BIOLOGY PAPER 1

EXPECTED QUESTIONS IN KCSE

Comprises 6 KCSE prediction set exams (Class of KCSE March 2022).

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PREDICTION 1

NAME_____INDEX NO _____

SCHOOL_____ CANDIDATE'S SIGN _____

DATE _____

231/1

BIOLOGY
Paper 1 Form 4 2021
Time: 2 Hours.

Instructions

1. Write your name, Index Number and School in the spaces provided above.
2. Sign and write the date of the examination in the spaces provided above.
3. Answer all the questions in the spaces provided.
4. Additional pages must not be inserted.
5. Check the question paper to ascertain that all the pages are printed and that no questions are missing.

FOR EXAMINER'S USE ONLY

Question	Maximum Score	Candidate's Score
1-27	**80**	

1. State the function of the diaphragm in a light microscope. (1mark)

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2. State the function of the following cell organelles
   a.) Centriole (1mark)

……

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b.) Golgi bodies (1mark)

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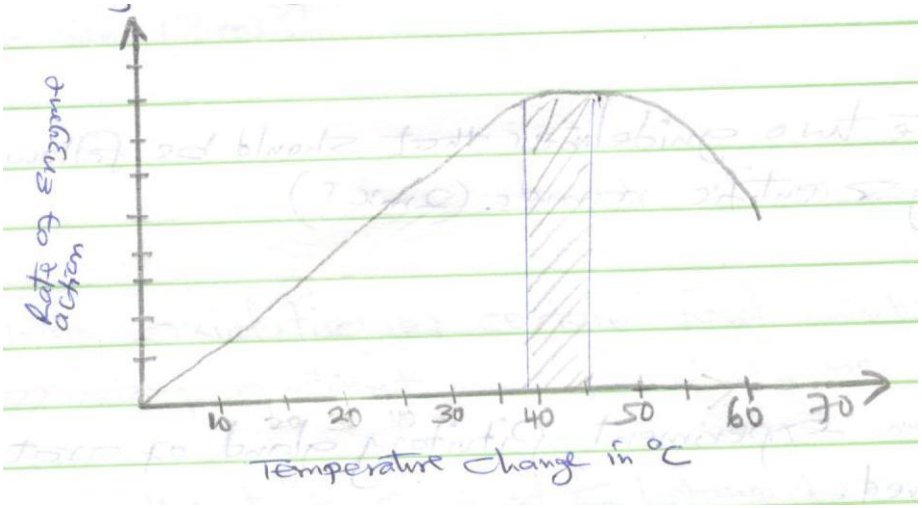
3. Study the graph below.



Account for the rate of reaction at:

i.) 10^{O} C (2marks)

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ii.) 50^{O} C (2marks)

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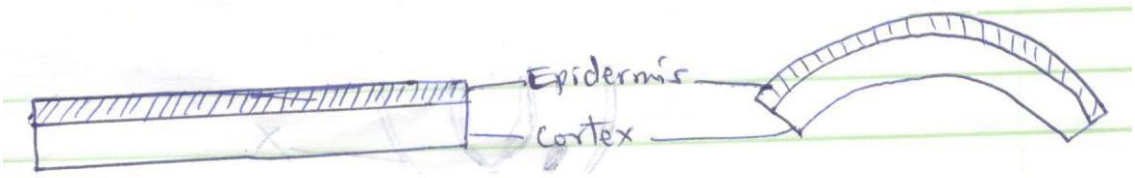
4. Strips were cut lengthwise from the stem of a herbaceous plant and placed in a salt solution for 30 minutes as shown below.



Account for the results obtained when the strip was placed in the salt solution. (4marks)

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5. (i) Name the main products of the dark stage of photosynthesis. (1mark)

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(ii) State the importance of chlorophyll in photosynthesis. (1mark)

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6. State the two guidelines that should be followed when typing scientific names. (2marks)

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7. In an experiment, Pituitary gland of a rat was removed.
   a.) State the effect this will have on the quantity of urine produced by the rat. (1 mark)

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   b.) Give a reason for your answer in (a) above. (1mark)

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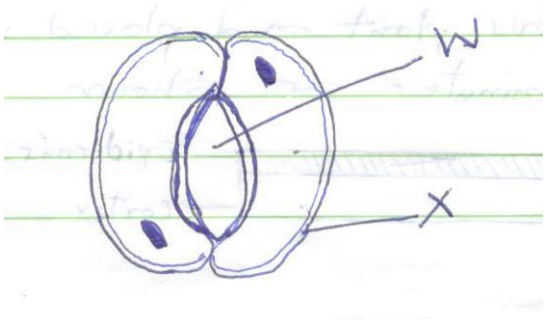
8. The diagram below shows part of a plant.



   a.) Name the cell labelled X and part labelled W. (2marks)

   X ……

   W ……

   b.) State two adaptations of cell labeled X to its function (2marks)

……

……

9. Explain why a baby loses more heat per unit weight than an adult when exposed to the same environmental conditions. (2marks)

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10. During oxidation of certain food substances, the respiratory quotient was found to be 0.718.

i) Name the type of food substance being oxidized. (1mark)

……

ii) State two advantages of using the food substances named. (2marks)

……

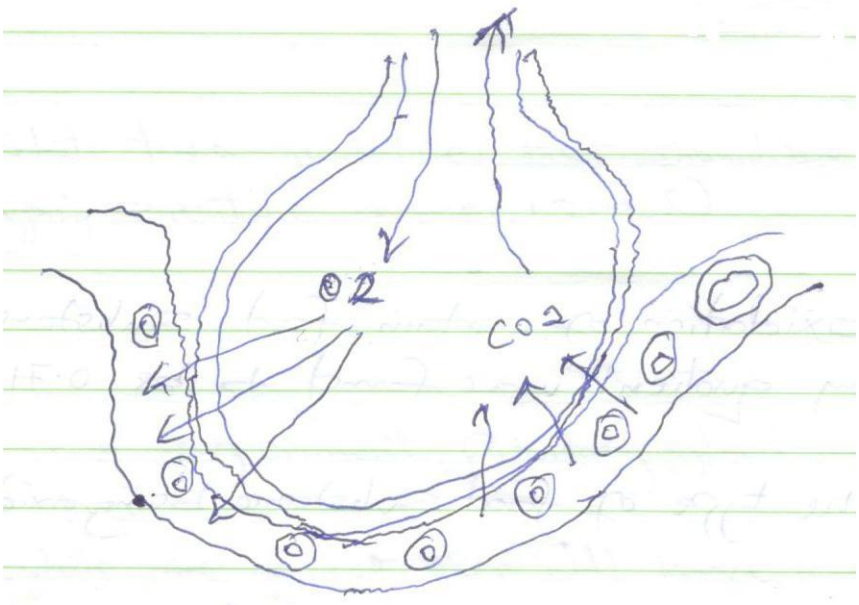
……

11. Name two structures used for gaseous exchange in plants. (2marks)

……

……

12. The diagram below shows the exchange of gases in alveolus.



a) State how the alveoli are adapted for their function. (3marks)

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b) Name the cell labeled A (1mark)

……

13. During germination and early growth, the weight of the endosperm decreases while that of the embryo increases. Explain (2marks)

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14. a) What is the importance of metamorphosis? (1mark)

……

……

b) Give an example of insect that undergoes :

i) complete metamorphosis (1mark)

……

ii) incomplete metamorphosis (1mark)

