



BIOLOGY PAPER 1

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STAREHE GIRLS' CENTRE TRIAL EXAMINATION

231/1

BIOLOGY

PAPER 1

(THEORY)

TIME: 2 HOURS

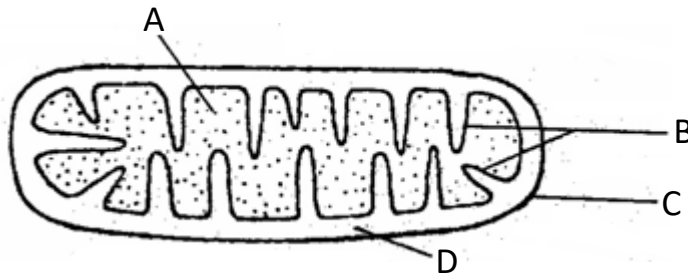
INSTRUCTIONS TO CANDIDATES:

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

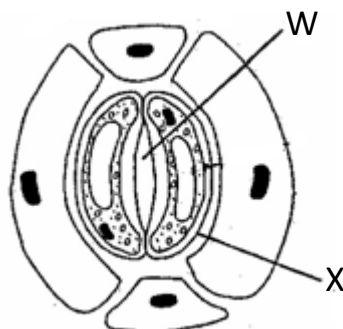
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Question	Maximum Score	Candidate's Score
1 - 26	80	

1. Name the causative agent of cholera. (1 mark)
2. The diagram **below** represents a cell organelle.



- (a) Identify the organelle. (1 mark)
 - (b) Name the part labelled **B**. (1 mark)
 - (c) State the function of part labelled **A**. (1 mark)
3. State the functions of the following parts of a light microscope.
 - (a) Condenser. (1mark)
 - (b) Diaphragm. (1 mark)
4.
 - (a) Explain **three** ways in which a red blood cell is adapted to its function. (3 marks)
 - (b) In which form is carbon (IV) oxide transported. (1 mark)
5. State the functions of the following organelles.
 - (i) Centriole. (1 mark)
 - (ii) Nucleolus. (1 mark)
6. The diagram **below** shows part of plant tissue.



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

(b) State **two** adaptations of cell labelled **X** to its function.

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

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

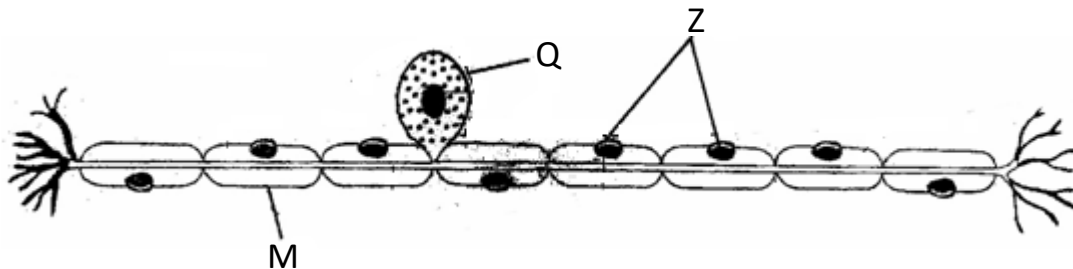
8. (a) Define polyploidy. (1 mark)

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

9. (a) Distinguish between homologous and analogous structure. (2 marks)

(b) Explain the term continental drift as used in evolution. (2 marks)

10. The diagram **below** represents a sensory cell.



(a) Identify with a reason the type of neurone above. (1 mark)

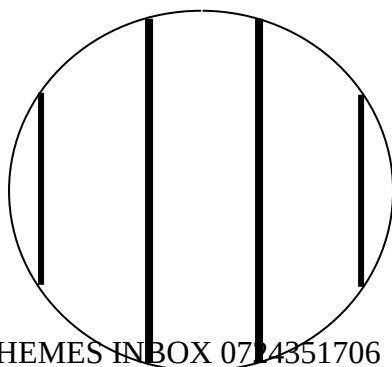
Reason: (1 mark)

(b) Name parts labeled Q and Z (2 marks)

11. (a) Name **three** supportive tissues in plants. (3 marks)

(b) Name the type of muscles found in the gut. (1 mark)

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



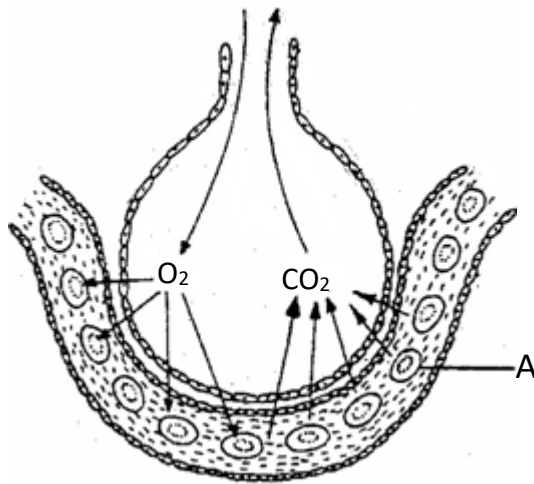
(a) Define the term resolving power. (1 mark)

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

13. (a) Distinguish between transpiration and guttation. (2 marks)

(b) State **two** importance of guttation in hydrophytes. (2 marks)

14. The diagram **below** shows the exchange of gases in alveolus.



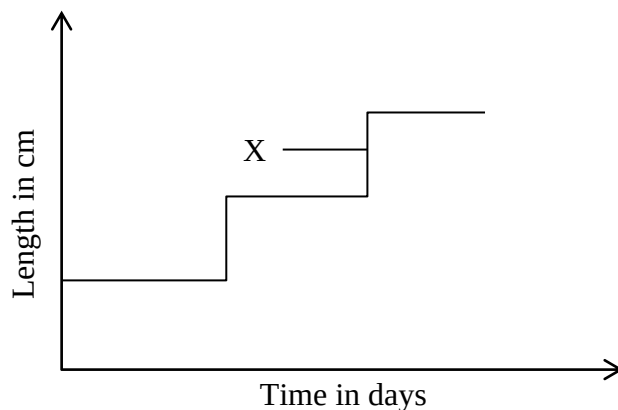
(a) State how the alveoli are adapted to their function. (3 marks)

(b) Name the cell labelled **A**. (1 mark)

15. (a) Distinguish between respiratory quotient and oxygen debt. (2 marks)

(b) Name the site where anaerobic respiration occurs in the cell. (1 mark)

16. Study the graph **below** and answer the questions that follow.



- (a) What is the name given to the type of graph? (1 mark)
- (b) What is the name used to describe point **X**. (1 mark)
- (c) State the importance of part **X**. (1 mark)
- (d) Name the phylum in which the graph represented in above occurs. (1 mark)
17. (a) Define the term natural selection. (1 mark)
- (b) Name **three** evidence of organic evolution. (3 marks)
18. State **one** adaptation of the following parts of mammalian eye.
- (i) Fovea centralis. (1 mark)
- (ii) Sclera. (1 mark)
- (iii) Ciliary body. (1 mark)
19. Name the cartilage found between vertebrae of the vertebral column. (1 mark)
20. (a) Differentiate between gaseous exchange and ventilation. (2 marks)
- (b) Name the respiratory sites of the following:
- (i) Fish (1 mark)
- (ii) Insects (1 mark)
21. (a) Name **two** cardiovascular diseases. (2 marks)
- (b) If the nerve supply to the heart of a mammal is severed the rhythmic heart contraction and relaxation will go on and heart continues to beat. Explain why. (2 marks)
22. Name **two** major branches of Biology. (2 marks)
23. (a) State the functions of the following apparatus.
- (i) Bait trap. (1 mark)
- (ii) Pooter. (1 mark)
24. State **two** structural adaptations of veins to their function. (2 marks)
25. Name the process that results to formation of tissue fluid. (1 mark)
26. What is serum? (1 mark)

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FRIENDS' SCHOOL KAMUSINGA

231/1

BIOLOGY

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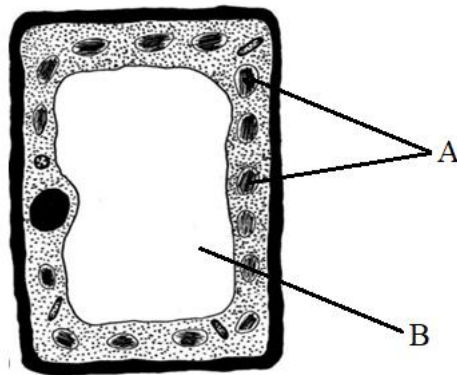
1. Give a reason why the following precautions should be adhered to during collection of specimens.

a) Not harming or killing the specimen unnecessarily. (2marks)

b) Not destroying its natural habitat. (1mark)

2. State two functions of the cell sap. (2marks)

3. The diagram below represents a cell.



a) Name the parts labelled A and B. (2marks)

A-

B-

b) Suggest why the structures labelled A would be more on one side than the other.

(1mark)

4. The number and distribution of the stomata on three different leaves are as shown in the table below.

leaf	Number of stomata	
	Upper epidermis	Lower epidermis
A	300	0
B	150	200
C	02	13

- a) Suggest the possible habitat of the plants from which the leaves A and C were obtained. (2marks)

A-

C-

- b) Suggest the modification found in the stomata of leaf C. (1mark)

5. a) Distinguish between homodont and heterodont dentition. (1mark)

Homodont	Heterodont

- b) What is the functions of carnassial teeth? (1mark)

- c) A certain animal has no incisors, no canines, 6 premolars, and 6 molars on its upper jaw. In the lower jaw there are incisors, 2 canines, 6 premolars and 6 molars. Write down its dental formula. (2marks)

6. The diagram below represents a type of a tooth found in human being



a) With a reason give the identity of the tooth.

(2marks)

Type-

Reason-

7. How are the xylem vessels adapted for support?

(1mark)

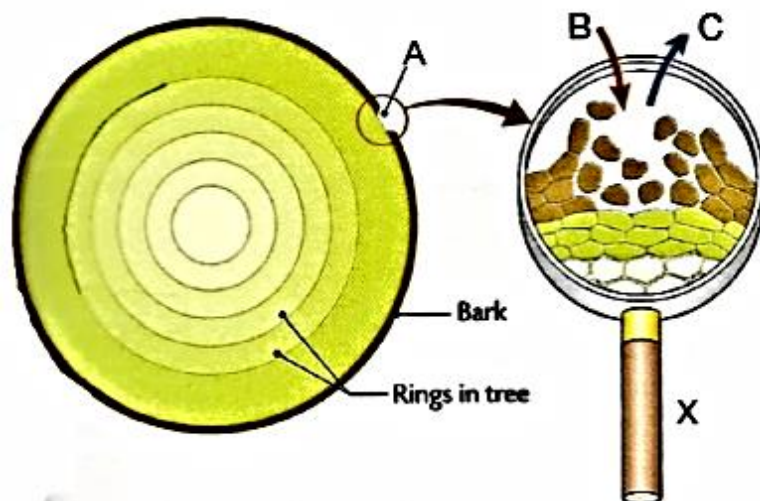
8. Name the end products of light stage in photosynthesis.

