

1 a) - Photosynthesis ✓_{ul}

- Gaseous Exchange / Respiration ✓_{ul}

- Pollination / fertilisation / Reproduction / fruit formation

- Transpiration

b) The conditions caused drooping of the leaves, reducing surface area for trapping sunlight hence reducing the rate of photosynthesis ✓_{ue}

The conditions caused closure of flowers petals which hindered pollination hence affecting fruit formation / fertilisation ✓_{ue}

The conditions caused closure of the stomata which reduced gaseous exchange hence affecting respiration and photosynthesis ✓_{ue}

c) Opening of flower petals in the morning when transpiration rate is low to allow pollination with minimal water loss ✓_{Ae}

Drooping of leaves reduced surface area for water loss hence reducing rate of Transpiration ✓_{Ae}

The hairs on the leaves trapped a layer of moisture / vapour to reduce the rate of Transpiration ✓_{Ae}

Leaves straighten in early morning hours to increase the surface area for trapping sunlight for photosynthesis with minimum water loss ✓_{Ae}

Flower petals remained closed; to reduce rate of transpiration ✓_{Ae}



3 or more $U_e = 6$
2 $U_e = 5$
1 $U_e = 4$
 $U_i = 1$

3 or more $A_e = 6$
2 $A_e = 5$
1 $A_e = 4$
 $A_i = 2$

2c) - Damage to body organs due to effect of chemicals in petrol / smoke from marijuana resulting into health complications and mental disorders / damage to body organs / health complications / mental disorder caused by dangerous chemicals in petrol and marijuana. ✓_{ue}

- Death from drug abuse / violence / damage to body organs / health complications / mental disorder from chemicals / Mob justice from violence ✓_{ue}

Imprisonment due to crime / violence / chaos ✓_{ue}

Societal / family neglect / rejection due to drug abuse / crime / bad peer groups ✓_{ue}

Addiction due to continued use of drugs. ✓_{ue}

b) - Ears heard the sound and impulses were sent to brain ✓_{ue}

- The brain stimulated adrenal gland to release adrenaline ✓_{ue}

- The adrenaline increased heart beat rate ✓_{ue}

- The heart pumped more blood to muscles hence faster supply of oxygen and nutrients to generate / facilitate high rate of respiration to generate energy required for faster muscle contraction ✓_{ue}

- Rapid and faster muscle contraction and relaxation caused him to run faster and reach home ✓_{ue}

c) - Guidance and counselling to know the dangers associated with being in such groups and know what to do ✓_{ue}

- stay away from bad peer groups and drugs to avoid the temptation of using the drugs ✓_{ue}

- Engage in productive activities to avoid idleness that would lead into the temptation of using drugs ✓_{ue}

- Go for rehabilitation / medical treatment to stop / reverse the effects of drug abuse ✓ Ae

2+ Ue in (a) and 1+ Ue in (b) or vice versa } = 5

1+ Ue in (a) and 1+ Ue in (b) or } = 4
2+ Ue in any of a or b

U1 = 1

1 Ae = 5

Al = 2

3 a) - There is a chance of having a normal baby since it is genetic condition based on probability during fertilisation ✓ Ae
Haemophilia can be managed in hospitals by administering clotting factors in case of physical injuries ✓ Ae

Abortion is illegal in Ugandan Laws which may lead them into jail ✓ Ae

Abortion can lead to death of the mother from excessive bleeding if not carried out properly ✓ Ae

increased risk of infections to the reproductive system if done in an unsafe environment / not treated properly ✓ Ae

May lead to mental health disorders due to the psychological distress and guilt of doing something immoral / illegal ✓ Ae.

b) Haemophilia is sex-linked Joan is a carrier and David is normal since he has no symptoms.
Let H represent allele for normal blood clotting
Let h represent allele for haemophilia

Parental phenotype

Carrier Joan

Normal David

Parental genotype

$X^H X^h$

$X^H Y$

Meiosis

Gametes.