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15. Define the following terms used in ecology

i) biosphere (1mark)

……

……

ii) population (1mark)

……

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iii) synecology (1mark)

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iv) carrying capacity (1 mark)

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16. The paddles of whales and the fins of fish adapt these organisms to aquatic habitats.

a.) Name the evolutionary process that may have given rise to these structures. (1mark)

……

b.) What is the name given to such structures? (1 mark)

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c.) Give two examples of vestigial organs in man. (1 mark)

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17. a.) Define polyploidy (1 mark)

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b.) Name three disorders resulting from gene mutations. (3marks)

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18. State the importance of sexual reproduction. (2marks)

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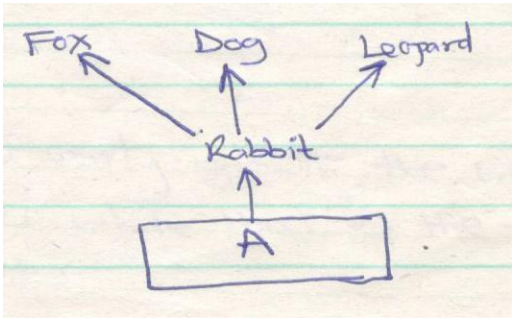
19. The diagram below shows part of a food relationship in an ecosystem.



a) Name the food relationship shown in the diagram. (1mark)

……

b) Name the trophic level occupied by organism A. (1mark)

……

c) What is the main source of energy in the ecosystem shown in the diagram above? (1mark)

……

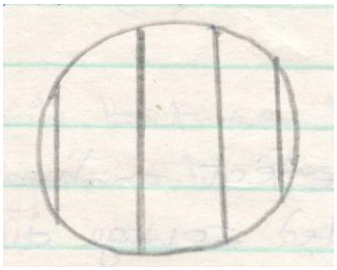
20. Name three supportive tissues in plants. (3marks)

i.) ……..

ii.) …….

iii.) ……

21. A form one student trying to estimate the size of onion cells observed the following on the microscope's field of view.



a) Explain the resolving power of a microscope. (1mark)

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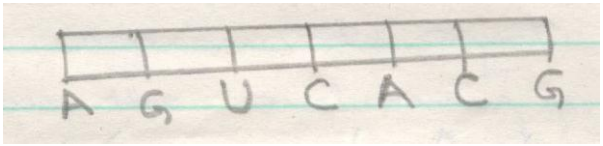
b) If the student counted 20 cells across the field of view calculate the size of one cell in micrometers. (2marks)

22. Below is a nucleic acid strand.



a) Name the nucleic acid. (1 mark)

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b) Explain the reason of your answer in (a) above. (1mark)

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23. a) Explain three ways in which a red blood cell is adapted to its function .(3marks)

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b) In which form is carbon (IV) oxide transported. (1mark)

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24. Explain the likely effect on humans and other organisms of untreated sewage discharge into water body that supplies water for domestic use. (3marks)

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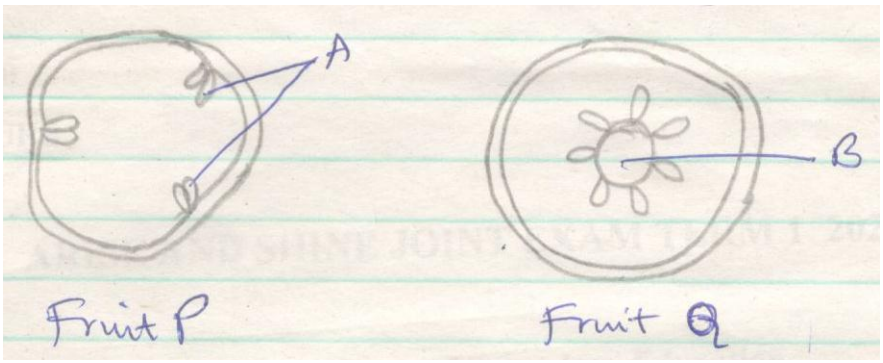
25. Below are cross sections of two fruits. Study them and answer the questions that follow.



a.) Name the parts labeled

A…… (1 mark)

B…… (1 mark)

b.) Name the type of placentation in fruit. (2marks)

P……

Q……

26. a) Differentiate between hypogeal germination and epigeal germination. (2marks)

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b) Explain two causes of dormancy in seed. (2 marks)

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27. Identify two divisions in the kingdom plantae that show alternation of generations. (2marks)

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PREDICTION 2

NAME ……. **INDEX NO** **……..**

SCHOOL…… **SIGNATURE** **……..……**

DATE ……..……...

231/1
BIOLOGY
PAPER 1
(THEORY)
2 HOURS

Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS TO CANDIDATES

- Write your name and Index Number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **ALL** questions in the spaces provided.
- All workings **MUST** be clearly shown where necessary.

FOR EXAMINERS USE ONLY.

Question	Maximum Score	Candidates Score
1 – 28	80	

This paper consists of 7 Printed pages.
Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing

1. Name the reagent used for testing presence of (3 **marks**)

   (a) Starch

   ……

   (b) Reducing sugars

   ……

   (c) Vitamin c

……

2. State the processes which occur in each of the following organelles. (2 **marks**)

(a) Chloroplast

……

(b) Mitochondrion

……

(c) Ribosomes

……

3. A student observed a specimen through a light microscope. He used the objective lens marked X40.If he indicated the magnification of the image as x 400, what was the eye - piece magnification? (Show your working). (3 **marks**)

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4. State the function of the following in mammalian trachea. (3 **marks**)

(a) Rings of cartilage

……

(b) Mucus

……

(c) Cilia

……

5. (a) What do you understand by the term biological control? (1 **mark**)

……

……

(b) Explain why all the energy produced by producers does not flow to the tertiary consumers. (2**marks**)

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6. Name any three forces that maintain the transpiration stream (3 **marks**)

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7. Give the form in which the following gases are transported in blood. (3 **marks**)

(a) Oxygen

……

(b) Carbon (IV) oxide

……

(c) Carbon (II) oxide

……

8. (a) Name the main group of organisms which comprise the Kingdom Monera. (1**mark**)

……

(b) State any three ways in which the organisms named in 8 (a) above affect human lives. (3**marks)**

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(d) State the main characteristics of Monera which distinguish it from all other kingdoms. (1 **mark)**

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9. State ways in which the xylem tissue is adapted to carry out its function. (3**marks**)

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10. Why is it necessary for an athlete to breathe heavily after running? (2 **marks**)

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11. State ways in which the following diseases can be prevented

(a) Typhoid and amoebic dysentery (2 **marks)**

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……

(b) Malaria (2 **marks**)

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……

12. What are the three distinguishing features of phylum Arthropoda? (3**marks**)

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13. (a) Name the main product of the dark stage of photosynthesis. (1**mark**)

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(b) What is the role of chlorophyll during photosynthesis (2**mark**)

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14. Name three mechanisms that prevent self-pollination in flowers that have both male and female parts. (3 **marks**)

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15. State three applications of anaerobic respiration. (3 **marks**)

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16. What is the significance of highly folded inner membrane of a mitochondrion? (2 **marks**)

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17. Why is it necessary for blood from the gut to pass through the liver before joining general circulation? (2 **marks**)

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18. A person's urine tested positive for reducing sugars.