(2marks)

9. Why does transport fluid in insects lack pigment equivalent to haemoglobin?

(2marks)

10. The diagram below shows a gaseous exchange structure in the stems of angiosperms.



Name;

a) Part labelled A. (1mark)

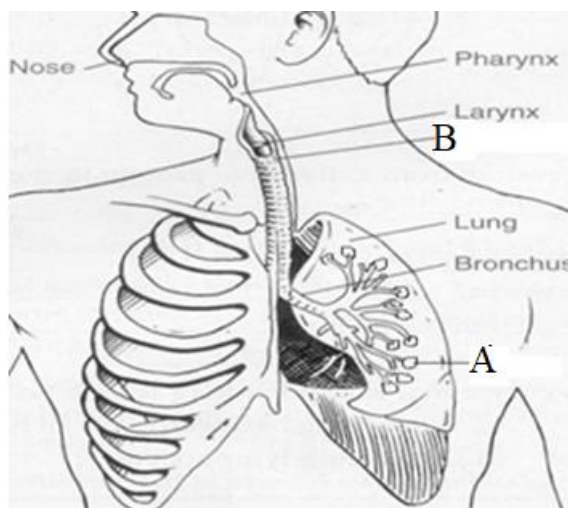
b) Apparatus X. (1mark)

c) Substances represented by arrows B and C. (2marks)

B-

C-

11. (a) The diagram shows some structures in the human breathing system. (2marks)



(a) Name structures A and B. (2 marks)

A -

B -

(b) The table shows the level of two gases, X and Y, in blood entering and leaving the lungs during the process of gas exchange.

Gas	Level of gas in cm^3 per 100cm^3 of blood	
	Blood entering lungs	Blood leaving the lungs
X	10.6	19.0
Y	58.0	50.0

(i) Identify the two gases. (2marks)

Gas X -

Gas Y -

12. In an experiment on respiration, a rat was observed to have inhaled 295cm^3 of oxygen and exhaled 300cm^3 of carbon (IV)oxide in ten minutes.

a) Calculate the respiratory quotient for activity in the experiment. (2marks)

b) Identify the possible food substance consumed by the mouse. (1mark)

c) State the fate of excess food named in (b) above in human body. (2marks)

13. a) A person consumes a lot of sugar in tea. Briefly explain the feedback mechanism in order to bring the sugar level to normal. (3marks)

b) What causes diabetes insipidus? (1mark)

14. Animals have complex excretory organs as compared to the plants. Explain. (2marks)

15. Explain the immediate reaction of the body bathed in cold water. (2marks)

16. What is meant by the term taxonomy?

(1mark)

17. A student came across an animal which had the following characteristics;

Has a body covered with scales

Has fins

Has a heart with two chambers

State the phylum and the class which the animal belongs to

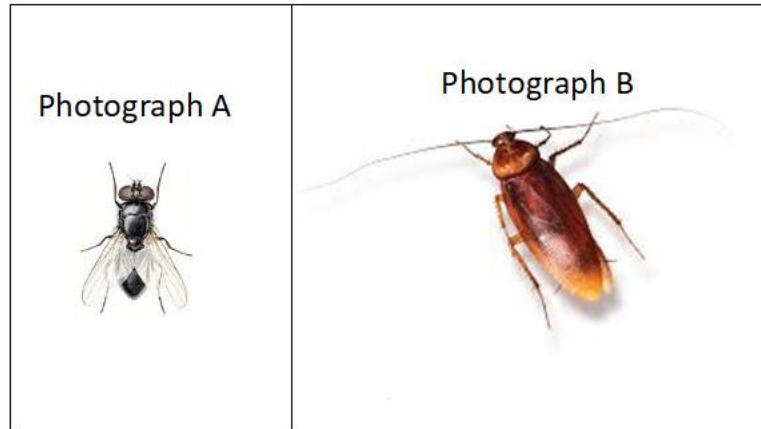
i) Phylum.

(1mark)

ii) Class.

(1mark)

18. The photograph below represents organisms belonging to the animal kingdom, examine the and answer the questions that follows.



a) Name the phylum and the class which they belong to.

(2marks)

i) Phylum-

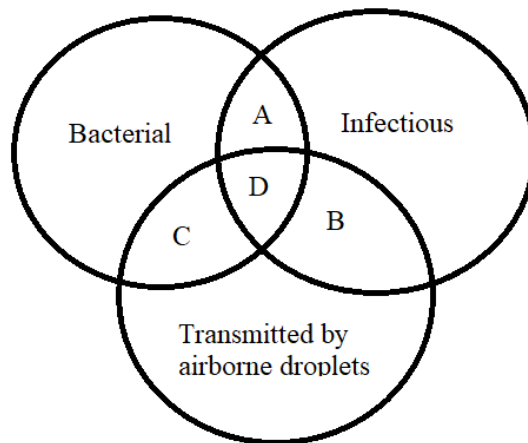
ii) Class-

b) State two observable features that makes them to be classified in the class stated in a)(ii) above.

(2marks)

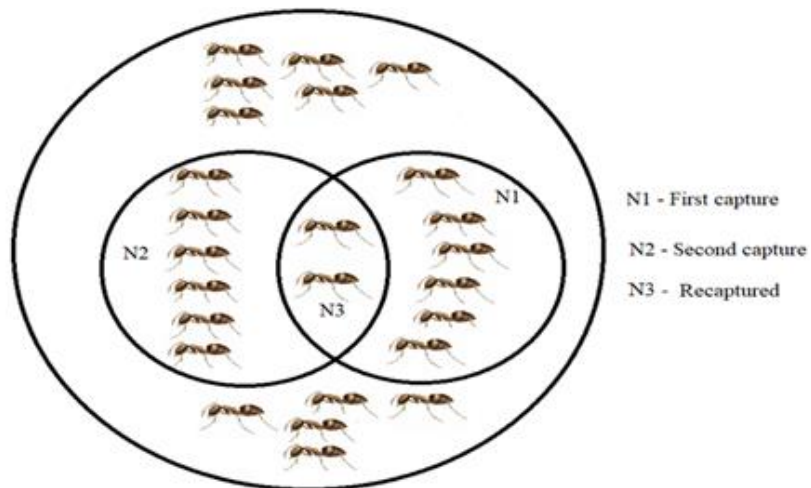
c) Name the type of metamorphosis exhibited by organism in photograph B.(1mark)

19. The diagram below shows properties of a disease.



- a) Which area in the diagram shows the properties that are common to both cholera and tuberculosis. (1mark)
- b) Name the organism that
- i) Transmits malaria. (1mark)
- ii) Causes Amoebic dysentery. (1mark)

20. The illustration below shows a method of estimating populations of organisms in an ecosystem.



- a) Which method is illustrated above? (1mark)

b) Calculate the population of the organisms under study.

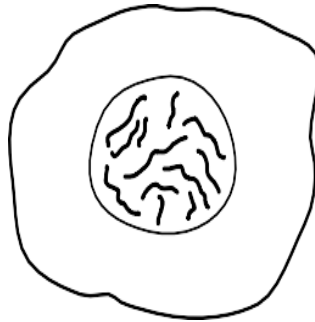
(3marks)

21. Give two reasons why primary productivity in an aquatic ecosystem decreases with depth.
(2marks)

22. During which phase of meiosis does crossing over occur.

(1marks)

23. The diagram shows the cell of an organism. The nucleus contains 12 chromosomes.



(i) After this cell divides by meiosis, how many chromosomes would be present in one of the daughter cells?
(1mark)

(ii) List two events that take place in Anaphase I.

(2marks)

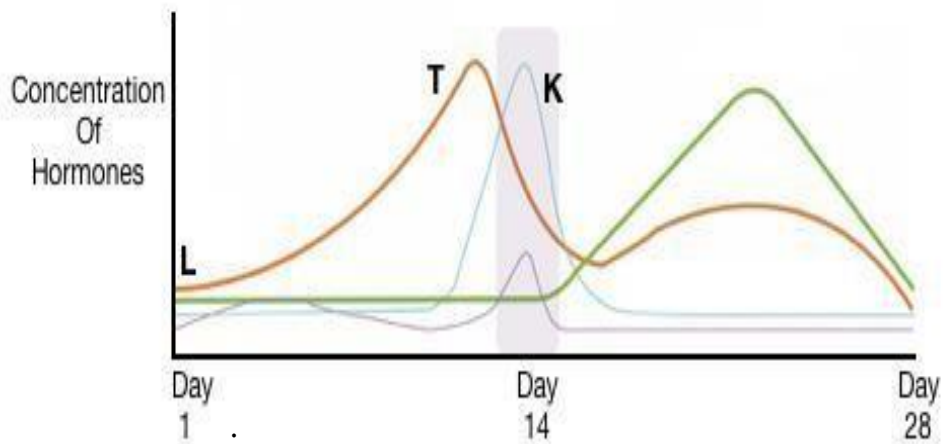
24. a) Which substance surrounds the embryo during its development.

(1mark)

b) State one role of the substance you have named in a) above.

(1mark)

25. Below is a graphical representation of the concentration of hormones involved in the menstrual cycle against time. Study it and answer the questions that follow



a) Name hormone K.

(1mark)

b) Did pregnancy occur based on the cycle above? Explain your answer.

(2marks)

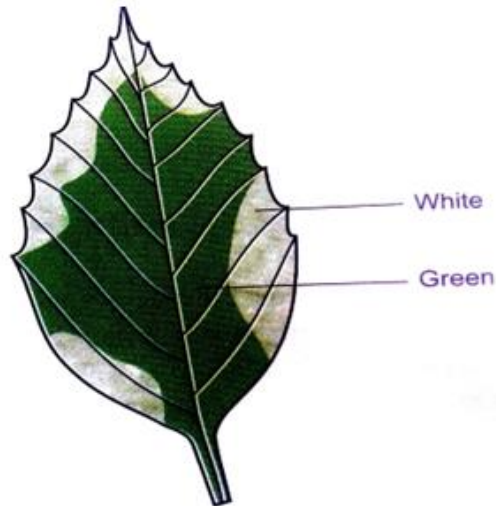
c) Name the organ that secretes hormone T.

(1mark)

d) Identify the process that occurs during the time labelled L.

(1mark)

26. The diagram shown below shows a leaf that was used to study photosynthesis. After the experiment, drops of Iodine solution were placed on the processed leaf



a) Which food substance was being tested for? (1mark)

b) Fill in the table below to show the colors observed in the following regions (2marks)

Region	Color
White	
Green	

c) Account for observation made on white part of the leaf. (2marks)

27. Name the chemical substances in plants that. (2marks)

a) Promote ripening of fruits.

b) Flowering in plants.

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KISII SCHOOL TRIALS

231/1
BIOLOGY
PAPER 1

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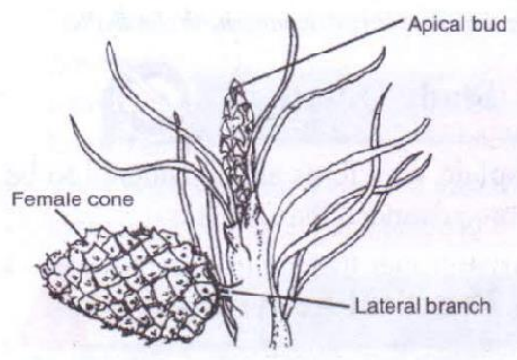
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- The table below shows concentration of some minerals inside the cells of a water plant and in the surrounding water.