X^H

X^h

X^H

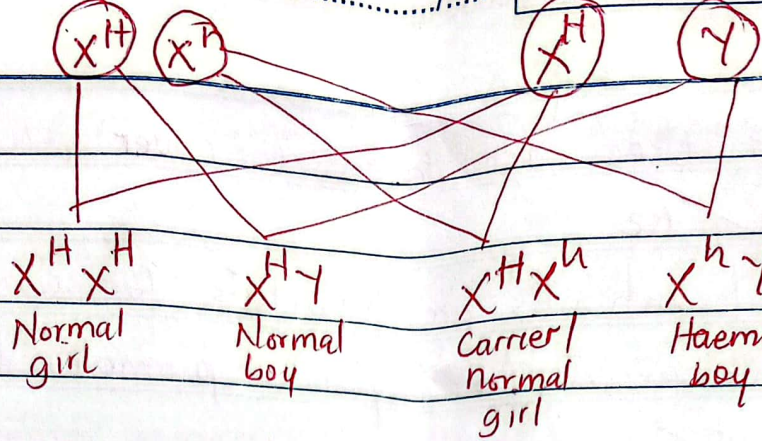
Y

Gametes

Fertilisation

offspring genotypes

offspring phenotypes



- Immediate and timely medication to stop bleeding in case of physical body injuries / to replace lost blood ✓ ue
- Guidance and Counselling to provide psychological support to the plants ✓ Ae
- Take proper care of the child to avoid risky situations that can expose the child to physical injuries protective year when playing etc ✓ Ae
- Proper nutrition with foods that can increase volume of blood ✓ Ae

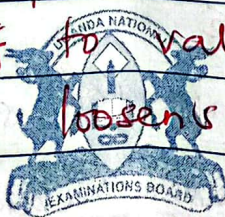
$$\begin{array}{l|l} 2 \text{ or more ue} = 6 & 5 \text{ or more Ae} = 6 \\ 1 \text{ ue} = 4 & 1 - 4 \text{ Ae} = 5 \\ & \text{Ae} = 3 \end{array}$$

Clearing the land destroyed the vegetation cover exposing the soil to erosion / destroying habitats for animals / removing wind breaks / leading to green house effect / loss of medicinal plants / loss of food ✓ ue.

- Monocropping / growing maize only caused nutrients exhaustion leading to soil infertility ✓ ue
- Destroying ant hills with chemicals killed termites that would help in soil aeration / break down plant remains to improve soil fertility ✓ ue

Application of fertilisers affected soil pH / some were carried away into water bodies causing water pollution / death of aquatic organisms ✓ ue NB for a ue, the activity must be attached to

- 4 b) Shrubs and trees provide soil cover which prevents soil erosion ✓ Ae
- Trees / shrubs / antihills are habitats for several organisms ✓ Ae
 - Conserving indigenous tree species promotes tourism / Employment / study purpose ✓ AL
 - Termites and indigenous trees are source of food ✓ Ae
 - Leaves from trees decompose to release nutrients for plant growth / termites improve soil aeration and soil drainage ✓ Ae
 - Shrubs and trees provide oxygen for respiration ✓ Ae
 - Trees prevent air pollution ✓ Ae
 - Indigenous trees / shrubs are source of herbal medicine ✓ Ae
 - Trees help in rainfall formation ✓ Ae
 - Trees can act as wind breakers ✓ Ae.
- All benefits that are not beneficial to living things in natural ecosystem are coded AI
- 3 or more Ae = 5
2 Ae = 4
1 Ae = 3
All = 1
- 2 or more Ae = 6
1 Ae or AI = 5
- Timber cutting removes big trees that act as wind breaks exposing the area to strong winds / removes trees that would hold soil particles together exposing the soil to mudslides ✓ Ae
 - Fearing of Cattle compacts soil leading to poor drainage which facilitates rapid surface water run off to the valleys causing flooding / over stocking leaves land bare facilitating rapid surface run off hence floods in the valley / Animal movements creates routes / paths which result into gulleys hence rapid water run off to valleys causing floods. ✓ Ae
 - Bush Crop gardening loosens the soil structure leading to mudslides ✓ Ae



Bush burning destroys humus / removes leaves that would form humus weakening soil structure hence loosening the soil particles exposing it to mudslides / removes vegetation cover that exposes the soil surface to rain water leading to mudslides ✓ Ue

Charcoal burning removes big trees that act as wind breaks exposing the area to strong winds / removes trees that would hold the soil particles together exposing the soil to mudslides ✓ Ue

Digging up and down the slopes loosens the soil particles exposing it to mudslides / creates channels for water run off leading to flooding of the valleys ✓ Ue

