**PRESIDENT'S OFFICE REGINAL ADMINISTRATIVE AND LOCAL GOVERNMENT**
**KILOMBERO DISTRICT COUNCIL**
**FORM FOUR PRE NATIONAL, SEPTEMBER 2019**
**BIOLOGYMAKING SCHEME**

## SECTION A (15 MARKS)

**1.**

| i | ii | iii | iv | v | vi | vii | viii | ix | x |
|---|---|---|---|---|---|---|---|---|---|
| B | B | D | B | E | C | E | A | B | D |

1Mark@=10TOTAL MARKS

2.

| | |
|---|---|
| i | C |
| ii | A |
| iii | D |
| iv | G |
| v | A |

1MARK@ =5TOTAL MARKS

## SECTION B (60 MARKS)

3. a) i) Is a collection of different cells***1Mark***

ii) Animal tissues

-Blood
-Muscle
- Bone***½ Mark 2 Points 1Mark***

Plant tissues

- Meristematic
- Parenchyma
- Collenchyma
- Vascular

***½ Mark 2 Points 1Mark***

b) Is a process by which cells from the same origin become specialized for specific functions***1 Mark***

c) It leads to cell diversity which results in better performance of life processes ***3Marks***

***07Total Marks***

4. a) Is a type of nuclear division which produces two daughter cells with the same number of chromosomes as the parent cell.***1Marks***

b) - Interphase
-Prophase
-Metaphase
-Anaphase
-Telophase***½ Mark@2 ½ Total Marks***

c) –For replacement of dead cells
- For increasing number of cells aid growth
- Some organism is able to regenerate part of their body
-For asexual reproduction
- It helps to maintaining genetically identical from one generation to another

***½ Mark @ 2 ½ Total Marks***

***06 Total Marks***

5. a) i) Helps people to understand themselves better

ii) The knowledge of biology enables people to conserve their surrounding environment which is important to the welfare of mankind

iii)The knowledge of biology enables man to improve his standard of living and care for animals and plants***1Mark @ 2Points 2 Marks***

b) i) Classification of bean plant up to class level
- Kingdom - Plantae
- Division -Angiospermatophyta
- Class - Dicotyledonous***½ Mark @1½ Total marks***

ii) Classification of toad up to class level
- Kingdom - Animalia
- Division -Chordata
- Class - Amphibia***½ Mark @ 1½ Total marks***

- Characteristics of dicotyledonous
i) They have tap root system
ii) They have leaves with net veins
iii)They have floral parts in four or five or multiples
iv) They produce seeds which contain two cotyledons
v)They have vascular bundles which form a ring in the stem***½ Mark @ 1 ½ Total marks***

-Characteristics of Amphibian
i) They have a skin which is always moist
ii) Their life cycle involves a larval form called a tadpole
iii)They have gills for gas exchange in the early stages of the development of the tadpole
iv)They have a heart which has three chambers***½ Mark @ 1 ½ Total marks***

***08Total Marks***

1. a) Is the system of assigning scientific names with two names, namely generic and specific***1Mark***

b) - It reflects evolutionary relationship
-For easy communication among biologists
-Short hand information***1Mark @ 2 Points 2Total marks***

c) Because viruses shows both living and non- living characteristics***2Marks***

***06 Total Marks***

7.a) i) Is sudden loss of consciousness arising from failure of blood to circulate properly to all body parts particularly the brain***1Mark***

ii) - Emotion stress
-Low blood pressure
- Illness
- Injury which lead to loss of blood
-Bad news
- Dehydration***½ Mark @ 4 Points 2Total marks***

b) –it save lives
- it prevent the worsen of injury and helps recovery
-it reduces pain
- it brings hope and encouragement
-it prevents further accidents ***½ Marks @ 4 Points 2 Total Marks***

***06TotalMarks***

8) a) i) Because it control other glands to produce hormone
***1Marks***

ii) Because during cold olfactory surface become dry which lead the receptor for smell fail to detect smell during cold.***2Marks***

b) If the amount of glucose is in high amount in the blood, insulin convert the excess glucose to glycogen and if the amount of glucose is low in the blood glucagon convert the stored glycogen to glucose

Insulin
GLUCOSE ⇌ GLYCOGEN***3Marks***
Glucagon***06Total marks***

9. a) i) - Have thin membrane to facilitate quick diffusion
- They are moisture for gases diffusion
- They have large surface are for maximum exchange of gases
- They are well supplied with blood capillaries for transportation of gases
- They are well ventilated to receives a steady flow of air ½***Mark***

***@ 4points 2marks***

b) It helps the body to generate heat when body temperature is low especially during cold time
***2½ Marks***

c) When a ring of bark is removed from the tree it dies because phloem tissues are destroyed hence translocation of food from the leaves to parts below the ring is blocked.***2½ Marks***

***07Total Marks***

11. a) Because the food enters the oesophagus due to the series of wave-like muscular contractions of the walls of the oesophagus start (peristalsis) and the food is pushed downwards towards the stomach and other parts of the alimentary canal this means the movement of food in the oesophagus does not depend on gravitational forces

***3Marks***

b) Mammals have different ways of reducing excess water from the body such as sweating, urination, breathing, defecation. When a mammal's body heats up the body regulates its temperature by sweating hence the frequency urination is reduced ***3Marks***