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

- Name the process by which magnesium is taken up by the plant. (1mrk)
.....
.....
 - Explain why maize plant take up calcium minerals quicker in well aerated soils than in water logged soil.(3mrks)
.....
.....
.....
.....
- Give a reason why a mature plant cell does not lose its shape even after losing water. (1mrk)
.....
 - State the function for co-factors in cell metabolism. (1mrk)
.....
 - Give one example of a metallic co – factor. (1mrk)
.....
 - Name the features that increase the surface area of the small intestines.(2mrks)
.....
.....
 - Name three characteristics that are used to divide the members of phylum Arthropoda into classes. (3mrks)
.....
.....
.....
 - The diagram below represents a certain plant species.



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

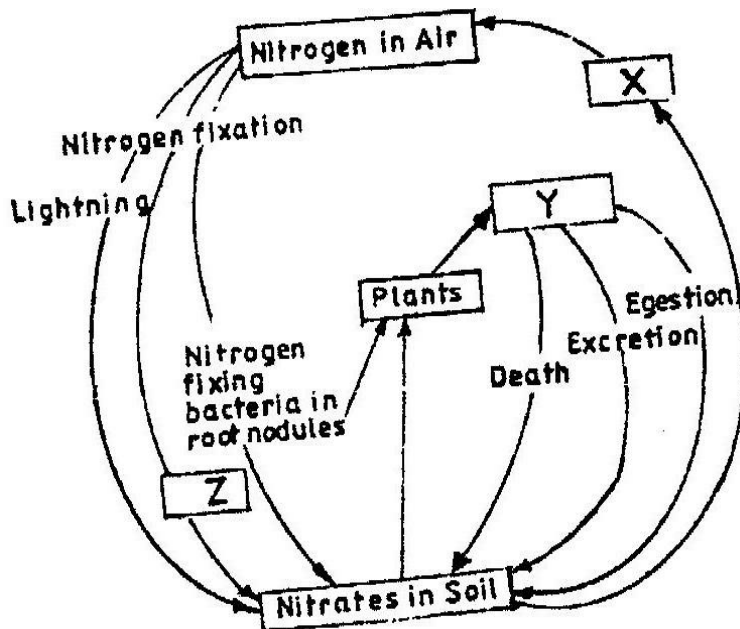
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ii) State one observable xerophytic characteristic seen in the diagram above?.(1mrk)

.....

.....

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 aburning charcoal stove in a poorly ventilated room. What compound is formed in the human body that lead to such deaths?.

(1mrk)

.....

.....

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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.....I

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 leaf 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)

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

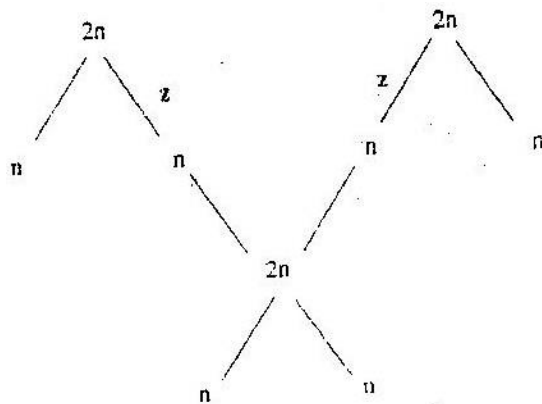
9. When transplanting seedlings, it is advisable to remove some leaves. Explain (1mrk)
.....
.....

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

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

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

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



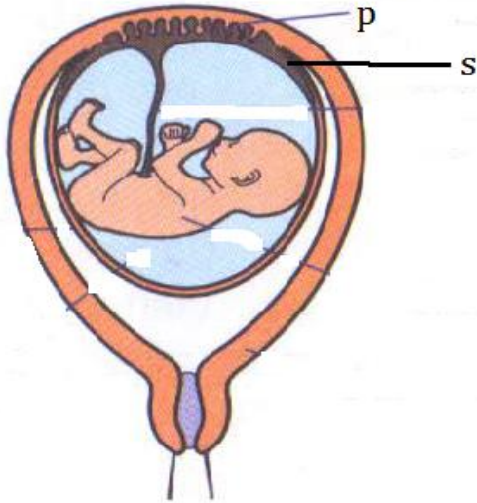
a). What type of cell division takes place at Z. (1mrk)
.....
.....

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.

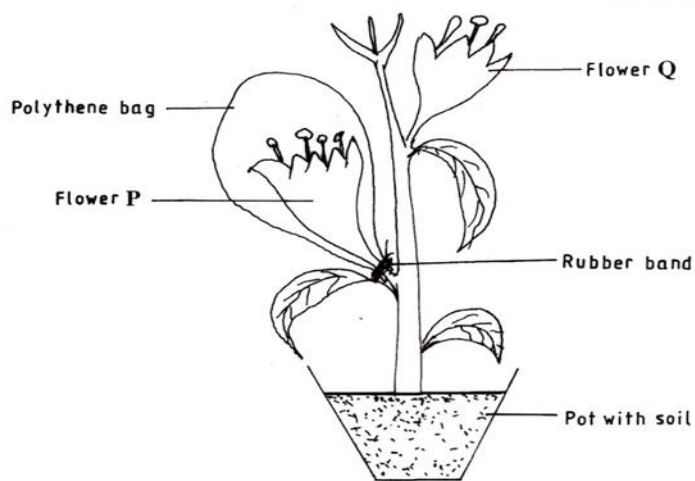
ii) Protection.

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)

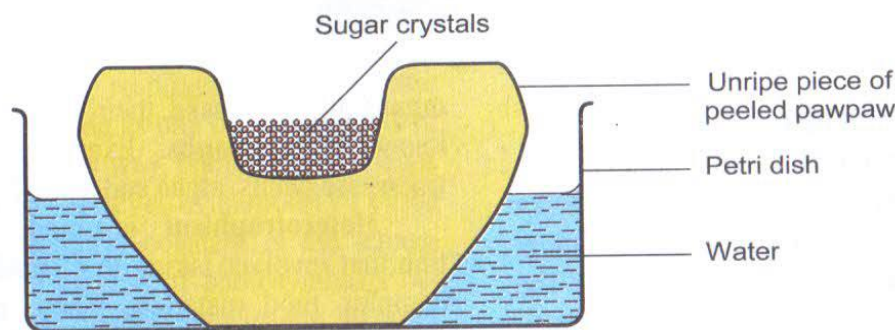
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18. Distinguish between magnification and resolution as used in microscopy. (1mrk)

.....

.....

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)

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.....
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. Give the role of the following hormones during menstrual cycle. (3mks)

a) Follicle stimulating hormone.

b) Oestrogen.

c) Luteinizing hormone.

24. The chart below represents the result of successive crosses, starting with red- flowered plants and white flowered 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)

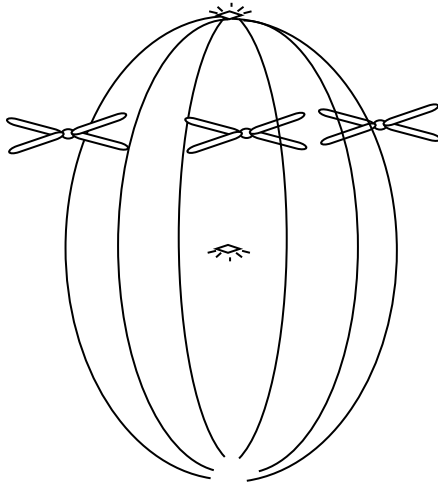
.....
25. a) Name two tissues in plants which are thickened with lignin.

(2 marks)

.....
b) How is support attained in herbaceous plants?

(1 mark)

.....
26. The diagram below shows a stage of a certain type of cell division.



a) Identify the stage and type of the cell division the above cell is undergoing. (2mks)

b) State two importance of the above type of cell division.(2mks)

27. 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)

.....
.....

28. In a capture-recapture exercise to estimate population size of dragon flies on a stretch of rivers, 250flies were first caught and marked. Two days later 500 flies were caught in the second capture and out of this, 50 flies had marks on their bodies. Estimate the population size of the flies. (show your working)

(3mks)

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ALLIANCE BOYS' HIGH SCHOOL

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Answer all the questions in the spaces provided.

1. State two characteristics of organisms that are easily observed in both animals and plants. (2 marks)

.....

.....

.....

2. Fingerlings of fish were introduced to two different ponds. Those fingerlings in pond one all died within four days but the fingerlings in pond two survived.

Suggest the likely reasons why the fingerlings in pond one died. (3 marks)

.....

.....

.....

3. A student observing a specimen through a microscope viewed a blurred image of the specimen. Suggest two possible reasons for this observation. (2 marks)

.....

.....

.....

4. In what ways does Lamarck's theory fail to agree with modern scientific evidence (2 marks)

.....

.....

.....

5. Distinguish between convergent and divergent evolution. (1 mark)

.....

.....

6. (a) Terrestrial insects such as locusts were captured and their blood was analysed. It was found that the blood does not have blood pigments such as haemoglobin. Explain. (2 marks)

.....

.....

(b) State how the tracheal system in insects is adapted to gaseous exchange. (3 marks)

.....

.....

.....

.....
 .
 7. State two functions of a diastema in herbivores.

(2 marks)

.....

 ..

8. A girl could clearly read the book placed 10cm away but could not identify her friend 10 metres away.

a) What eye defect was she suffering from?

(1mk)

b) Explain why she could not identify her friend but could read the book.

2mks

c) Explain how the defect can be corrected.

1mk

9. Explain two ways in which the chloroplast is adapted to photosynthesis.

(2 marks)

.....

10. The diagram shown below represent cells from a certain type of epithelial tissues in mammals.



(a) Name the part labeled V.

(1 marks)

.....
 (b) Identify the region of the mammalian body where the epithelial tissue maybe found. (1 mark)

.....

(c) What is the role of the numerous mitochondria in the epithelial cells as shown above. (2 marks)

.....

 11. Explain what would happen to red blood cells if blood glucose concentration increased due failure of the secretion of insulin. (3 marks)

.....

 .

12. State three biotic factors that could affect an antelope living in Masai Mara. (3 marks)

.....

13. A drop of a person's blood shows clumping in serum of blood group B but not in serum of blood group A.

(a) Identify the blood group of this person. (1 mark)

.....

(b) Name the antibodies found in blood of the following groups. (2 marks)

(i) Blood group A

.....

(ii) Blood group AB

.....

14. list three methods used to show energy flow through the ecosystem. (3 marks)

.....

.....

15. Name three organelles that would be abundantly present in secretory cells. (3 marks)

.....

.....

16. Give three ways in which the red blood cell is adapted to transport oxygen? (3 marks)

.....

.....

17. Describe how the leaves of submerged plants are adapted to gaseous exchange. (2 marks)

.....
.....
.....
.....

18. Name the part of the seed whose growth brings about epigeal germination. (1 mark)

.....

19. State three aspects of light that affect the rate of photosynthesis. (3 marks)

.....

20. (a) Identify the class with organisms that have three body parts and three pairs of legs. (1 mark)

.....

(b) Suggest three reasons why members of the class named in (a) above are adapted to all types of habitats. (3 marks)

.....

21. (a) List three types of gene mutation. (3 marks)

.....

(b) (i) What are sex-linked genes? (1 mark)

.....

(ii) Name two conditions that are sex-linked. (2 marks)

.....

22. (a) State any two rules of binomial nomenclature. (2 marks)

.....

(b) Define the term species. (2 marks)

23. (a) Name two digestive enzymes produced in their inactive form. (2 marks)

.....
.....

(b) Explain why the enzymes named in (a) above are produced in inactive form. (2 marks)

.....
.....
.....

24. (a) Define immunity. (1 mark)

.....
.....