How the challenges can be overcome:

- Strict laws against charcoal burning and timber cutting to conserve trees / vegetation cover preventing strong wind and mudslides ✓ A

- Use alternative sources of fuel / building materials to conserve the trees to prevent strong winds and mudslides ✓ Ae

- Carry out good farming practices like contour ploughing, terracing, agroforestry, zero grazing etc to reduce speed of surface water run off preventing floods and mudslides ✓ Ae

- Sensitising the people on the dangers of bush burning, timber cutting, charcoal burning ✓ Ae

- Reforestation to restore trees and prevent strong winds and mudslides ✓ Ae

- Resettlement / relocation of people to allow regeneration of vegetation cover ✓ Ae



b) - Thick Vegetation provides soil cover / holds soil particles together which prevents soil erosion / mud slides / flooding ✓ Ae

- The Vegetation is a habitat for wild animals ✓ Ae

- Trees act as wind breakers ✓ Ae

- Vegetation is source of food ✓ Ae

- Vegetation is source of herbal medicine ✓ Ae

- Trees prevent air pollution by absorbing carbon dioxide ✓ Ae

- Trees help in rainfall formation ✓ Ae

- Trees provide oxygen for respiration ✓ Ae

- To maintain soil fertility for plant growth ✓ Ae

4 or more Ae = 5

2-3 Ae = 4

1 Ae = 3

Ae = 1

1 Ae from solution = 6

2 Ae from benefits = 6

1 Ae from benefits = 5

Ae from solution / benefits = 5

c) - Hitting the head damaged the brain disrupting the nervous control of activities leading to unconsciousness ✓ Ae.

- Losing a lot of blood reduced blood volume / reduced blood pressure hence low supply of oxygen / nutrients to the brain leading to unconsciousness. ✓ Ae

- Injured the kidneys resulting into accumulation of metabolic wastes / water leading to malfunctioning of body organs ✓ Ae

d) - All can donate to John except the mother ✓ Ae

- Cousin and sister can donate to John because he cannot produce antibodies against antigens A and B in their blood ✓ Ae



- The brother can donate to John because the brother's blood lacks antigens that can trigger antibody production ✓ Ae
- The mother cannot donate to John because her blood has hepatitis B which can be transmitted through blood transfusion ✓ Ae
- The sister can also donate because they have the same blood group.

$$3 \text{ or more Ue} = 6$$

$$2 \text{ Ue} = 4$$

$$1 \text{ Ue} = 3$$

$$\text{Ue} = 2$$

$$3 \text{ Ae} = 6$$

$$2 \text{ Ae} = 5$$

$$1 \text{ Ae} = 3$$

$$\text{Ae} = 1$$

7. Passive smoking affected her respiratory system and it could not effectively meet the demand for respiratory gases needed during sports ✓ Ue

Her HIV positive status weakened her immune system exposing her to frequent illness weakening her body hence not able to perform in sports ✓ Ue.

Malaria destroys red blood cells, thus reducing oxygen supply to respiring tissues ✓ Ue

Poor appetite results into inadequate nutrients intake hence insufficient energy required for sporting activities ✓ Ue

Heart diseases reduced the working rate of the heart hence not able to pump and supply enough blood with oxygen and nutrients to tissues / body organs ✓ Ue

Respiratory diseases caused malfunctioning of respiratory system affecting gaseous exchange ✓ Ue.

b) - Relocate / protect against Mosquito bites to prevent malaria ✓ Ae (or an environmental friendly method of controlling Mosquito bites)

Seek medical care / treatment against diseases she is suffering from ✓ Ae

Her husband should seek counselling to help him stop smoking so that Chandira is not exposed to passive smoking. ✓ Ae
Proper nutrition to boost her body immunity / energy production / body building. ✓ Ae

$$\begin{aligned} \text{or more } U_e &= 6 \\ 2-3 \ U_e &= 4 \\ 1 \ U_e &= 3 \\ U_e &= 2 \end{aligned}$$

$$\begin{aligned} 3 \text{ or more } A_e &= 6 \\ 2 \ A_e &= 5 \\ 1 \ A_e &= 3 \\ A_e &= 1 \end{aligned}$$

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UCE

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Subject Paper code

EOC 2 Understands how plants obtain and use nutrients to meet their requirements during which raw materials are carried to and from various organs in plants

