

## ACEITEKA 553/1 2024

### PROPOSED GUIDE BY T.K DANIEL (705245081)

#### ITEM 1

a)

Roots, stems, leaves, flowers and fruits (*do not accept branches*)

CRITERIA	CODE	Level of performance	Score	Maximum score
Identifies affected plant parts	I	4 – 5 Plant parts	03	03
		3 -2	02	
		1	01	
		0	00	

b)

The fungus infested roots hindered the plants' ability to absorb water and mineral salts, through the root hairs. This led to wilting and drying of some tomatoes plant before they could bear fruits, it also interfered with photosynthesis since water is a raw material

Destruction of tomato leaves by the hail storm removed the sites for photosynthesis, therefore it prevented the manufacturing of food. Destruction of leaves removed sites for entry of carbon dioxide gas which is a raw material for photosynthesis hence food formation was interrupted.

The breaking of stems prevented transportation of another raw material for photosynthesis, water molecules, from soil to the point of food manufacturing, hence photosynthesis was interfered with

The destruction of stems interfered the tomato plants' structural ability, making it difficult for them to support the weight of the fruit. This led to reduced fruit production or premature fruit fall

The rate of transpiration was greatly reduced since there were few leaves available which are sites for transpiration. The broken stem also cut off transpiration pull which is essential for water transport to leaves

Direct damage to the to the fruits from the hail storm resulted in physical damage and cracking, making them unmarketable and reducing the total yield

BASIS OF ASSESMENT	CODE	Level of performance	Score	Maximum score
Identifies the function of the plant part affected	F	3 functions of three plant parts	03	03
		2 functions of two plant parts	02	
		1 function of 1 plant part	03	
		No function	00	
Explains how plant processes were affected by damaging plant parts	E	3 processes explained	03	03
		2 processes explained	02	
		1 process explained	01	
		No process explained	00	

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c)

Crop rotation with non-host plants to break the fungus life cycle

Establish wind breaks like rows of trees to reduce hail storm impact and wind speed

Growing tomatoes in protected structures like green houses to guard against impact by hailstones

Applying fungicides as a last resort to kill fungi that affect roots

*(Measures should be limited to reducing or preventing the impact of hailstorm and root fungus)*

BASIS OF ASSESMENT	CODE	Level of performance	Score	Maximum score
Identifies ways of preventing impact by fungus and hail storms	P	3 ways	03	03
		2 ways	02	
		1 way	01	
		No way	00	

**Total = 3+ 6 +3= 12 scores**

## ITEM 2

a)

Damage to brain cells and tissue led to altertered brain chemistry and functioning such aa memory and cognitive impairment making her forget that she was cooking

Motor skill impairment leading to poor balance and coordination

Slowed reaction time, increasing the risks of accidents

Altered perception and poor decision making

*(Accept any other physical and psychological effect of drug abuse)*

CRETERIA	CODE	Level of performance	Score	MAXIMUM SCORE
Identifies physical and psychological effects of drug abuse	d	3 effects	03	03
		2 effects	02	
		1 effect	01	
		No effect	00	

**b)**

Light rays from the smoke entered Sarah's eye, they were then refracted by the cornea, aqueous humour, lens, vitreous humour and finally focused on the retina forming an image

The photoreceptors in the retina changed the light stimulus into nervous impulses. These impulses were then sent to the brain along the optical nerves for interpretation.

The brain interpreted smoke image as danger and send impulses to the adrenal gland causing it to secrete adrenaline into the blood stream which is transported to different parts of the body.

This caused her heart rate and breathing rate to increase to increase oxygen supply to the muscles for respiration, and increase in breathing rate to supply the body with more oxygen for respiration respectively and dilation of the pupil to allow more light to into the eye.

This prepared her body to run very fast to Nalongos kitchen to extinguish the fire in time.

CRETERIA	CODE	Level of performance	Score	MAXIMUM SCORE
Identifies the structures/organs involved	s	8 to 12	03	03
		4 to 7	02	
		1to 3	01	
		0	00	
Mentions the role/ functions of structures/organ involved	F	6 to 8	03	03
		3 to 5	02	
		1 to 2	01	
		0	00	

**c)**

Education and awareness through teaching children and adults about the dangers of drug abuse Encouraging healthy ways to manage stress and emotions

Provide a positive influence and role models

Engaging in community activities and build strong relationships

Avoid exposure to drugs and drug using environments

Engage in heathy activities and hobbies

Surround yourself with positive and supportive peers

CRITERIA	CODE	Level of performance	Score	MAXIMUM SCORE
Identifies prentative measures of drug abuse	P	3 measures	03	03
		2 measures	02	
		1 measure	01	
		No measure	00	

**Total score = 3+6+3 = 12 scores**

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### ITEM 3

a)

- A- Pollination
- B- Fertilization
- C- Germination
- D- Growth/ Development

CRETERIA	CODE	Performance level	Score	MAXIMUM SCORE
Identifies the correct process taking place at each stage	P	3-4 processes	02	02
		1-2 processes	01	
		No process	00	

b)

Once a mature pollen grain lands on a mature stigma of a compatible species, it germinates.