(a) Name the type of sugar present in the urine. (1**mark**)

……

(b) Name the gland and the hormone which failed to control the above condition. (2**marks**)

Gland

……

Hormone

……

(c) Which disease was the person suffering from? (1**mark**)

……..

19. State two roles played by the process of reproduction. (2**marks**)

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20. What is the habitat of the following plants? (3**marks**)

(i) Xerophytes

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(ii) Hydrophytes

……...

(iii) Halophytes

……

21. (a) State ways in which molars are adapted to their functions. (2**marks**)

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(b) Name any two dental diseases. (2 **marks**)

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22. How is the sperm cell adapted to carry out its function? (3 **marks**)

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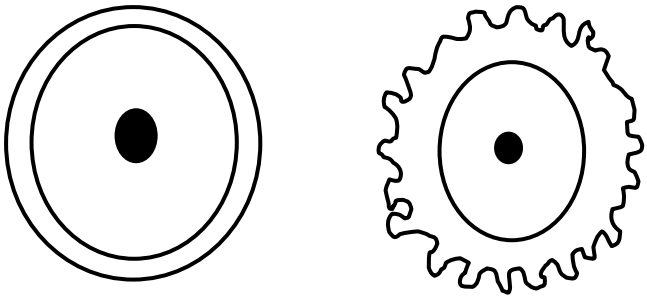
23. The following are diagrams of two pollen grains.



K **L**

(a) State one observable difference between K and L. (1 **mark**)

……

……

(b) State the agent of pollination for each of them. (2 **marks**)

K

……

L

……

24. How do sunken stomata reduce transpiration? (2**marks**)

……

……

……

25. Give the classes to which the following animals belong. (3**marks**)

(a) Human being

……

(b) House fly

……

(c) Spider

……

26. (a) State one event that occurs in prophase of meiosis I which does not occur in prophase of mitosis. (1 **mark**)

……

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(b) What are the results of the above phenomena? (2 **marks**)

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27. Explain why growing grass die a few days when salt is sprinkled on it. (3**marks**)

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PREDICTION 3

Name…… **Index No……/…….**

School…… **Candidates Signature……**

Date …….

231/1

BIOLOGY

THEORY

Paper 1

2 Hours

KCSE PREDICTION 3

Kenya Certificate of Secondary Education (K.C.S.E)

INSTRUCTIONS TO CANDIDATES

- Write your name and Index Number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **ALL** questions in the spaces provided.
- All workings **MUST** be clearly shown where necessary.

For Examiners use only.

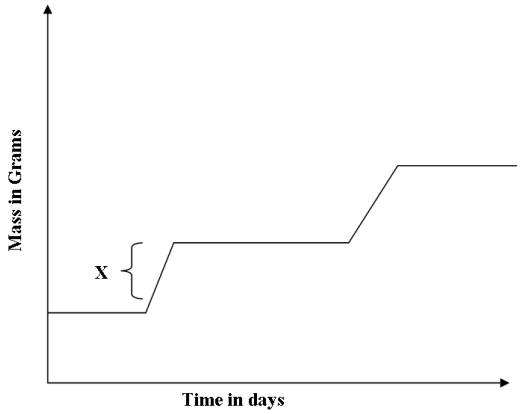
Question	Maximum Score	Candidates Score
1 – 25	80	

This paper consists of 11 Printed pages.

Candidates should check the question paper to ensure that all the

Papers are printed as indicated and no questions are missing

1. The graph below represents the growth pattern of animals in a certain phylum.



a) Name the type of growth curve shown above. (1mk)

……..

b) i) Identify the process represented by **X**. (1mk)

……..

ii) Name the hormone responsible for the process in b(i) above. (1mk)

……..

c) State the importance of the growth of a pollen tube to a plant. (1mk)

…….

2. a) What is the function of Sodium hydrogen Carbonate that is added to test solution of non-reducing sugar. (1mk)

……

…….....

b) The equation below represents a process X which is controlled by enzymes .

X

⇌

R

$C_6H_{12}O_6 + C_6H_{12}O_6$ $\qquad$ $C_{12}H_{22}O_{11} + H_2O$

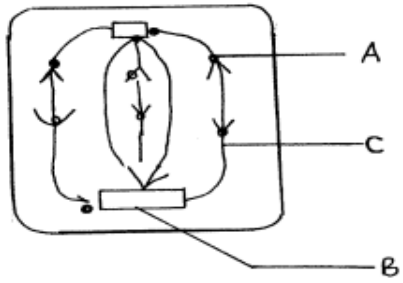
Glucose + Fructose $\qquad$ Sucrose + Water

i) Name the process **X** and enzyme **R**

Process **X** …… (1mk)

Enzyme **R** …….. (1mk)

3. The diagram shows an epidermal cell undergoing mitotic cell division.



i) Name the stage of mitosis it represents

…….(1mk)

ii) Name the structures

A ……. (1mk)

C…….. (1mk)

4. What is the effect of gibberellins on the shoots of plants? (4mks)

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5. (a) **Give two** forms in which carbon (IV) oxide is transported in human blood. (2mks)

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(b) **Name** the enzyme that enhances the loading and off – loading of carbon (IV) oxide in the human blood. (1mk)

……

……

6. a) What is the importance of the counter current flow in the exchange of gases in a fish. (2mks)

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……..

b) State **<u>two</u>** ways in which the tracheoles of an insect are adapted to their functions. (2mks)

……..

…….

7. The equation below represents a reaction that occurs during respiration in a cell.

K + Phosphate ⟶ Adnenosine triphosphate

a) Identify the compound K. (1mk)

……..

b) State **two** differences between **K** and **ATP.** (2mks)

……..

……..

c) Name the organelle responsible for the production of energy in a cell muscle (1mk)

……..

8. Explain how crops grown along roads can be a source of lead poisoning to human beings. (2mks)

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9. Explain why plants growing in low altitude areas grow faster than those in high altitudes. (3mks)

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10. List down **four** phenotypic characteristics that have been selected for the production of strains suitable for modern agricultural purposes. (4mks)

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11. Name the type of eye defects that can be corrected by;

i) Use of bifocal lens (1mk)

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ii) Use of artificial lens (1mk)

……

iii) Use of concave lens (1mk)

……

12. a) The length from the tail tip to the anus of a certain tilapia fish is 10cm. The length from the tail tip to the mouth is 35cm. Calculate the tail power of the fish. (Show all your working). (2mks)

b) What is the significance of high tail power in fish? (1mk)

……

13. List down three differences between the endocrine system and nervous system. (3mks)

Endocrine system	Nervous system
i. …… … ii …… … iii …… …	i. …… … ii …… … iii …… …

14. Distinguish between the struggle for existence and survival for the fittest as used in the theory of natural selection.