(b) Giving an example in each case, give two main types of immunity. (4 marks)

.....
.....

25. State three advantages of cross-pollination. (3 marks)

.....
.....
.....

26. State three factors that increase the rate of transpiration. (3 marks)

.....
.....

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MARANDA SCHOOL TRIAL EXAMS

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

- a) Write your name, school and admission number in the spaces provided above.*
- b) Sign and write date of examination in the spaces provided above.*
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Question	Maximum score	Candidate's score
1 – 29	80	

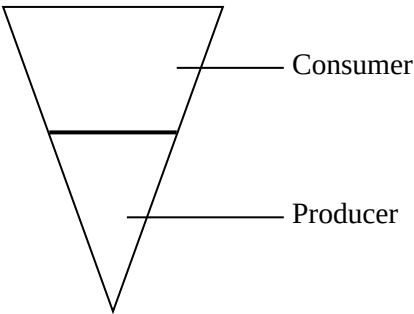
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FOR MORE PAPERS FOR ALL SUBJECTS AND MARKING SCHEMES

1. Insects’ blood is noted to lack a respiratory pigment. Explain (1 mark)
-
-
2. State the function of the following parts of a nephron.
- (i) Loop of Henle (1 mark)
-
-
- (ii) Distal convoluted tubule. (1 mark)
-
-
3. Most terrestrial plants do not grow well in water logged soils. Give a reason for this (1mark)
-
4. Give two destinations of food translocated from the leaves of plants. (2 marks)
-
5. Name the organelle that is likely to be found in abundance in: (3marks)
- (a) An enzyme secreting cell.
-
- (b) Cells producing lipid related secretions.
-
- (c) Areas where the cells have ruptured
-
6. The table below shows the percentage composition of carbon (IV) oxide and oxygen in inhaled and exhaled air.

Gases	Inhaled air	Exhaled air
Oxygen	20 %	17%
Carbon (IV) oxide	0.04%	4.0%

Explain the differences in percentage of the two gases inhaled and exhaled air.

- (a) Oxygen (2 marks)
-
- (b) Carbon (IV) oxide (2 marks)
-
7. The diagram below represents a pyramid of biomass derived from a certain ecosystem.



(a) Suggest the type of ecosystem from which the pyramid was derived (1 mark)

.....
.....

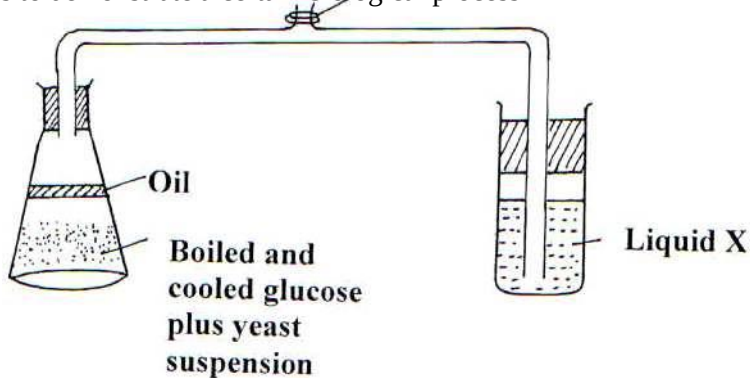
(b) State the significance of short food chains in an ecosystem. (1 mark)

.....
.....

8. Distinguish precisely between diabetes mellitus and diabetes insipidus (2 marks)

.....
.....

T9. The set up below shows apparatus to demonstrate a certain biological process



(a) What biological process was being investigated in the experiment (1 mark)

.....
.....

(b) Write down a word equation that represents the reaction above. (1 mark)

.....
.....

(c) In the above set up, why was it important to boil and cool glucose before adding yeast? (1 mark)

.....
.....

9. (a) What are meristems? (1 mark)

.....
.....

(b) (i) what is the role of cork – cambium in secondary growth? (1 mark)

.....
.....

ii) Name the meristem that is responsible for increase in length of stems (1 mark)

.....
.....

10. State two functions of the spleen (2 marks)

.....
.....
11. Name the excretory products eliminated by the following animals.

(i) Tilapia. (1 mark)

.....
.....
(ii) Chicken. (1mark)

.....
.....
12. Name the causative organism of the following diseases.

(i) Malaria (1mark)

.....
.....
(ii) Bilharzia (1mark)

.....
.....
13. Identify the part of light microscope which serve each of the functions described below

(i) Making rough focus (1 mark)

.....
.....
(ii) Reflecting light from the source (1 mark)

.....
.....
14. State two characteristics of aerenchyma tissue. (2marks)

.....
.....
15. What is the significance of transpiration in plants? (3marks)

.....
.....
16. State two ways in which xylem vessels are adapted to their functions. (2marks)

.....
.....
17. Distinguish between convergent and divergent evolution (1mark)

-
-
-
18. State the characteristics that distinguish the following organisms into their respective classes (3 marks)

Millipedes, spider and tsetse fly.

.....

.....

.....

.....

19. How do identical twins and fraternal twins arise?

(i) Identical twins (2 marks)

.....

.....

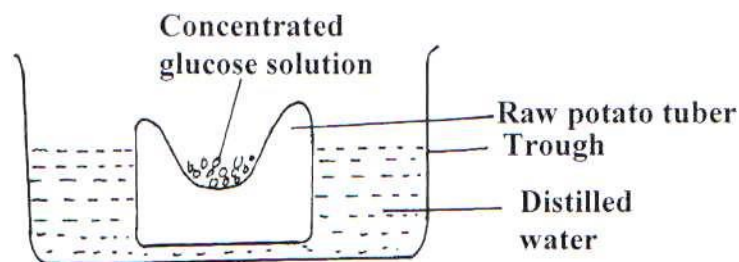
(ii) Fraternal twins. (2 marks)

.....

.....

20. Hemophilia is a sex linked character caused by a recessive gene carried by X chromosome. If a normal woman but a carrier for hemophilia marries a normal man, what would be the phenotypes of the offsprings? (3marks)

21. The experiment illustrated below was set up to investigate a certain physiological process using a raw tuber.



(a) Suggest a possible physiological process that was being investigated. (1 mark)

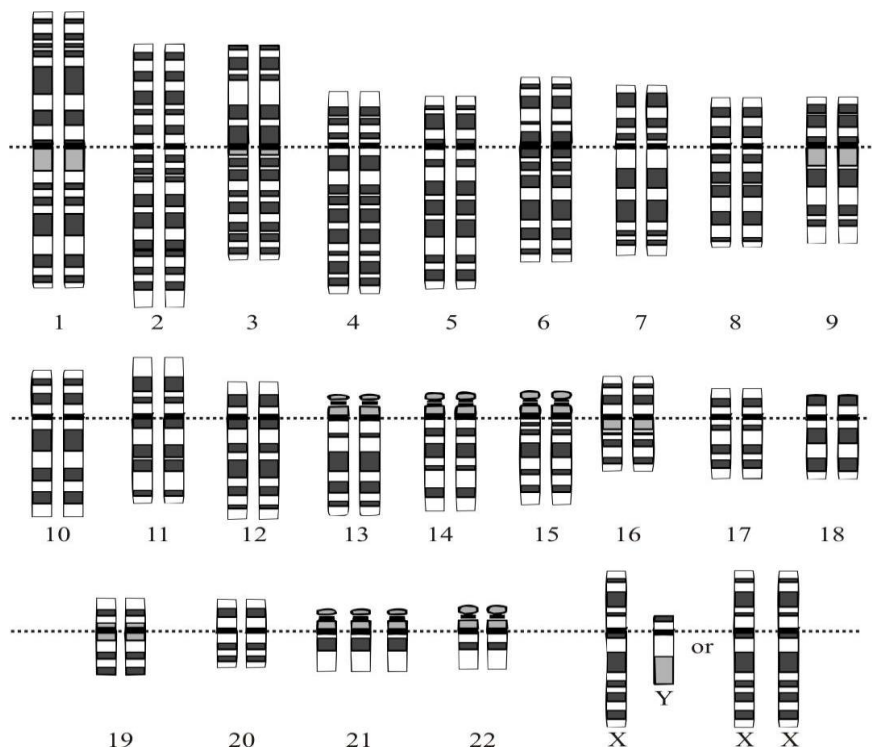
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(b) Explain the results obtained in the above experiment after a few hours (2 marks)

(c) State the observations that would have been made if the experiment was repeated using boiled potato. (2marks)

22. Below is a human karyotype (Picture of all chromosomes in a person's cells, arranged in order.)



(a) During the Chromosomal Microarray Analysis (screening test) a chromosomal aberration called non disjunction was found, name the type of non-disjunction in the above karyotype. (1 mark)

(b) Give three physical characteristics of the above disorder mentioned in (a) (3 marks)

(c) What is the name given to the last sets of chromosome "23" (1 mark)

23. Below are two illustrations (analogies) of gene mutations that have occurred leading to distortions of the intended message.

Intended: IMPORT OF THERMOS NOW BANNED.

- a) Actual: IMPORT OF **MOTHERS** NOW BANNED
- b) Actual: IMPORT OF THERMOS **NOT** BANNED

Identify each type of gene mutation

(2 marks)

.....

.....

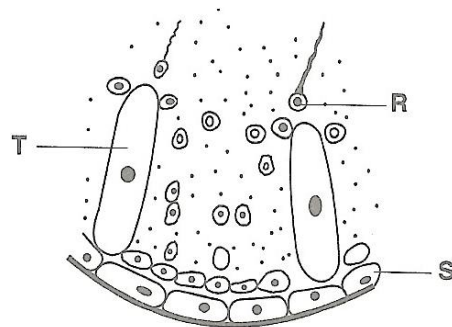
.....

24. Under which of the following light microscope magnifications would one see a larger part of the specimen X40 or X400? Give a reason. (2 marks)

.....

.....

25. The diagram below shows part of a seminiferous tubule.



- (a) Name the parts labeled **R** and **S**.

(2 marks)

.....

.....

- (d) Name the part labeled T and state its function

(2mark)

.....

.....

- (c) State the role of Follicle stimulating hormone in males.

(1mark)

.....

.....

26. The table below shows some physiological changes observed in a person in two different regions. The results were taken after the person stayed in each region for 2 weeks.

Physiological change	Region 1	Region II
Heartbeat per minute	80	71
Breath	Very deep	Average
Breathing rate	Fast	Average

- (a) Which one of the regions was likely to be at 4000 metres above sea level? Give reasons for your answer. (3 marks)

.....

.....

(a) Fish living in dark caves lost their eye sight due to lack of eye utilization in darkness, they continued passing this trait to their offsprings

(b) The present long necked giraffe evolved their long neck from an ancestral stock with short neck due to persistent stretching to reach food on high trees.

.....

.....

.....

.....

.....

.....

(a) How many diploid chromosomes would be expected in a mule obtained in cross between the horse and the donkey? (1 mark)

[illegible]

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NAIROBI SCHOOL TRIAL SERIES

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

- a) Write your name, school and admission number in the spaces provided above.*
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Question	Maximum score	Candidate's score
1 – 30	80	

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1. Name the tissue in plants responsible for (3marks)

a) transportation of water and mineral salts.....

b) primary growth.....

c) translocation of carbohydrates.....

2. A 20-year-old man works in a construction site. List down **three** factors that determine the amount of energy he requires in a day. (3marks)

.....

.....

.....

3. State the mode of asexual reproduction in (3marks)

a) Yeast.....

b) Rhizopus.....

c) Amoeba.....

