)

3. Pancreatic glands - Pancreatic juice (amylase, lipase, and trypsin enzymes)

(c) (i) (a) Hydrogen - Fuel for vehicles and power generation

(b) Ammonia - Fertilizer and refrigerant

(c) (ii) Balanced Chemical Equation

$NH_4Cl + Ca(OH)_2 \rightarrow CaCl_2 + NH_3 + H_2O$

d. (i) Root and Tuber Development - Potassium (K)

(ii) Formation of Chlorophyll - Magnesium (Mg)

(iii) Development of Strong Stem - Calcium (Ca)

(iv) Growth - Nitrogen (N)

(v) Fruit Development - Phosphorus (P)