(2mks)

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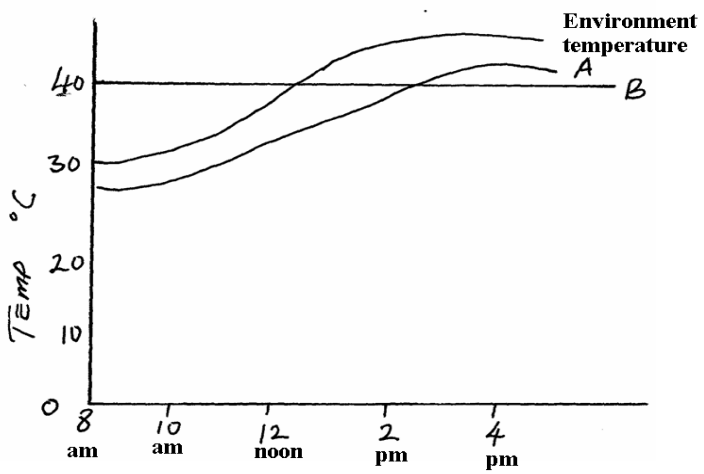
15. The body temperatures of two animals A and B varied as below with environmental Temperature



a) Which of the animals is;

i) Endothermic …….. (1mk)

ii) Ectothermic …… (1mk)

b) With a reason, state which of the animals is likely to be widely distributed (2mks)

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16. State three roles of oestrogen during the menstrual cycle (3mks)

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17. State three characteristics of cells at the zone of cell division in an apical merintem(3mks)

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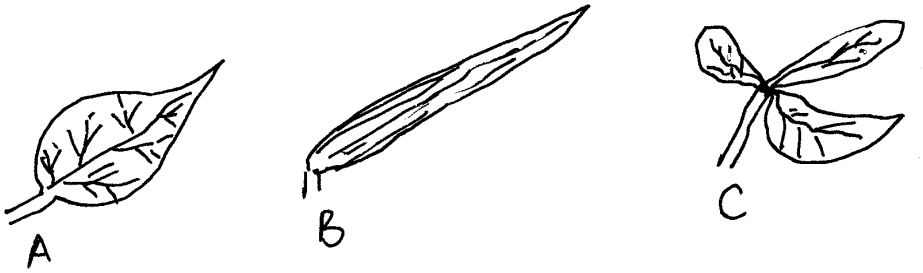
18. Below are diagrams of three leaves A, B and C. Construct a two step dichotomous

key which can be used to identify each of them. (4mks)



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19. a) Name two mutagenic agents. 2mks)

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……..

b) Identify the type of gene mutations represented by the following pairs of words.

i) Shirt instead of skirt …….. (1mk)

ii) Hopping instead of shopping …….. (1mk)

20. Liver damage leads to impaired digestion of fats. Explain this statement. (2mks)

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21. Explain why several lateral buds sprout when a terminal bud in a young tree is removed. (3mks)

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22. (a) State **two** structural adaptations that make xylem vessels suitable for transport of water and mineral salts. (2mks)

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(b) List any **three** adaptations of the root hair cells to their functions (3mks)

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23. (a) Define the following terms:- (2mks)

(i) Species:

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(ii) Binomial nomenclature:-

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24. What is the significance of active transport in the human body. (3mks)

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25. Explain how the biceps and triceps muscles bring about the movement at the hinge joint of the elbow in man. (2mks)

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PREDICTION 4

Name…….Index Number……..Class……..…Candidate'sSignature…… Date……

BIOLOGY

PAPER 1

231/1

TIME; 2 HOURS.

KCSE PREDICTION 4

(Kenya Certificate of Secondary Education)

BIOLOGY THEORY

For examiner's use only

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1 - 29	80	

This paper consist of 11 printed pages. Candidates should check the questions to ascertain that all the pages are printed as indicated and no questions are missing.

1. The table below shows concentration of some minerals inside the cells of a water plant and in the surrounding water.

Mineral	Sodium	Magnesium	Calcium
Cell sap	631	202	318
Surrounding water	28	293	47

a) Name the process by which magnesium is taken up by the plant. (1mrk)

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b) Explain why maize plant take up calcium minerals quicker in well aerated soils than in water logged soil. (3mrks)

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2. Give a reason why a mature plant cell does not lose its shape even after losing water. (1mrk)

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3. i) State the function for co-factors in cell metabolism. (1mrk)

……

ii) Give one example of a metallic co – factor. (1mrk)

……

4. Name the features that increase the surface area of the small intestines. (2mrks)

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5. a) Name three characteristics that are used to divide the members of phylum Arthropoda into classes. (3mrks)

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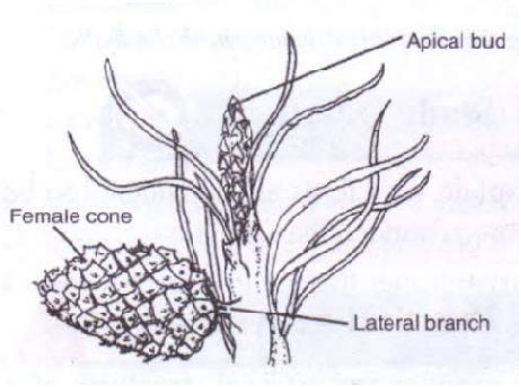
b) The diagram below represents a certain plant species.



i) State the class to which the plant belongs. (1mrk)

……

ii) State one observable xerophytic characteristic seen in the diagram above?. (1mrk)

……

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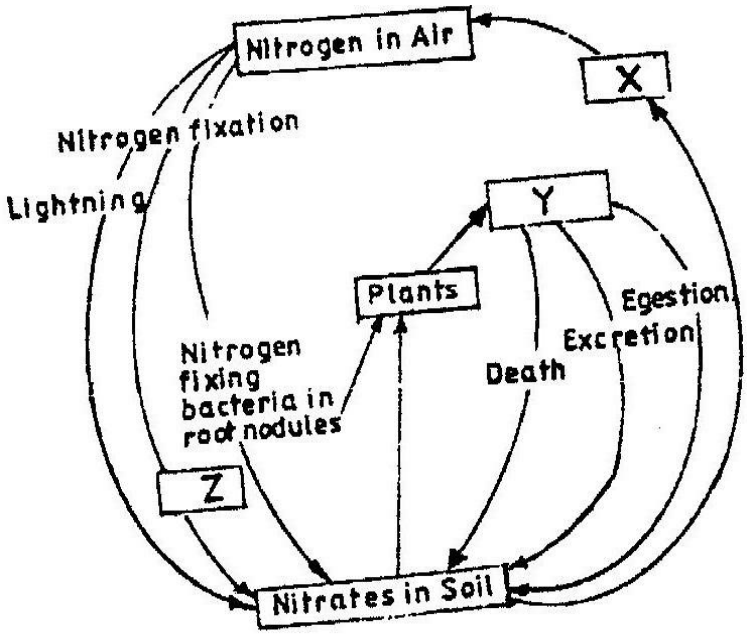
6. The chart below represents a simplified nitrogen cycle.



What is represented by X, Y and Z. (3mrks)

X……

Y……

Z…….

7. People can die when they inhale gases from a burning charcoal stove in a poorly ventilated room. What compound is formed in the human body that lead to such deaths?. (1mrk)

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8. Explain why blood from a donor whose blood group is A cannot be transfused into a recipient whose blood group is B. (2mrks)

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9. In an experiment, a student covered one of the leaves of a potted plant on both upper and lower surfaces with blue cobalt chloride paper. The plant was exposed outside for 45 minutes.