4. A three-year-old was noted to be suffering from kwashiorkor, scurvy and night blindness. Name **two** classes of foods the boy was lacking in his diet (2marks)

.....

5. Give **two** reasons why primary productivity in an aquatic ecosystem decreases with depth

.....

..... (2marks)

6. Name the cell organelles that would be most abundant in (2marks)

a) skeletal muscle cells.....

b) palisade cells.....

7. A person was found to pass large amounts of dilute urine frequently. Name the:

a) i) disease the person was suffering from.....(1mark)

ii) hormone that was deficient.....(1mark)

b) If the pancreas of this person was removed what would be the further effect on urine produced.....(1mark)

8. A rhinoceros in a national park was found to be infected with ticks. State

a) the type of relationship between the two organisms.....(1mark)

b) the trophic level occupied by the: (2marks)

i) rhinoceros..... ii) ticks.....

9. Name the waste product that is:

a) almost absent in the renal vein but is normally present in the renal artery (1mark)

b) transported in the blood and is not removed by the kidneys (1mark)

10. Name the mineral element that is obtained from insects by insectivorous plants (1mark)

11. Name the parts of a flower that are responsible for the production of gametes (2marks)

12. Give **two** reasons why accumulation of lactic acid during vigorous exercise leads to an increase in heart beat (2marks)

13. State **two** features of pollen grains of insect pollinated flowers (2marks)

14. The equation below represents a metabolic process that occurs in the liver.

Amino acids $\longrightarrow$ Organic compound + Urea

a) Name the process.....(1mark)

b) What is the importance of the process to a mammal? (1mark)

c) What is the source of amino acids in this process? (1mark)

15. Name **two** disorders in humans that are caused by chromosomal mutation (2marks)

16. During a practical activity, students observed the wings of an eagle, a butterfly and a house fly to determine their evolutionary relationship.

a) What name is given to these type of structures.....(1mark)

b) Name the type of evolution illustrated by the wings.....(1mark)

c) What evidence is illustrated by the wings observed.....(1mark)

17. Name **three** classes of animals that excrete their nitrogenous waste products mainly in the form of uric acid. (3marks)

.....
.....
.....

18. A student collected an organism that had two body parts and four pairs of legs.

a) Classify the organism into
(2marks)

Phylum.....Class.....

b) besides the abdomen, name the other body part of members in this class (1mark)

.....

19. Other than Carbon (IV) Oxide, name the other products of anaerobic respiration in plants.

.....
.....(2marks)

20.a) Name the opening to the chamber of the heart of an insect (1mark)

.....

b) name the structures for gaseous exchange in insects (1mark)

.....

c) Give **two** ways in which the structures named in (b) above are suited to their function(2marks)

.....

.....

d) Apart from the lungs name **two** gaseous exchange surfaces in a frog (2marks)

.....

.....

21. What is seed dormancy? (1mark)

.....

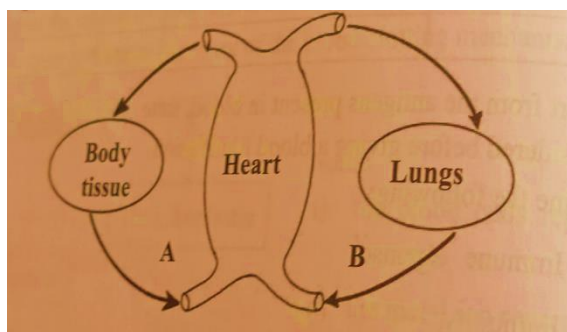
.....

b) State **two** environmental conditions that can cause seed dormancy (2marks)

.....
.....

c) Name a growth inhibitor in seeds.....(1mark)

22.



a) Name the type of circulation illustrated above..... (1mark)

b) Name blood vessels (2marks)

A.....B.....

23. Name **two** sex linked traits in humans located on the X-CHROMOSOME (2marks)

.....
.....

24. When a fish in an aquarium was touched using a small glass straw, it escaped. Name two characteristics exhibited by the fish that show it is a living organism (2marks)

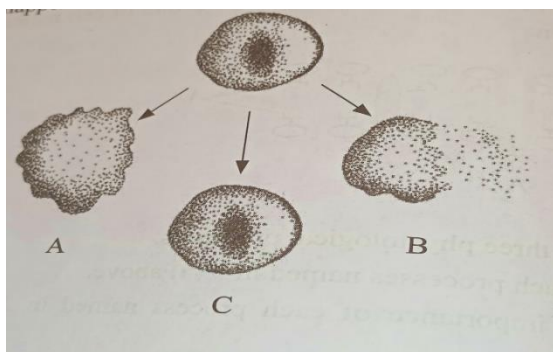
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25. State **three** pieces of evidence that support the theory of evolution (3marks)

.....
.....

26. An animal cell was viewed under a light microscope using objective lens of X100 and eye piece lens of X10. Determine the total magnification of the image (2marks)

27. A student carried out an experiment involving red blood cells by immersing them in solutions of different concentrations A,B and C. The following diagrams show what happened to each of the red blood cells.



a) Which physiological process was being investigated in this experiment (1mark)

.....

b) What kind of solutions are represented by A and C (2marks)

A.....C.....

c) Name the processes the red blood cells underwent when placed in solution A and B (2marks)

A.....B.....

28. Give the function of the following parts of a light microscope. (2 marks)

a) Diaphragm.....

b) Condenser.....

29.Explain why a fresh wound on the skin bleeds more on a hot sunny day than on a cold chilly day.....(2 marks)

30. The table below gives information about some diseases. Fill in the gaps in the table.(3marks)

Disease	Organism causing the disease	Mode of transmission
a) Amoebiasis		Ingestion
b) Cholera		Taking in contaminated food or water
c)Typhoid		Taking in contaminated food or water

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ALLIANCE BOYS' HIGH SCHOOL

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

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1 – 25	80	

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FOR MORE PAPERS FOR ALL SUBJECTS AND MARKING SCHEMES

1. The following apparatus is used in biological studies.



a) Identify the apparatus. (1mk)

.....

.....

b) State its function. (1mk)

.....

2 Explain why plants do not require an elaborate gaseous exchange system. (2mks)

.....

.....

.....

3 Name **two** organisms that belong to the Kingdom Protista. (2mks)

.....

.....

4 60 black and 60 white mice were released in an area inhabited by jackals. After six weeks, it was established that 24 black and 8 white mice had remained.

a) Account for the above observation. (3mks)

.....

.....

.....

.....

.....

b) Name the evolution theory that supports this observation. (1mk)

.....

.....

5. A freshly obtained dandelion stem measuring 5cm long was split lengthwise to obtain two similar pieces. The pieces were placed in solutions of different concentration in petri dishes (L1 and L2) for 20 mins. The appearance after 20 mins is as shown.



- a) Account for the appearance of the piece in solution L₂ after 20 minutes. (3mks)
- b) State **one** significance of the biological process involved in the experiment. (1mk)

6 State **two** environmental conditions that can lead to formation of carboxyhaemoglobin in the human body. (2mks)

7 a) Name the part of the ovule that forms each of the following structures after fertilization:

- i) Zygote..... (1mk)
- ii) Testa..... (1mk)

8 State **two** structural difference between motor and sensory neurons. (2mks)

Motor Neuron	Sensory Neuron

9 Below is a diagram of an organism.



a) Identify the Class to which the organism belongs. (1mk)

b) State **two** features shown on the diagram that are characteristics of this Class. (2mk)

10 a) Differentiate between **population** and **community** as used in ecology. (1mk)

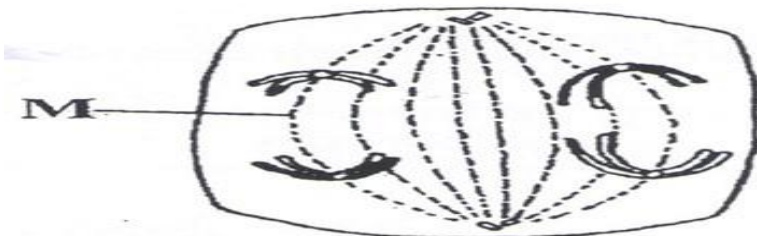
b) Explain **one** negative effect of the use of herbicide on human health. (1mk)

c) State **two** ways through which energy is lost from one trophic level to the next in a food chain. 2mks

11a) Give **two** reasons why anaerobic respiration yields less energy than aerobic respiration. (2mks)

b) Explain why fats are not efficient respiratory substrates. (2mks)

12 The diagram below represents a stage in cell division.



a) i) Name the stage of cell division illustrated. (1mk)

ii) Give a reason for your answer in 12 (a)(i). (1mk)

b) i) In the space provided below, illustrate the next stage of cell division before the one shown above. (1mk)

.....

.....

.....

ii) Give **one** disadvantages of inbreeding among living organisms. (1mk)

.....

13 The table below shows the concentration in parts per million of sodium and iodide ions in sea water and cell sap of a plant.

	Sodium ions concentration	Iodide ions concentration
Sea water	326	39
Cell sap	162	574

a) i) Which of the two ions intake will be affected if the plant was sprayed with a chemical that inhibits respiration. (1mk)

.....

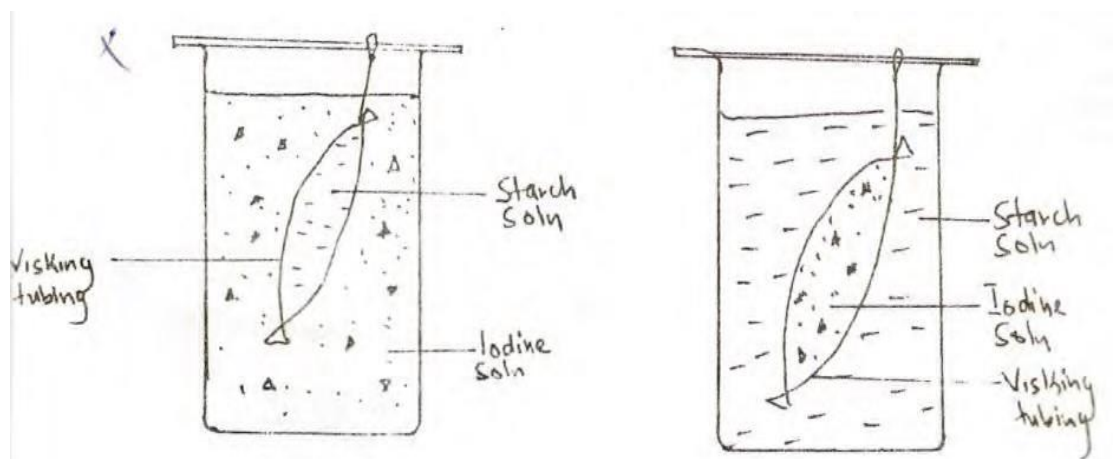
ii) Explain your answer in (a)(i) above. (1mk)

.....

.....

.....

b) An experiment was set up as shown in the diagram below.



At the end of the experiment, it was observed that the starch turned blue black while the color of iodine solution in the beaker did not change. Account for this observation. (2mks)

.....

.....

.....

14 State the role of the following organelles: (3mks)

a) Ribosomes

.....

.....

.....

b) Chloroplast

.....

.....

.....

c) Nucleus

.....

.....

.....

15 A goat and a sheep are both herbivores. Explain why the two can comfortably exist in the same ecosystem. (2mks)

.....

.....

.....

16 Explain the role of antidiuretic hormone when the human blood water level is below normal. (3mks)

.....