A sucrose solution is secreted by the epidermal cells of the stigma. This stimulates the germination of the pollen grain and supplies food.

A pollen tube emerges from the pollen grain and grows rapidly down the style towards the ovary

The pollen tube growth is controlled by the tube nucleus of the pollen grain, which is found at the growing tip of the pollen tube.

During growth of the pollen tube, the generative nucleus of the pollen grain divides by mitosis to produce two male nuclei that represent the male gametes. They depend on the pollen tube to reach the female gamete in the embryo sac of the ovule

Once the pollen tube enters the ovule through the micropyle, the tube nucleus degenerates and the tip of the tube bursts, releasing the male gametes near the embryo sac which they enter

One male nucleus fuse with the egg cell nucleus (female gamete) to form a diploid zygote, and the second male nuclei fuses with the diploid nucleus forming a triploid nucleus (primary endosperm nucleus)

CRETERIA	CODE	Performance level	Score	MAXIMUM SCORE
Identifies the correct process	c	Correct process	01	01
		Incorrect	00	
Describes the process of double fertilization  <i>The description should be chronological, and the learner should mention the</i>	f	Accurately and coherently describes the process of double fertilization	03	03
		Correctly describes the process of double fertilization but not coherently	02	
		Fairly describes the process of double fertilization	01	

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<i>structures and activities involved</i>		Completely wrong	00	
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c)

let Y represent the allele for yellow peas seed coats

let y represent the allele for green pea seed coats

### 1<sup>ST</sup> SEASON

Parents phenotypes(2n): Yellow peas X Green peas

Parents genotypes (2n): YY X yy

Meiosis

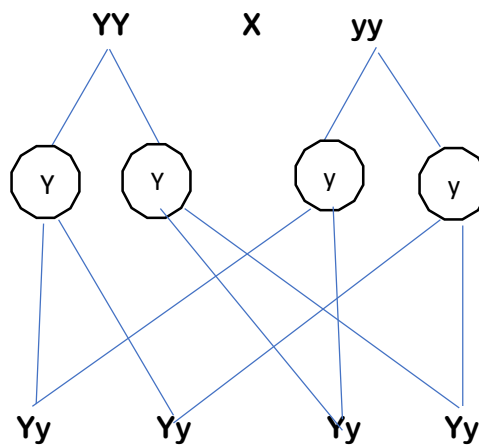
Gametes(n);

Fertilization

F1 Generation (2n)

F1 genotype: All Yy

F1 phenotype: All yellow



### 2<sup>ND</sup> SEASON

Parents phenotype: Yellow peas X Yellow peas

Parents genotype(2n): Yy X Yy

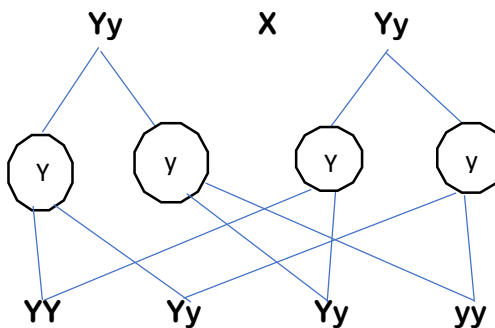
Meiosis

Gametes (n)

F1 generation(2n)

F1 genotypic: 1 YY: 2Yy: 1yy

F1 phenotype: 3 yellow; 1 green



Pea seedcoat color is controlled by a gene with two alleles, yellow being dominant over green allele

CRETERIA	CODE	Performance level	Score	MAXIMUM SCORE
Explains the appearance of peas during the 1 <sup>st</sup> season using genetic diagrams The explanation should logically include the following <ul style="list-style-type: none"> <li>• Alleles</li> <li>• Parents phenotype</li> <li>• Parents genotypes</li> <li>• Gametes</li> <li>• Fertilization</li> <li>• Genotypic ratio</li> <li>• Phonotypic ratio</li> </ul>	S <sub>1</sub>	4- 7	03	03
		2-3	02	
		1	01	
		None	00	
Explains the appearance of peas during the second season using genetic diagrams <ul style="list-style-type: none"> <li>• Parents phenotype</li> <li>• Parents genotypes</li> <li>• Gametes</li> <li>• Fertilization</li> <li>• Genotypic ratio</li> <li>• Phonotypic ratio</li> </ul>	S <sub>2</sub>	4-7	03	03
		2-3	02	
		1	01	
		None	00	

Total score = 2+4+6 = 12 score

## Part I

### ITEM 4

Water bodies such lakes, ponds and rivers are breeding places for mosquitoes which are vectors for plasmodium germ that cause malaria. When they bite an infected person, the germs are picked and when the same mosquito bites another person the germs are transmitted and the person suffers from malaria.