Observation: The cobalt chloride on the undersurface of the leave changed into pink in the first 20 minutes only as the upper surface remained blue. However at the end of the experiment, after 45 minutes, the upper surface also turned pink.

i) State the aim of the experiment. (1mrk)

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ii) Give one significance of the results obtained. (1mrk)

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10. When transplanting seedlings, it is advisable to remove some leaves. Explain (1mrk)

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11. a) Describe the path taken by carbon (IV) oxide released from the tissue of an insect to the atmosphere. (3mrks)

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……

b) Name two structures for gaseous exchange in plants. (2mrks)

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c) What is the effect of contraction of the diaphragm muscles during breathing in mammals?. (2mrks)

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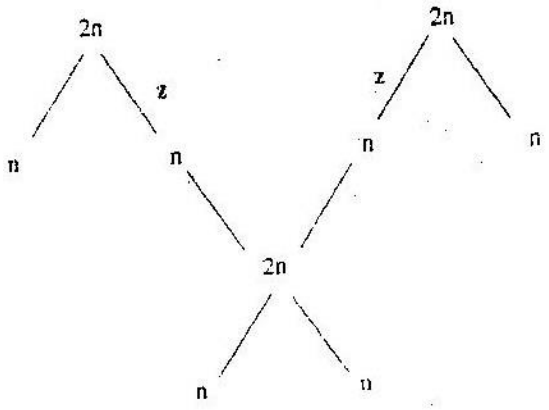
12. The chart below shows the number of chromosomes before and after cell division and fertilization in a mammal.



a). What type of cell division takes place at Z. (1mrk)

……

……

b) Where in the female body of humans does process Z occur?. (1mrk)

……

……

c) Name the process that leads to addition or loss of one or more chromosomes. (1mrk)

……

……

13. State three benefits of polyploidy in plants to a farmer. (3mrks)

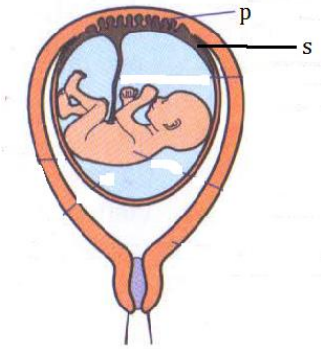
……

……

……

……

14. The diagram below represents human foetus.



a) Name the part labelled S (1mrk)

……

……

b) Give the roles of structure P in; (2mrks)

i) Nutrition.

……

……

……

ii) Protection.

……

……

……

d) What is the function of the following in the human male reproductive system?. (2mrks)

i) Epididymis.

……

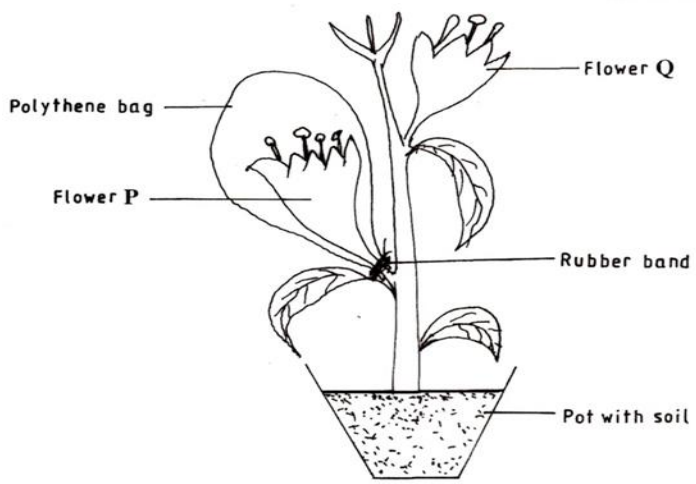
……

ii) Scrotal sac.

……

……

15. The diagram represents an experimental set up used by students to investigate a certain process.



Flower Q produced seeds, while P did not. Account for the results (3mrks)

……

……

……

……

……

16. Name any two branches of microbiology. (2mrks)

……
……

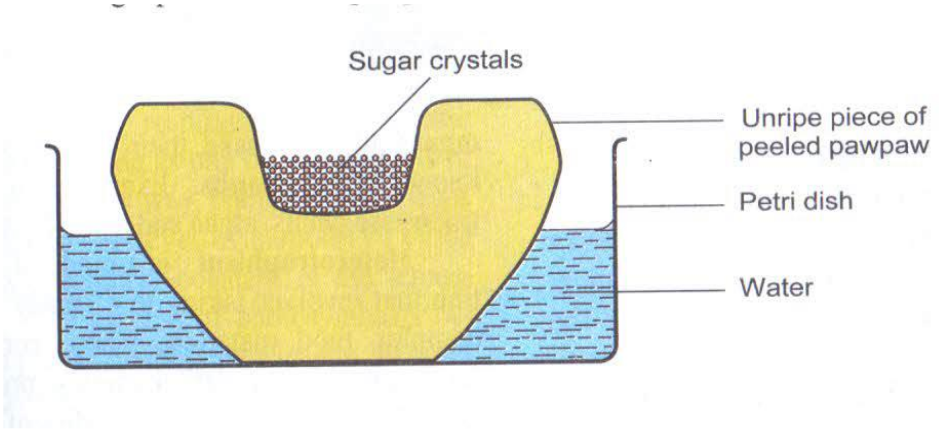
17. Which biological tool would a scientist require to collect rats to be used for study? (1mrk)

……
……

18. Distinguish between magnification and resolution as used in microscopy. (1mrk)

……
……
……

19. A group of students set up an experiment to investigate a certain physiological process. The set up was as shown below.



a) Name the physiological process being investigated. (1mrk)
.....
.....

b) Account for the formation and rise in the level of sugar solution at the end of the experiment. (3mrks)
……
……
……
……
……
……

20. The scientific name of a blackjack is bidens pilosa. Identify two mistakes in the written name. (2mrks)

……
……
……

21. State two advantages of natural selection to organisms. (2mrks)

……
……
……

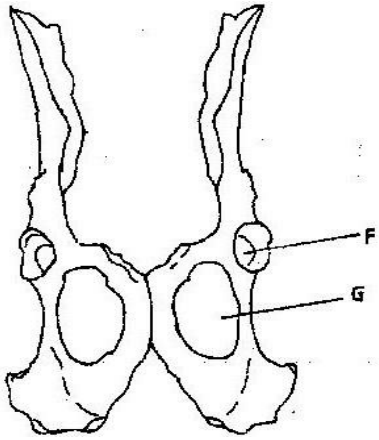
22. a) Give two ways in which sexual reproduction is important in the evolution of plants and animals. (2mrks)

……
……
……
……

b) Explain why it is only mutations in genes of gametes that influence evolution (1mrk)

……
……

23. The diagram below shows two fused bones of a mammal.



(a) Identify the fused bone. (1 mark)

……
……

(b) Name the

(i) Bone that articulates at the point labelled F. (1 mark)

……
……....

(ii) The hole labelled G. (1 mark)

……

……

24. The chart below represents the result of successive crosses, staring with red- flowered plants and white flowed plants and in which both plants are pure breeding.

Parental genotypes: Red flowers x white flowers

↓

First filial generation

↓ Selfed

Second filial generation

3 red flowers: 1 white flower

Phenotypic ratio 3: 1

(a) What were the parental genotypes? Use letter R to represent the gene for red colour and r for white colour. (1mrk)

……

(b) (i) What was the colour of the flowers in the first filial generation?. (1mrk)

……

ii) Give a reason for your answer in b (i) above. (1mrk)

…….....

(c) What is a test- cross?. (1 mark)

……

……

25. a) Name two tissues in plants which are thickened with lignin. (2 marks)

……

……..

b) How is support attained in herbaceous plants? (1 mark)

……

……

26. Name the type of response exhibited by; (2mrks)

(a) Euglena when it swims towards the source of light.

……..……

(b) Sperms when they swim towards the ovum.

……..……

27. A person was able to read a book clearly at arm's length but not at normal reading distance. (3mrks)

a) State the defect the person suffered from?.