.....

.....

17 Equal amounts of crushed irish potato were placed in equal volumes of hydrogen peroxide solution at various pH values. A gas L was produced, its volume measured and recorded as shown below.

pH	4.2	7.0	9.2
Volume of gas L	2.9	5.9	7.9

a)Identify gas L. (1mk)

.....

b) Account for the difference in the volume of gas L produced at pH values 4.2 and 9.2. (3mks)

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18a) State **two** ways in which red blood cells are adapted to their function. (2mks)

.....

.....

.....

b) In which **two** forms is carbon (iv) oxide transported in the body. (2mks)

.....

.....

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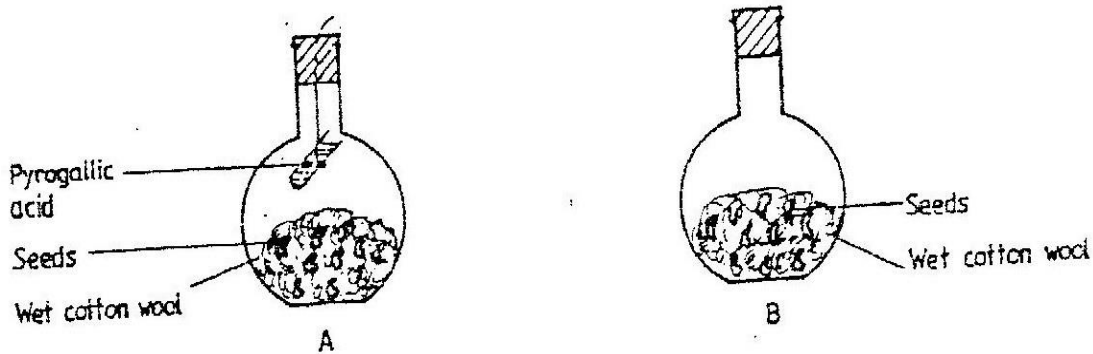
19 State **three** characteristics of a respiratory surface. (3mks)

.....

.....

.....

20 A student set up an experiment as shown in the diagrams below



The set up was at room temperature for a week

(a) What was the aim of the experiment? (1mks)

.....

.....

(b) What would be the expected results at the end of the experiment (2mks)

.....

.....

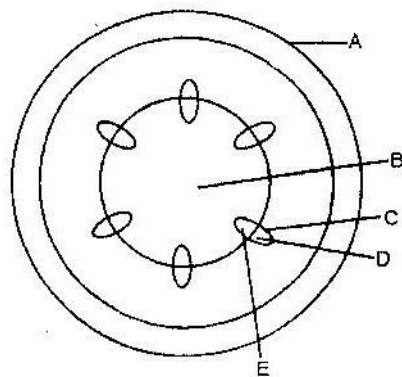
21 After four months of pregnancy, the ovaries of a woman can be removed without terminating pregnancy. However, during the first four months of pregnancy, the ovaries must remain intact if pregnancy is to be maintained. Explain these observations. (2mks)

.....

.....

.....

22 The diagram below represents a transverse section of a young stem



(a) Name the parts labelled A and B (2mks)

A.....

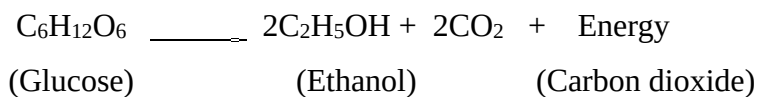
B.....

(b) State **two** ways in which xylem vessels are adapted to their function. (2mks)

.....

.....

23 A process that occurs in plants is represented by the equation below.



(a) Name the process. (1mk)

.....

(b) State **two** economic importance of the process named in (a) above. (2mks)

.....

24 Explain why some desert animals excrete uric acid rather than ammonia. (2mks)

.....

.....

25. A shoot of seedling exposed to light on one side bends towards the source of light as it grows.

a) Name the response exhibited by the shoot of the seedling. (1mk)

.....

.....

.....

b) Explain how the bending towards the source of light occurs. (3mks)

.....

.....

.....

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STAREHE BOYS CENTER TRIAL MOCKS

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

INSTRUCTIONS TO CANDIDATES

- h) Write your name, school and admission number in the spaces provided above.*
- i) Sign and write date of examination in the spaces provided above.*
- j) Answer **all** the questions in the spaces provided.*
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1 – 28	80	

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1. (a) Explain why a person discharges urine more frequency when environmental temperatures are lower than when they are high. (2mks)

.....

.....

.....

- (b) Name the nitrogenous waste product excreted by a fresh water fish. (1mk)

.....

.....

2. Explain how the xylem vessels are adapted to their functions. (3mks)

.....

.....

.....

3. State three evidences of organic evolution (3mks)

.....

.....

.....

4. In an experiment, it was found that when maggots are exposed to light, they move to the dark areas.

- a) Name the type of response exhibited by the maggots. (1mk)

.....

.....

- b) State the survival value of the response in (a) above. (1mk)

.....

.....

5. (a) What is meant by oxygen debt. (2mks)

.....

.....

.....

- (b) State one factor that affects basal metabolic rate. (1mk)

.....

.....

6. Explain what would happen to red blood cells when they are placed in hypotonic solution.(3mks)

.....

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.....

.....

7. State the organelle that perform the following functions. (3mks)

- (i) Synthesis of ribosomes.....
- (ii) Transport of lipids.....
- (iii) Package and transport of gloco-proteins.....

8. What are structural units of lipids. (2mks)

.....

.....

.....

.....

9. (a) State the major factor in the ‘Global warming’ experienced in the world today. (1mk)

.....

.....

(b) Suggest the ways of reducing the global warming (2mks)

.....

.....

.....

.....

10. State the role of the following in Homeostasis. (2mks)

- i) ADH:.....
- ii) Aldosterone.....

11. Explain why cells of an endosperm are triploid and not haploid. (2mks)

.....

.....

.....

.....

12. State four ways in which respiratory surfaces are suited to their functions (4mks)

.....

.....

.....

.....

13. State three structural modifications of nephrons found in desert mammals. (3mks)

.....

.....

.....

.....

14. How would you find out from a sample of urine whether a person is suffering from diabetes mellitus.

.....

.....

.....

.....

(3mks)

15. What are the advantages of fruit and seed disposal (2mks)

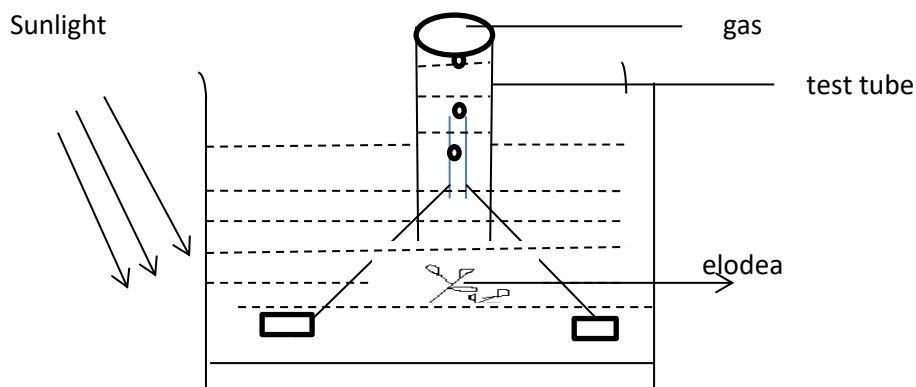
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16. The diagram below represents a set-up that was used to investigate a certain process in a plant.



a) What was the aim of the experiment? (1mk)

.....

.....

b) Name the gas collected in the gas jar. (1mk)

.....

.....

c) What is the confirmation test for the gas in (b) above? (1mk)

.....

.....

d) State two factors that would affect the process. (2mks)

17. Name the antigens that determine human blood group.

(2mks)

.....

.....

.....

.....

18. a) Explain why pepsin in stomach of man is secreted in inactive form

(1mk)

.....

.....

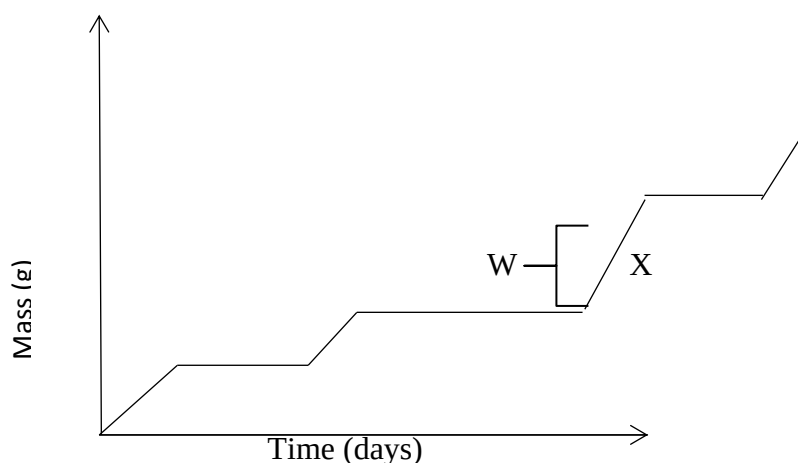
b) Which gland secretes pepsinogen?

(1mk)

.....

.....

19. The graph below represents its growth of animals in a certain phylum.



a) Name the type of growth pattern shown on the graph.

(1mk)

.....

.....

b) Identify the process represented by x.

(1mk)

.....

.....

c) Name the hormone responsible for the process in (b) above.

(1mk)

.....

.....

20. A student smeared Vaseline jelly on the lower epidermis of a leaf of a potted green plant which had been kept in the dark for 24hrs. She then transferred the plant to the light for six hours starch test on the leaf of the plant were negative. Account for the observation.

(3mks)

.....

.....

21. State the three different types of blood cells. (3mks)

.....

.....

.....

22. The following cell are found in living organisms.

a) Identify the parts labeled V and U. (2mks)

.....

.....

b) State the function of part labeled S. (1mk)

.....

.....

c) State one cell organelle which is most abundant in the structure and explain its role. (2mks)

.....

.....

.....

23. a)) Explain briefly Lamarck's theory of evolution. (2mks)

.....

.....

.....

b) State a reason why Lamarck's theory of evolution has been disapproved by scientists. (1mk)

.....

.....

24. Below is an equation showing the aerobic breakdown of fat.



Calculate the respiratory quotient of the breakdown above. (2mks)

.....

.....

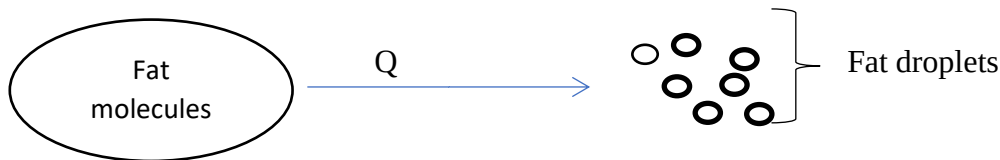
.....