Domestic wastes and sewage support the development and multiplication of pathogens/ germs for diseases such as cholera (vibrio cholerae), dysentery (E. coli) and diarrhea (C. trachomatis) as they carry out decomposition of organic matter. These germs are ingested when a person drinks that contaminated and hence suffers from the water borne diseases.

This sewage and domestic wastes attract houseflies and is a breeding place to them. House flies are vectors for germs that cause cholera, dysentery and diarrhea. When the house flies go to feed on garbage, they also breed on it, the germs attach on the hairy bodies of house flies which when they land on food left uncovered, they transmit the germs there. When family members feed on the same food, they take in these germs that cause various diseases

Spread of water borne disease due to sewage and wastes discharge in water bodies can be reduced by ensuring proper hygiene., proper disposal of wastes, covering left over food, sewage treatment, recycling and reuse

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domestic waste materials for example in fertilizer formation, spraying using insecticides to kill house flies, Boiling water before drinking

Malaria in the community can be controlled by draining stagnant water to minimize their breeding sites, oiling stagnant water to kill mosquito larvae, using mosquito repellants to reduce the number of mosquito bites, using biological control mechanisms like introducing fish in ponds around communities, slashing away bushes which act as breeding grounds for mosquitoes.

CRETERIA	CODE	Performance level	Score	MAXIMUM SCORES
Identifies the parasite/vector that spread/cause the diseases	v/p	2v/2p	03	03
		1p/1v	02	
		1p/ov or 0p/1v	02	
		0p/0v	00	
Describes how the disease is spread/caused by the vector/parasite.	w	3+ ways	03	03
		2 ways	02	
		1 way	01	
		0 way	00	
Identifies solutions for the spread of malaria/water borne diseases	m/w	2m/2w	03	03
		1m/1w	02	
		1m/0w or om/1w	01	
		0m/0w	00	
Explains how the suggestion solves the problem	e	3 explained	03	03
		2 explained	02	
		1 explained	01	
		None explained	00	

**TOTAL SCORE = 12 SCORES**

## ITEM 5

De-vegetation by clearing the bushes and cutting trees exposed the soil to erosion agents; such as running water, and wind; Due to soil erosion the top fertile layer was washed; away leaving the maize in less nutritious soils; It also reduced on rain fall formation; by evapotranspiration hence the crops did not have enough water for growth;

Monocropping depleted; all the plant nutrients that support maize as well as the increase in the population of the maize pests in the garden due to the availability of food every season.

Pesticides and herbicide application might have led to non-selective killing of soil living organisms; such as earthworms; that could help in soil aeration hence increased fertility; They also alter the pH; of the soil hence affecting maize growth;

Some pests might have become resistant; to the pesticides due to over use.

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The above challenges can be solved by applying organic manure to the soil to improve on its fertility, planting of cover crops to reduce soil erosion by reducing on the speed of running water, crop rotation to break the life cycle of maize pests making sure that legumes are included in the cycle, planting pest resistant maize varieties, mulching the maize garden to keep the soil moist and reduce on soil erosion and watering the maize plantations.

CRETERIA	CODE	Performance level	Score	Maximum score
Identifies the resultant problems	P	4+ problems	03	03
		2 to 3 problems	02	
		1 problem	01	
		0 problems	00	
Explains the effects of the problems to soil productivity	E	4+ problems explained	03	03
		2 to 3 problems explained	02	
		1 problem explained	01	
		0 problems explained	00	
Identifies solutions for the challenges	S	4+ solutions identified	03	03
		2 to 3 solutions identified	02	
		1 solution identified	01	
		No solution identified	00	
Explains the functionality of the solutions	F	4+ solutions explained	03	03
		2 to 3 solutions explained	02	
		1 solution explained	01	
		No solution explained	00	

**TOTAL SCORE = 12 SCORES**

## Part II

### ITEM 6

The child's meal is posh(carbohydrate) and unfried green vegetables (roughages)

In the mouth, the food(posho) is broken down using teeth. Starch in the food is broken down to maltose by salivary amylase in saliva secreted from the salivary gland.