……

b) Why was he unable to read book clearly at normal distance.

……

……..……

c) How can the defect be corrected?.

……

……

28. The photograph below shows the effects of certain pollutant in Nairobi dam. Study it carefully and use to answer the questions that follow.

i) Suggest the main pollutant in the dam (1mark)

……

……...

ii) What are the possible effects of pollution illustrated in the photograph (2mrks)

……

……

……

iii) Suggest one possible pollution control measure that can be put in place to save aquatic organisms in the dam. (1mark)

.....

.....

29. State one structural and one functional difference between motor and sensory neurones. (2mrks)

……

……

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……

PREDICTION 5

NAME _____ INDEX NO. _____

SCHOOL _____ SIGNATURE _____

DATE _____

231/1
BIOLOGY
(THEORY)
PAPER 1
TIME: 2 HOURS

KCSE PREDICTION 5

INSTRUCTIONS TO CANDIDATES

- Write your name, school and admission number in the spaces provided above.
- Sign and write date of examination in the spaces provided above.
- Answer **all** the questions in the spaces provided.
- Additional pages **must not** be inserted.
- Candidates may be penalized for false information and even wrong spellings of technical terms.
- This paper consists of **8** printed pages.
- Candidates should check to ensure that all pages are printed as indicated and no questions are missing.

FOR OFFICIAL USE ONLY

Question	Maximum score	Candidate's score
1 – 27	80	

1. Explain the meaning of the following branches of biology.

a) Cytology (1mark)

_____

b) Mycology (1mark)

_____

2. State **three** reasons why it's necessary to classify living organisms. (3marks)

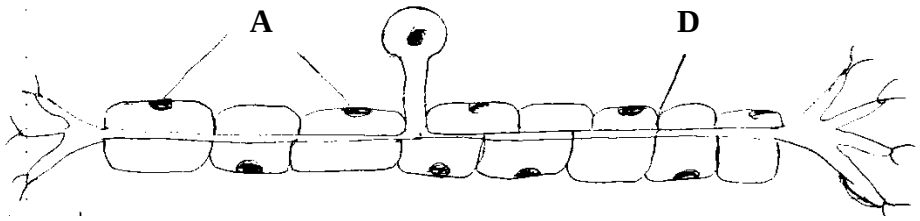
_____

_____

_____

_____

3. The diagram below represents a neuron.



a) i) Identify the neuron. (1mark)

_____

ii) Give a reason. (1mark)

_____

_____

b) Identify the parts labeled A and D. (2marks)

A _____

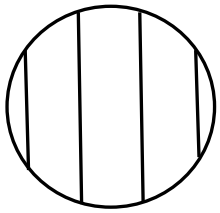
D _____

c) State the function of neuron. (1mark)

_____

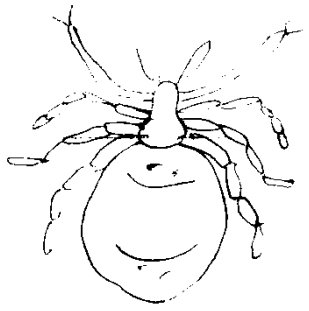
_____

4. A form one student trying to determine the size of onion cells observed the following on a microscopes field of view.



If the student observed 2 cells across the field of view calculate the length of one cell in micrometers (3marks)

5. The diagram below represents a certain organism collected by a student on his way to school



a) State the class to which the organism belongs (1mark**)**

_____

b) Give **two** reasons for your answer 5(a) above (2mark)

_____

_____

_____

6. What is meant by the following terms as used in ecology?

i) Biomass (1mark)

_____

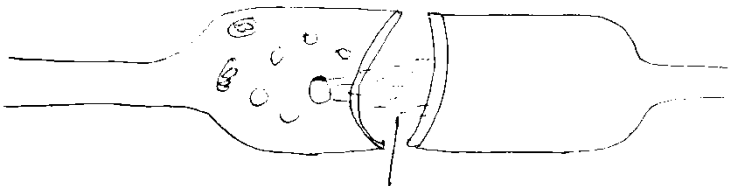
_____

ii) Ecosystem (1mark)

_____

_____

7. The diagram below represents a synapse



P

a) Indicate the direction of the impulse on the diagram (1mark)

b) State **two** significances of a synapse in the body (2marks)

_____

_____

_____

8. Name a tissue whose cells are thickened with

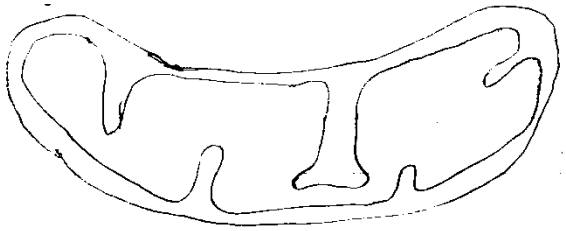
a) Cellulose and pectin (1mark)

_____

b) Lignin (1mark)

_____

9. The diagram below shows the structure of an organelle



a) State the function of the organelle (1mark)

_____

_____

b) State **one** adaptation of the above organelle to its function (1mark)

_____

_____

c) Give the function of the following cell organelles

i) Lysosomes (1mark)

_____

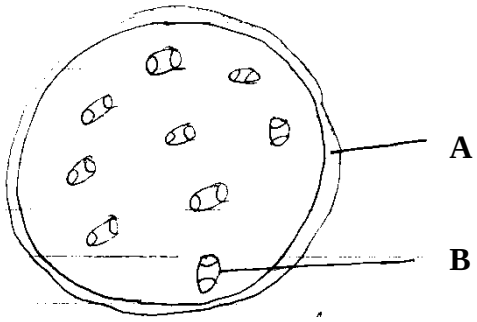
_____

ii) Golgi bodies (1mark)

_____

_____

10. The diagram below represents across section of a certain plant



a) Name the parts labeled A and B (2marks)

A _____

B _____

b) i) State the class to which the plant above belongs (1mark)

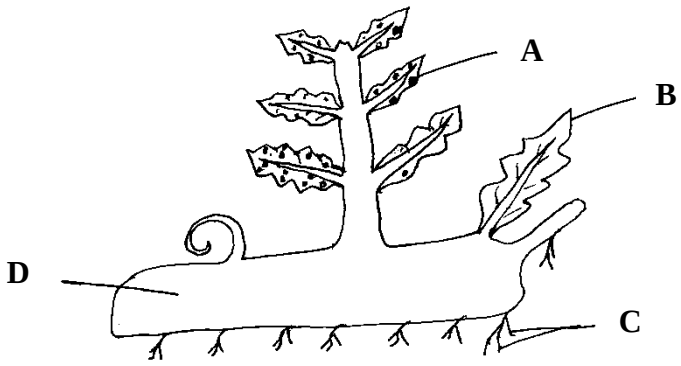
_____

ii) Give a reason (1mark)

_____

_____

11. During research on different types of plants students found a plant that looked like the one shown below



a) Identify the plant. (1mark)

_____

_____

b) Name the parts labeled A, B, C and D. (4marks)

A _____

B _____

C _____

D _____

c) State the division to which the plant belongs. (1mark)

_____

12. Why do you think we experience more discomfort in hot humid weather than we do in hot dry weather (3marks)

_____

_____

_____

_____

_____

13. Explain why a water logged soil does not support plant growth. (3marks)

_____

_____

_____

_____

_____

14. Name the carbohydrate that is.

a) Found in abundance in mammalian blood. (1mark)