25. (a) What are vestigial structures? (1mk)

b) Give two examples of vestigial structures found in man. (2mks)

26. Give two limitations of fossil records as evidence of evolution. (2mks)

27. The diagram below illustrates a physiological process that occurs in the alimentary canal of man.



a) Name the process Q above. (1mk)

b) Explain the biological importance of the above process. (1mk)

c) Name the substance that helps the process name in (a) above (1mk)

28. List 3 features that make man the most dominant species on earth. (3mks)

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MANGU HIGH SCHOOL TRIAL EXAMS

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

INSTRUCTIONS TO CANDIDATES

- a) Write your name, school and admission number in the spaces provided above.*
- b) Sign and write date of examination in the spaces provided above.*
- c) Answer **all** the questions in the spaces provided.*
- d) Additional pages **must not** be inserted.*
- e) Candidates may be penalized for false information and even wrong spellings of technical terms.*
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Question	Maximum score	Candidate's score
1 – 28	80	

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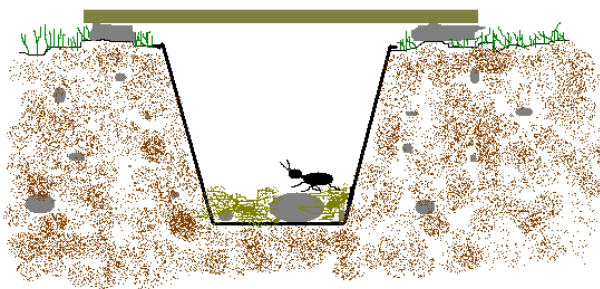
1. State the branch of Biology that would be used in solving the problem of disputed parentage. (1mk)

.....

.....

.....

2. Study the diagram below and answer questions that follow



(i) What is the name given to the apparatus shown above (1mk)

.....

.....

.....

(ii) What is its use in Biological studies? (1mks)

.....

.....

.....

3.a) State the role of active transport in animal nutrition (1mk)

.....

.....

.....

b) Cyanide lowers the rate of active transport. Explain? (2mks)

.....

.....

.....

4.(a) Explain the two role of diffusion in human beings. (2mks)

.....

.....

.....

(b) What is meant by each of the following terms?

(i) Crenated cell. (1mk)

.....

(ii) Flaccid cell.

(1mk)

.....

.....

5. The table below shows the effect of wind, still air and stomatal opening on the rate of transpiration of a plant in milligrams of water lost per hour dm². Study the table and answer the following questions

Stomatal opening (µm)	1	2	3	4	5	6	7
Windy	40	53	74	86	94	110	124
Still air	0	5	12	19	23	27	30

(a) (i) Compare the rates of transpiration in windy and still air conditions

(1mk)

.....

.....

(ii) Explain your observation in a(i) above

(2mks)

.....

(b) How does stomatal opening affect transpiration rate?

[1mark]

.....

6. Phagocytes also called granulocytes or polymorphs are cells found in the blood where they ingest pathogens and cell debris.

a) Why are they called polymorphs?

(1mk)

.....

b) Name the cell organelle most abundant in phagocytes to enable them function effectively. (1mk)

.....

7. Name the blood vessel that supplies blood to the

a) Brain

(1mk)

.....

b) Cardiac muscle

(1mk)

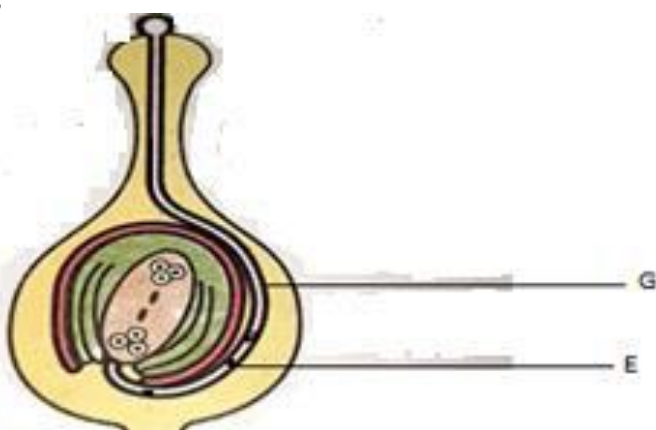
.....
.....
8. a) Cowpeas seeds were placed in a vacuum flask and left for five days. What is the expected change in composition of gases in the flask on the sixth day? (1mk)

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

.....
.....
9. a) Biotechnologist works day a night to curb food insecurity using the knowledge of polyploidy in genetics. Explain the economic importance of such practice? (2mks)

.....
.....
b) Define a backcross? (1mk)

.....
.....
10. The diagram below shows a pollen tube as it develops down the style. Use it to answer the questions that follows;



.....
.....
(i) Name the part labelled G. (1mk)

.....
.....
(ii) State two functions of structure labelled E. (2mks)

.....

.....

11.A group of Form Three students collected a certain specimen for study as shown below. Study it carefully and use it to answer the questions that follow.



(i) Name the type of metamorphosis in the above specimen. (1mk)

.....

.....

.....

(ii) Give any two advantages of the above metamorphosis. (2mks)

.....

.....

.....

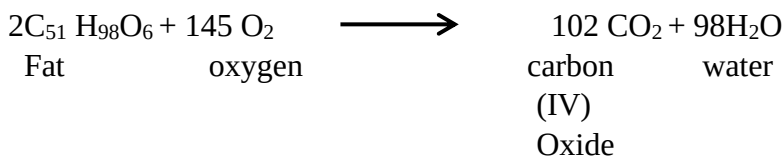
12. A mature coconut fruit has mesocarp which has air spaces. Explain the biological significance of that mesocarp (2mks)

.....

.....

.....

13.Use the chemical formula below to answer the question that follow;



a) Calculate the respiratory quotient (RQ) (3mks)

.....

.....

.....

.....

.....

.....

b) Under what condition do animals use tissue protein for respiration? (1mk)

.....
.....
.....

14.Name the causative agent of the following disease.

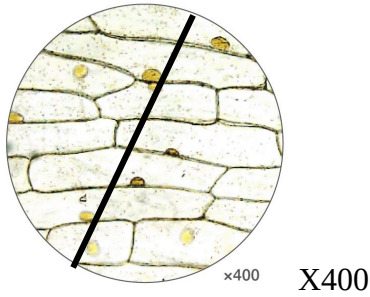
i) Acquired immune deficiency syndrome (1mk)

.....
.....

ii) Syphilis (1mk)

.....
.....

15.The diagram below shows onion cells in a field of view of a light microscope

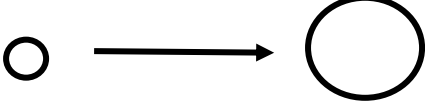


Using the dark line as diameter of field of view, determine the actual diameter of one cell (4mks)

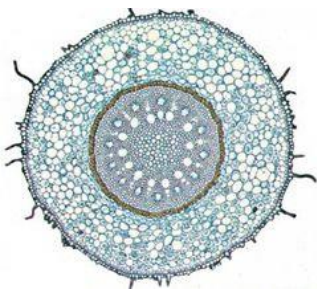
.....
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.....

16. Identify the functions of a light microscope as shown by the following diagrams(2mks

a)  Function

b)  Function

17.The following is a cross-section of part of a plant



Samwel observed that this diagram represents a monocot root. Give a reason why

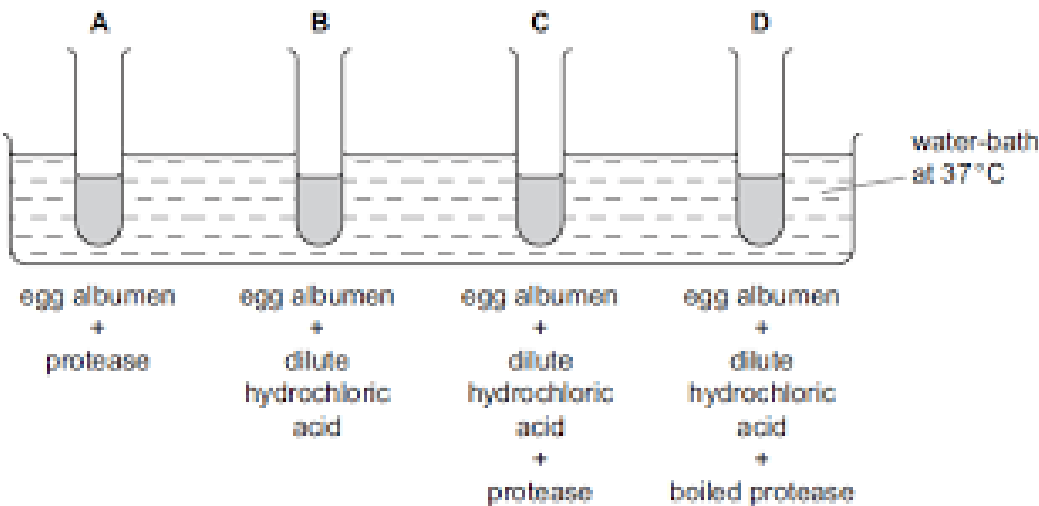
i) It is a root (1mk)

.....
.....

ii) It is from a monocot plant (1mk)

.....
.....

18.An experiment was carried out as shown below to study enzymatic reactions. After 30minutes, Biuret’s test was carried out on contents of each test tube to get results. Fill in the table below to offer explanation for the results obtained (4mks)



Test Tube	Result		Explanation
C	Blue		
D	Purple		

19. State two characteristics that make alveolus and buccal cavity suitable for gaseous exchange. (2 Marks)

.....

.....

.....

20. State the changes that take place during inhalation in mammals in the following structures.

a) Rib Cage (1mk)

.....

.....

.....

b) Diaphragm. (1mk)

.....

.....

.....

21. Explain two ways in which the trachea is adapted to perform its functions. (2marks)

.....

.....

.....

22. State two control measures of bilharzia. (2 Marks)

.....

.....

.....

23.a. What is eutrophication? (2 marks)

.....

.....

.....

b. What are the effects of eutrophication? (2 marks)

.....

.....

.....

24.In an experiment to determine the population size of mosquitoes in Kisumu Museum, Kenya Research Institute researchers caught 600 mosquitoes which they marked and released. After 24hrs 300 mosquitoes were caught out of which 100 already had the marks.

- a) Suggest a possible instrument of capturing the mosquitoes 1mk)
- b) Estimate the population size of mosquitoes in Kisumu Museum. (2mks)
-
-
-

25. Give two classes of the phylum Chordata whose members are all poikilothermic. (2mks)

.....

.....

.....

26. State the role of the following in a nitrogen cycle:

a) Nitrogen fixing bacteria. (1mk)

.....

.....

.....

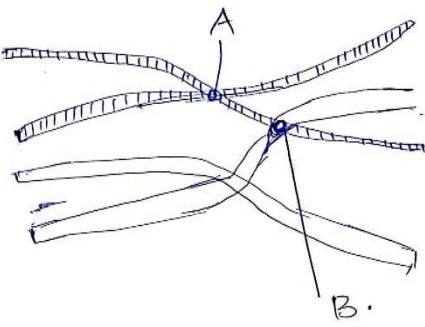
b) Nitrifying bacteria. (1mk)

.....

.....

.....

27. The diagram below shows a phenomenon which occurs during cell division.



- a. Name the parts labeled A and B. (2marks)
-
-
-
- b. State the biological importance of the part labeled B. (1mark)
-
-
-

c. Identify the type of cell division in which this phenomenon occurs. (1mark)

.....

.....

.....

d. Name the organs in human being in which the phenomenon occurs. (2marks)

.....

.....

.....

28.a) Give two sex linked traits found on the Y-chromosome. (2mks)

.....

.....

.....

b) Below is a nucleotide strand

A	A	G	T	C
---	---	---	---	---

i) Identify the type of nucleic acid. (1mk)

.....

.....

.....

ii) Give a reason for your answer in (a) above. (1mk)

.....