12. i) A- Pelvic girdle
B- Ligaments
C- Articulate cartilage
D- Synovial fluids
E- Synovial membrane
F- Femur***1Mark @ 6 Marks***

ii) -Function of part B – Ligaments
- It is a tissue which connects bone to bone at the joint.***1 Mark***
- Function of part C – Articulate cartilage
- It minimizes friction happen when bones rub against each other.
- It helps the bone to enlarge because their cells are actively to divide mitotically.***1 Mark***

iii) Ball and Socket joint
- It is characterized by allowing movement in many directions including rotation

***2 Mark***

***10Total Mark s***

## SECTION C

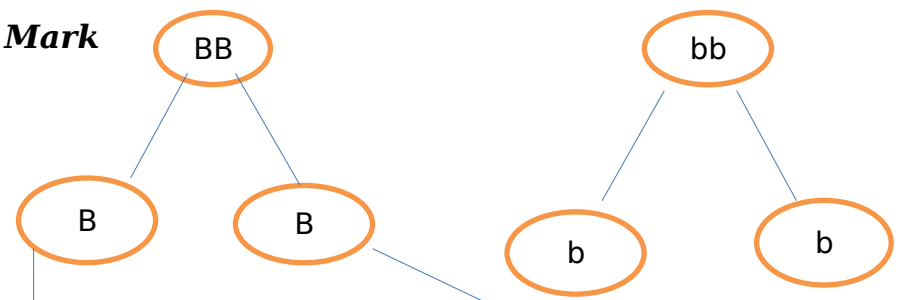
13.a) B – Represents dominant gene (black)***½ Mark***
b- Represents recessive gene (white)***½ Mark***

Parental phenotype s ***½ Mark*** Black x White

Parental genotypes***½ Mark***

Meiosis ***½ Mark***

Gametes***½ Mark***



Fertilization***½ Mark***

$F_1$genotype***½ Mark*** Bb BbBbBb

Offspring of $F_1$ generation: All black***1 Marks***
Genotypes of the parents are BB and bb***1 Marks***
Genotype of the offspring is Bb***1 Mark***

b)i) Is a tendency for certain inherited characteristics to occur in one sex than the other***2Mark***

ii) If coat colour in rabbit is a sex-linked trait, the possible phenotype and genotype are as follows

B – Represents dominant gene (black) ***½ Mark***

b- Represents recessive gene (white)***½ Mark***

Parental phenotypes ***½ Mark*** Black x White

Parental genotypes***½ Mark*** $X^BYY$ $X^bX^b$

Meiosis***½ Mark***

Gametes***½ Mark*** $X^B$ Y $X^b$ $X^b$

Fertilization***½ Mark***

F1 genotype ***½ Mark*** $X^BX^bX^BX^bX^bYX^bY$

Phenotypes: 2- Daughters are black
2- Sons are white ***1Mark***

Genotypes are: $X^BX^b$ and $X^bY$ ***1Mark***
***15Total Marks***

14.**INTRODUCTION**
Minerals are organic compound containing elements which are essential for normal body metabolism. These minerals are grouped into two macro and micro minerals.***½Mark***

**MAIN BODY**
**Iron**
Roles
- It is constituent of haemoglobin (red pigment)

***1Mark***
Sources
-Beans, liver, eggs, green vegetables

***1Mark***
Deficiency disorders
-Anaemia

***1Mark***

**Calcium**
Roles
-For blood clotting
-For proper functioning of the heart
-For proper functioning of nervous system
-For contraction of muscle
- Formation of bones and teeth ***1Mark***

Sources
-Milk, cheese, eggs, fruits green vegetables, sardines

***1Mark***

Deficiency
-Weak bones and teeth which can lead to rickets and easily fractured bones

***1Mark***
**Sodium**
Roles
-For passage of impulse along nerve fibres
-Important in digestion ***1Mark***

Sources
-Table salt, sea water, meat, fish, poultry, eggs, milk

***1Mark***
Deficiency
-Poor passage of impulse along nerve fibres
- Nauseas exhaustion

- Muscle cramp **1Mark**

**CONCLUSION** **½ Mark**

***10 Total Marks***

15. **INTRODUCTION**

**Causative agent**

-It is caused by flatworms called schistosoma haematobium or blood flukes.

***2Mark***

**MAIN BODY**

**Transmission**

-Adult flat worms live inside the blood vessels of an infected man's urinary bladder. These worms damage the walls of vessels (bladder) by the help of a sharp spine and get released through urine and faeces. If an infected person egests or urinates in the bush the eggs find their way to the water bodies through rain water. In water they absorb it and burst releasing embryo called miracidia.***3Marks***

**Symptoms**

**-**General body weakness and loss of weight

-Anaemia

- Loss of appetite
- Spleen became large
- Urine and faces mixed with blood pass out

***At least four points ½ Mark @ 2Total marks***

**Preventives measures**

-Destroy breeding places of snails by clearing vegetation along the canals ponds and rivers

- Introduce ducks into the water to eat snails
- Spray molluscides in stagnant water to kills snails
- Educate people to use toilets and boils the drinking water

***At least four points ½ Mark @2Total marks***

**CONCLUSION** **1Marks**

***10 Total Marks***