_____

b) Stored in a mammalian liver. (1mark)

_____

15. Liver damage leads to impaired digestion of fats. Explain. (2marks)

_____

_____

_____

16. The letters 'N' and n represents the dominant and recessive genes for hemophilia respectively. Write down the genotype of the following (3marks)

a) Homozygous dominant_____

b) Homozygous recessive_____

c) Heterozygote_____

17. Give **three** adaptations of human male gamete to its functions. (3marks)

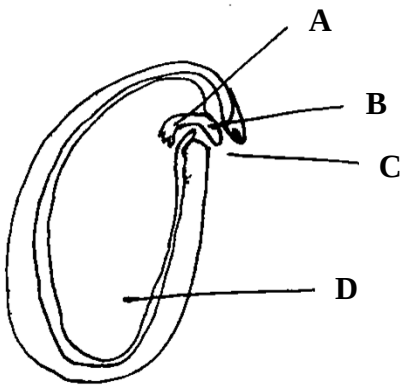
_____

_____

_____

_____

18. The diagram below represents a longitudinal section of a bean study it and answer the questions that follow:



a) Identify the parts labeled A to D. (2marks)

A _____

B _____

C _____

D _____

b) Give the role of the plant labeled D. (1mark)

_____

_____

c) What type of germination would the seed shown above undergo? (1mark)

_____

_____

19. a) A person who is blood group AB has an advantage over a person who is blood group O. Explain. (2marks)

_____

_____

_____

b) Give **two** reasons for screening blood before transfusion. (2marks)

_____

_____

_____

20. a) Define immunity. (1mark)

_____

_____

b) Distinguish between natural immunity and acquired immunity. (1mark)

_____

_____

_____

c) Identify **one** immunisable disease in Kenya. (1mark)

_____

21. State the causative agent of;

i) Cholera (1mark)

_____

ii) Amoebic dysentery. (1mark)

_____

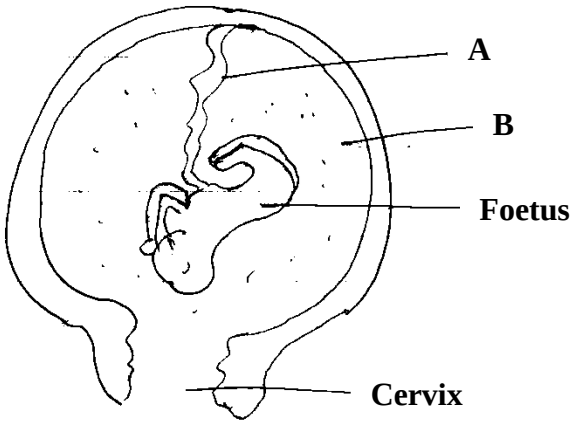
22. Explain why it difficult to calculate the respiratory quotient (RQ) in plants. (2marks)

_____

_____

_____

23. The diagram below represents a stage in the development of human foetus.



a) State **one** function of each of the structures labeled A and B. (2marks)

A _____

_____

B _____

_____

b) Apart from the size of the foetus what else from diagram illustrates that birth was going to occur in the near future.

_____

_____

24. Give the reasons why Lamar's theory on natural selection in organic evolution was discarde. (2marks)

_____

_____

_____

_____

25. Explain why the following process is essential in living organism.

a) Reproduction (1mark)

_____

_____

b) Excretion (1mark)

_____

_____

26. Explain why there are only a few days in each menstrual cycle when fertilization can occur. (2marks)

_____

_____

_____

27. Study the bio-chemical reactions given below.

$C_6H_{12}O_6 + C_6H_{12}O_6 \xrightarrow{I} C_{12}H_{22}O_n + H_2O$

$C_{12}H_{22}O_{11} + H_2O \xrightarrow{II} C_6H_{12}O_6 + C_6H_{12}O_6$

a) Identify the process marked I and II (2marks)

I _____

II _____

b) Explain how the process marked II can be carried out in a laboratory. (1mark)

_____

_____

_____

PREDICTION 6

NAME:…… INDEX NO. ……..…

SIGNATURE: ……..... DATE: .....

231/1
BIOLOGY
Theory
Paper 1
Time: 2 Hours

KCSE PREDICTION 6
Kenya Certificate of Secondary Education (K.C.S.E)
231/1
Biology
Paper 1

Instructions to Candidates

- ***Write your name, admission number, class and signature in the spaces provided at the top of the page.***
- ***Answer all the questions in the spaces provided in this paper.***

FOR EXAMINER'S USE ONLY

Question	Maximum score	Candidate's score
1-29	80	

This paper consists of 8 printed pages. Candidates should check the question paper to ascertain that all pages are printed as indicated and that no pages are missing.

1. Which organelle would be numerous in the following cells? (2 mks)

(a) Liver cells

……

(b) Palisade cells

……...

2. State the functions of the following cell structures during cell division. (2 mks)

(i) Centriole –

……

(ii) Centromere –

……

3. In an investigation, the pancreatic duct of a mammal was blocked. It was found that the blood sugar regulation remained normal while, food digestion was impaired. Explain these observations. (2 mks)

……

……..……

……

4. State two structural differences between ribonucleic acid 9RNA) and deoxyribonucleic acid (DNA). (3 mks)

……

……..…

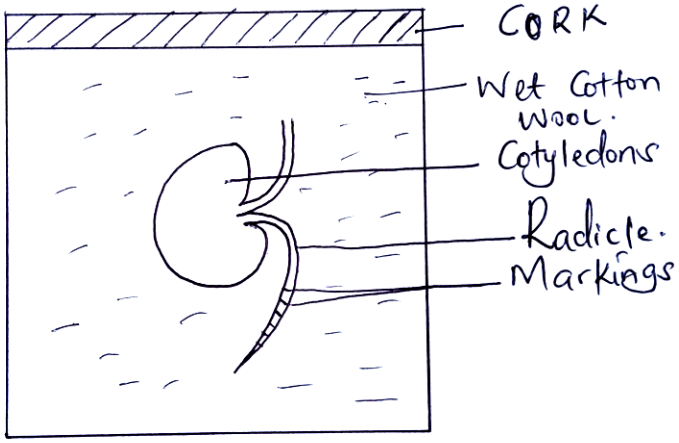
5. Explain why glucose does not appear in urine of a healthy person even though it is filtered in the Bowman's capsule of a mammal. (2 mks)

……

……..……

……

6. A student set up an experiment as shown in the diagram below .



(a) (i) What was being investigated in the experiment? (1 mk)

……

(ii) Why was it necessary to have wet cotton wool in the container? (1 mk)

……

(b) What is the role of the following in germinating seed? (2 mks)

(i) Oxygen –

……

(ii) Cotyledon –

……

7. Give a reason why it is only mutation in genes of gametes that influence evolution. (1 mk)

……

……

8. A person was able to read a book clearly at arm's length, but not at normal distance.

(a) State the eye defect the person suffered from. (1 mk)

……

(b) Why was he unable to read the book clearly at normal distance? (1 mk)

……

(c) How can the defect be corrected? (1 mk)

……

……

9. Some form three students took a germinating maize grain and placed it in a starch paste in a petri dish and put the petri dish in a water bath maintained at $30^{o}C$. After 48 hours, the starch paste was irrigated with iodine solution. The area around the maize grain changed to the colour of iodine solution while the rest turned blue-black.