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Item	Code	Descriptor	
1	U ₂ (4)	Describes 3 or more ways how the conditions experienced affected the functioning of the plants which led to poor yields	6
	U ₂ (3)	Describes 2 ways how the conditions -----	5
	U ₂ (2)	Describes 1 way how -----	4
	U ₂ (1)	Mentions any process that was affected by the conditions-----	1
	A ₂ (4)	Explains 3 ways how the pumpkins managed to survive the conditions experienced	6
	A ₂ (3)	Explains 2 ways -----	5
	A ₂ (2)	Explains 1 way -----	4
	A ₂ (1)	Lists / outlines / states -----	2
Item 2			
	EOC ₄	Appreciates how human body coordinate various activities and adjust to ensure normal functioning of body system	
	U ₄ (3)	Explains two challenges Donald may face and describe partially the process how Donald's body coordinated and made him reach home.	5
	U ₄ (2)	Explains any one challenge -----	4
	U ₄ (1)	Lists / states any challenge -----	1
	A ₄ (2)	Explains any one ways Donald avoid the challenges associated with being in such a group	5
	A ₄ (1)	Lists / outlines / states any ways -----	2
Item 3	EOC ₅	Appreciates how characteristics are inherited in living organisms passed to generation through reproduction and are manifested as organisms grow	

Item	Code	Descriptor	Weight Score
	U5(2)	Describes or shows any <u>two</u> or more steps of a sex-linked genetic cross i.e. (i) introduction/defined symbols. (ii) Parental genotypes and phenotypes (iii) gamete formation (iv) fertilisation (v) genotypes of offsprings (vi) phenotypes of offsprings.	6
	U5(1)	Describes or shows any one step of sex-linked genetic cross	4
	A5(3)	Explains five reasons why Joan should not take board's advice and/or what should be done to manage the challenges associated with the conditions of their son	6
	A5(2)	Explain 1-4 reasons	5
	A5(1)	Lists / outlines / states without reasons why Joan should not ---	3
	EOC 1	Appreciates diversity of living things and sustainability of natural resources.	
Item 4	U1(4)	Explains 3 or more challenges Mr Ouma caused to the environment associated to named natural resources affected	5
	U1(3)	Explains 2 challenges	4
	U1(2)	Explains 1 challenge	3
	U1(1)	outlines challenge	1
	A1(2)	Mentions two or more importance why Mr Ouma should conserve his env't all of which should be to living things	6
	A1(1)	Mentions any importance of the natural resources conserved	5
	U1(4)	Explains four or more ways how the different activities caused challenges	5
Item 5	U1(3)	Explain 3 or two ways	4 3
	U1(2)	Explains one way	3
	U1(1)	outlines without explanation	1

Item	Code	Descriptor	Score
	A ₁ (2)	Detailed solution(s) to at least one of the challenges identified or Mentions 2 or more of the benefits of Conserving such a hill to the community, all of which shd be to living things	6
	A ₁ (1)	Outlines / lists without detailed solutions to the challenge identified or Mentions one benefit	5
	EOC ₃	Understands how mammals obtain and use nutrients to meet their energy requirements during which raw materials and products are carried to and from various organs involved.	
Item 6	U ₃ (4)	Explain 3 ways how the accident affected the function of John's body	6
	U ₃ (3)	Explain 2 ways	4
	U ₃ (2)	Explain 1 way	3
	U ₃ (1)	Only lists	2
	A ₃ (4)	Explains 4 reasons why Identifies the potential donor and suggest 3 reasons why	6
	A ₃ (3)	Identifies 2 reasons	5
	A ₃ (2)	Identifies 1 reason	3
	A ₃ (1)	Identifies the potential donor without giving reasons	1
Item 7	U ₃ (4)	Explains 4 reasons why chandini's performance in sports had decline	6
	U ₃ (3)	Explain 2-3	4
	U ₃ (2)	Explain 1	3
	U ₃ (1)	Exp only	2



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- | | | |
|-------|---|---|
| A3(4) | Proposes with reasons Three ways how chandini can manage her health condition | 6 |
| A3(3) | Proposes Two ways | 5 |
| A3(2) | Proposes One | 3 |
| A3(1) | Proposes ways how chandini can manage without justification | 1 |