The food is rolled into bolus by the tongue and then swallowed. The food moves down the esophagus by peristalsis.

In the stomach, no chemical digestion of starch occurs.

In the duodenum, secretion of bile juice from the gall bladder and pancreatic juice from the pancreas occurs. Pancreatic juice secreted contains pancreatic amylase which breaks down starch to maltose.

In the ileum, intestinal juice from intestinal wall is secreted containing maltase enzyme which completes the breakdown of maltose to glucose.

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Glucose is then absorbed into the bloodstream by the villi found in the ileum and transported to the liver muscle cells where excess glucose is converted to glycogen for storage.

During any energy consuming activity by the child glycogen is converted to glucose that is broken down into carbon dioxide, water and energy. That makes the baby energetic.

The child is not gaining weight due to protein deficiency in his body. This is as a result of lack of any protein containing food in the child's meal. Proteins contribute to weight gaining since they are a raw material for formation of body structures such as cells.

The energy he gets is just enough to maintain body activities, no excess fats and glucose are formed for storage.

I recommend the mother to feed the child on a balanced diet containing proteins for body building such as fish, milk, and soya beans. Vitamins to boost the baby's immunity such as fruits like mangoes, oranges.

CRETERIA	CODE	Performance level	Score	MAXIMUM SCORE
Identifies processes carbohydrate food undergoes to provide energy	P	3-4 processes mentioned	03	03
		2 processes mentioned	02	
		1 process mentioned	01	
		No process mentioned	00	
explains the processes	E	3 processes explained	03	03
		2 processes explained	02	
		1 process explained	01	
		No process explained	00	
Explains the function of proteins, lipids and carbohydrates	F	3 functions	03	03
		2 functions	02	
		1 function	01	
		0	00	
Recommends on how to manage malnutrition	M	3 recommendations	03	03
		2 recommendations	02	
		1 recommendation	01	
		0	00	

**Total scores = 12 scores**

## ITEM 7

The athletes believe that carbohydrates and water are useless in their bodies yet they have the following roles;

Carbohydrates are energy giving foods which provide the energy to facilitate the day today activities when oxidized during respiration e.g., glucose

Some carbohydrates act as food reserves which are stored within organisms for example glycogen in man which can later be used during an intense exercise

Water is a universal solvent in which absorbed foods, wastes and hormones are transported around the body in blood even during an intense exercise

Water plays a role in temperature regulation i.e., cooling the body on hot days once one sweats

The nutrients make the athletes stronger throughout the competition when they undergo digestion, absorption, transport and respiration processes as described below.

In the mouth, the food is broken down using teeth. Starch in the food is broken down to maltose by salivary amylase in saliva secreted from the salivary gland. The food is rolled into bolus by the tongue and then swallowed. The food moves down the oesophagus by peristalsis into the stomach.

In the stomach, no chemical digestion of starch occurs but food.

In the duodenum, secretion of bile juice from the liver and pancreatic juice from the pancreas occurs. Bile salts in the bile juice emulsify fats into tiny droplets. Pancreatic juice secreted contains pancreatic amylase which breaks down starch to maltose.

In the ileum, intestinal juice/succus entericus from intestinal wall is secreted containing maltase enzyme which completes the breakdown of maltose to glucose.

Glucose is then absorbed into the bloodstream by the villi found in the ileum and transported to the liver muscle cells where excess glucose is converted to glycogen for storage.

During the race glycogen is converted to glucose that is used for respiration to produce energy. The energy is used for contraction of leg muscles to enable the athlete run fast and remain stronger.

For better performance I encourage athletes to;

Take plenty of water to keep hydrated.

Feed on well-balanced diet that includes plenty of carbohydrates to keep energetic during exercise.

Avoid drug abuse,

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Engage in exercise that strengthen your muscles

Have enough sleep.

*(Accept any other way that improves performance of athletes)*

CRETERIA	CODE	Performance level	Score	MAXIMUM SCORE
Identifies the roles of carbohydrates in the body.	W/C	2w/2c	03	03
		1w/1c	02	
		1w/0c or 0w/1c	01	
		0w/0c	00	
Identifies the process carbohydrates undergo to produce energy	P	3-4 processes	03	03
		2 processes	02	
		1 process	01	
			00	
Describes the processes	D	3 processes	03	03
		2 processes	02	
		1 process	01	
		No process	00	
Identifies ways to increase performance	R	3 recommendations	03	03
		2 recommendations	02	
		1 recommendation	01	
		No recommendation	00	

**Total scores =12 scores**