(a) Account for the observation. (2 mks)

……

……

(b) Why was the petri dish put in a water bath maintained at $30^{o}C$? (1 mk)

……

10. State two functions of muscles found in the alimentary canal of a mammal? (2 mks)

……

……

11. State the stage in a cell division in which the following events occur:

(i) Replication of the genetic material. (1 mk)

……

(ii) Exchange of genetic material. (1 mk)

……

12. Explain what happens when a marine amoeba is transferred to fresh water environment.

……

……

……

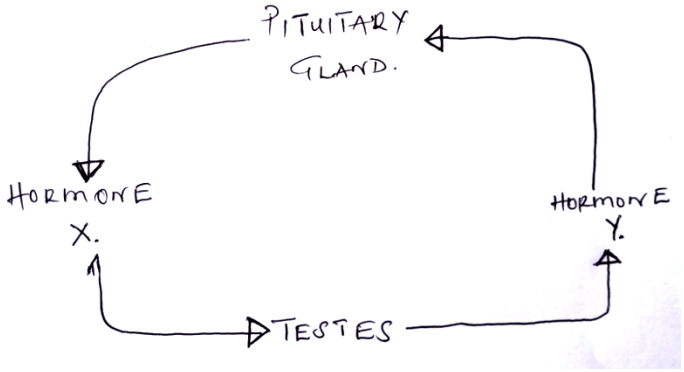
……

13. In blood test, a few drops of anti-B serum were added to two samples of blood. It was noted that agglutination occurred. What were the possible blood groups of the two blood samples? (2 mks)

……

……

14. The diagram below represents a simple endocrine feedback mechanism in a human male.



(a) Name the hormone labeled X. (1 mk)

……

(b) State two differences that may be observed between a normal male and one who is incapable of producing hormone labeled Y. (2 mks)

……

……

15. A small amount of chemical M was put on one side of maize coleoptiles. After some days, it was noted that the coleoptiles curved away from the side to which the chemical was applied .

(a) Suggest the possible identity of chemical substance M. (1 mk)

……

(b) Explain how this chemical might have caused the coleoptiles to curve. (2 mks)

……

……

16. In which part of the spinal cord is the cell body of the motor neurone found? (1 mk)

……

……

(b) Below are two features which make aneurone a specialized cell. State their role.

(i) Axion –

……

(ii) Dendrites –

……

17. (a) What is a natural selection? (1 mk)

……

……

(b) Distinguish between convergent and divergent evolution. (2 mks)

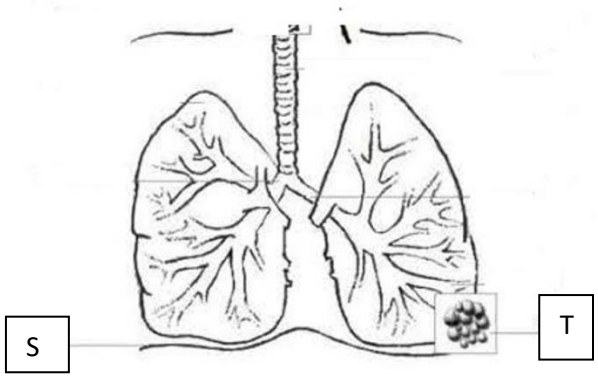
……

……

……

……

18. The diagram below shows part of a mammalian respiratory system.



(a) Explain two ways in which the part labeled T is adapted to its functions. (2 mks)

……

……

……

(b) How does the part labeled S facilitates inhalation ? (1 mk)

19. (a) Explain why the body temperature of a healthy human being must rise up to 39^{o}C on humid day. (2 mks)

……

……

……

(b) In an experiment, a piece of brain was removed from a rat. It was found that the rat had large fluctuation of body temperature. Suggest the part of the brain that had been removed. (1 mk)

……

20. Name the distinguishing features of class mammalian. (3 mks)

……

……

……

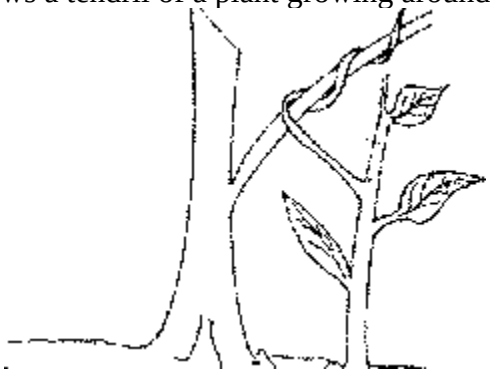
21. State three types of asexual reproduction and give its examples. (3 mks)

……

……

……

22. The figure below shows a tendril of a plant growing around a trunk.



(a) Identify the types of response which causes the twisting growth. (1 mk)

……

……

(b) Explain how the twisting process is accomplished. (3 mks)

……

……

……

24. Active yeast cells were added to a dilute sugar solution in a container. The mixture was kept in warm room. After a few hours bubbles of gas were observed escaping from the mixture.

(a) Write an equation to represent the chemical reaction above. (1 mk)

……

……

(b) What is the economic importance of this type of chemical reaction above? (1 mk)

……

……

(c) Why is that the total energy being released at the end of respiration (oxidation) being released in a small quantity. (1 mk)

……

……

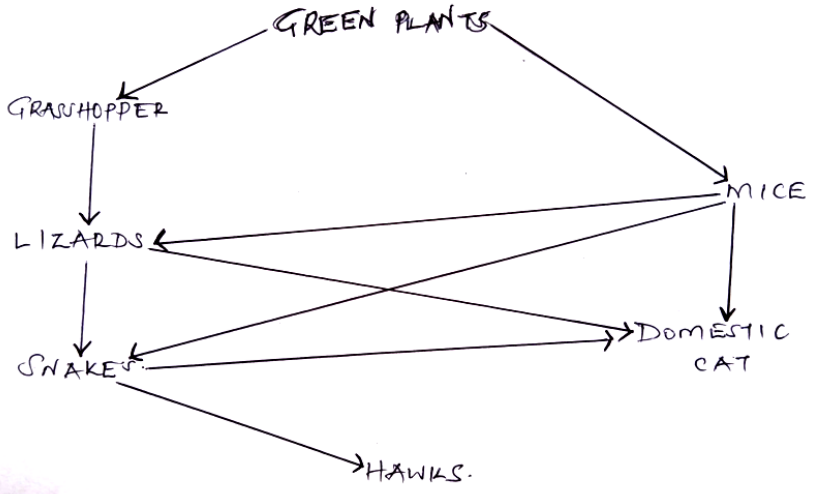
25. Describe three roles or active transport in living organisms. (3 mks)

……

……

……

26. The diagram below shows a feeding relationship in a certain ecosystem.



(a) Construct two food chains ending with a tertiary consumer in each case. (2 mks)

(b) Suggest three ways in which the ecosystem would be affected if there was prolonged drought. (3 mks)

……

……

……

27. Explain how the following parts of a mammalian reproductive system are adapted to their functions:

(i) Testis (1 mk)

……

(ii) Uterus (1 mk)

……

(b) Explain why removal of the ovary after four months of pregnancy does not terminate pregnancy. (1 mk)

……

……

……

28. (a) What is meant by double fertilization in flowering plants. (2 mks)

……

……

(b) State two advantages of cross pollination in a flowering plant. (2mks)

……

……

29. Name the division in kingdom plantae with the following spore producing bodies

(i) Capsule

……