.....

.....

29.a) Distinguish between homologous and analogous structures. (2mks)

.....

.....

.....

b) Give one reason why organisms become resistant to drugs. (1mk)

.....

.....

.....

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MASENO SCHOOL

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

INSTRUCTIONS TO CANDIDATES

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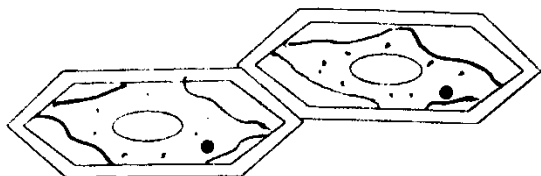
1. (a) State **two** functions of a microscope. (2mks)

.....
.....

(b) Define the term field of view as used in microscopy (1mk)

.....
.....

2. Study the diagram below showing a portion of an onion epidermis that had been irrigated with a certain solution X.



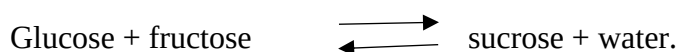
(a) In **one** word describe the condition of the cells (1mk)

.....

(b) Describe the process that leads to the condition named above. (3mks)

.....
.....
.....

3. The following reaction may proceed in forward or backward direction



(a) What term is used to refer to the backward reaction. (1mk)

.....

(b) In which part of alimentary canal does the backward reaction occur? (1mk)

.....

(c) Name the enzyme that catalyzes the backward reaction. (1mk)

.....

4. A certain metabolic pathway takes the following sequence.



At the start of the experiment an inhibitor was added to the reactants. After the experiment it was found out that there was the same concentration of J, near absence of K, L, M and N. When L was added to the inhibitor set M and N were detected.

(a) At what stage of the reaction sequence did the inhibitor have its effect? (1mk)

.....

(b) Explain how the inhibitor affected the reaction. (1mk)

.....

.....

(c) What is the identity of substance L? (1mk)

.....

5. After fertilization of an ovule, which parts develop into: -

a) Testa (1mk)

.....

b) Endosperm (1mk)

.....

6. (i) Name the process through which a plant takes up some mineral ions against a concentration gradient. (1mk)

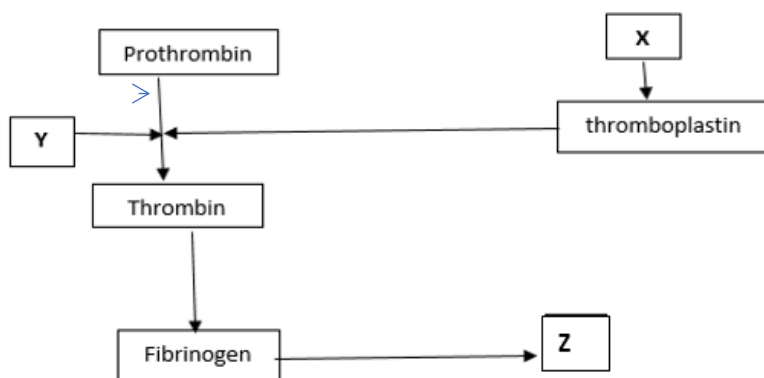
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ii) State two factors that may affect the process named in (i) above. (2mks)

.....

.....

7. Study the flow chart below which represents a physiological process in mammals



ai) Name blood components represented by X. (1mk)

.....

ii) What is the significance of product represented by Z. (2mks)

.....

.....

b) Under what condition is thrombokinase released by the platelets? (1mk)

8. (a) Name the nitrogenous waste product excreted by a fresh water fish (1mk)

.....

(b) Explain why a person discharges urine more frequently when environmental temperatures are low than when they are high (2mks)

.....

.....

.....

9. Why is it important to use dry mass in ecological studies and not wet mass (2mks)

.....

.....

10. Identify the agent of dispersal of the following (2mks)

(i)Fruits which split open along sutures when dry, hauling their seeds away from the parent plant

.....

.....

(ii)Light seeds with hairy extensions

.....

.....

11.a) Name the **TWO** components of a lipid molecule (2mks)

.....

.....

b) State **TWO** disadvantages of using fats as respiratory substrates (2mks)

.....

.....

12.a) Name the pigment that protects humans from the negative effect of Ultraviolet lights (1mk)

.....

b) Explain how sunlight contributes to stronger bones and teeth in human beings (2mks)

.....

.....

.....

13.Name the main target organ of the following hormones: (2mks)

Aldosterone.....

Insulin

14. Give **THREE** features that make modern man to be more adaptable to the environment (3mks)

.....
.....
.....

15. State **TWO** contributions of Carolus Linnaeus (1708 – 1778) to taxonomy (2mks)

.....
.....

16. A mother had a still birth and the expelled foetus showed clear signs of anemia and jaundice

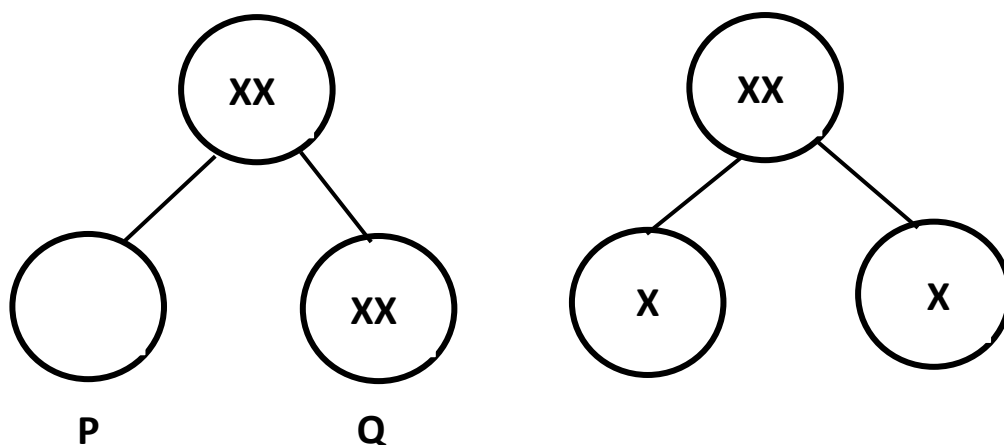
a) Give the name of this disorder (1mk)

.....

b) Describe how the disorder arose (3mks)

.....
.....

17. The process of gamete formation is represented below



a) State a reason why the process above represents gamete formation in female mammals (1mk)

.....

b) Name the chromosomal mutation represented above

.....

c) Identify the genetic disorder that arise when the following gametes are fertilized

P (1mk)

Q

(1mk)

18. A sample of air was passed through pyrogalllic acid and its volume reduced from 8 cm^3 to 7 cm^3 . When it was later passed through lime water, the volume reduced to 6.8 cm^3 .

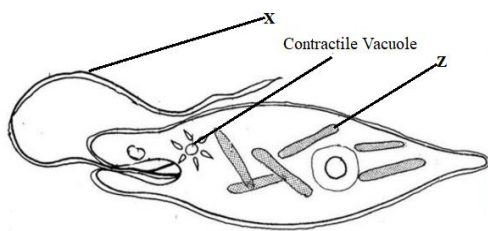
a) What was the role of pyrogalllic acid in this experiment? (1mk)

b) Determine the percentage of Carbon (IV) oxide in the sample of air (2mks)

c) Is this sample of air exhaled air or inhaled air? (1mk)

19. A zebra is observed to be grazing at a grassland, suddenly a lion appears and the zebra takes off. List two characteristics of living things exhibited by the zebra (2 mks)

20. The diagram below represents an organism. Study it and answer the questions that follow.



a) Identify the kingdom to which the organism belongs (1 mk)

b) Name the structure labeled X (1 mk)

c) Identify the type of nutrition carried out by the organism and give a reason (2 mks)

Type of:

Nutrition.....

Reason.....

21.A wild beast in Maasai Mara National Park was found to be infested with a lot of ticks. State the trophic level occupied by the following organisms: (2mks)

(a)(i) Wild beast.....

(ii) Ticks.....

(b) Construct a food chain from the above information (1mk)

.....
.....

22.(a) Name **one** hormone involved in insect metamorphosis. (1mk)

.....

(b) State the importance of metamorphosis to the life of insects. (2mks)

.....
.....
.....

23.(a) State two differences between the primary growth and secondary growth in woody plants. (2mks)

.....
.....
.....
.....
.....

(b) Name **two** tissues responsible for secondary growth in flowering plants. (2mks)

.....
.....

24. a) What is respiratory quotient? (1mk)

.....
.....

b) Explain why it is difficult to measure respiratory quotient in plants. (2mks)

.....
.....
.....
.....

25. Name one class of phylum Arthropoda with cephalothorax (1mk)

.....
.....

26. A section of nucleic strand contains the following sequence.

A — C — G — A — G — A — T — A — C

a) i) Write the complementary DNA strand. (1mk)

.....

ii) Write the mRNA strand of the strand in (a) above. (1mk)

.....

b) Name the site for protein synthesis in a cell. (1mk)

.....

27. (a) What are analogous structures? (1mk)

.....
.....

(b) Give two examples of analogous structures in animals (2mks)

.....
.....
.....

28. Name any two sites where gaseous exchange takes place in a leaf of a terrestrial plant (2mks)

.....
.....

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KAPSABET BOYS HIGH SCHOOL TRIAL EXAMS

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

INSTRUCTIONS TO CANDIDATES

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Question	Maximum Score	Candidate's Score
1-25	80	

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1. Name the branch of biology that involves the study of:

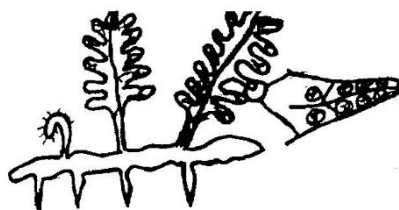
(a) Organism for the sake of classifying them

(1mark)

.....
(b) Microscopic organisms.

(1 mark)

2. The diagram below represents a plant



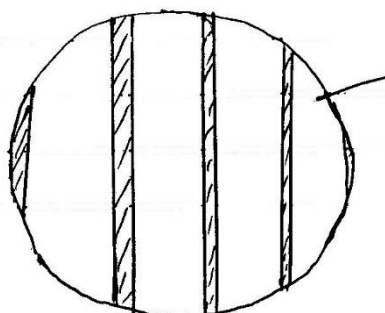
(a) Name the division to which the plant belongs

(1 mark)

.....
(b). Give three reasons for your answer in (a) above

(3 marks)

3. A student estimating a cell of an onion epidermal cell observed the following on the microscope field of view using a transparent ruler.



Field of view

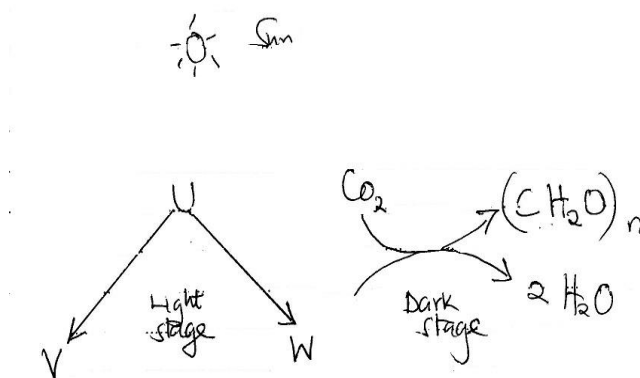
The student identifies 20 cells across the field of view. Calculate the size of the cell in micrometres.

(3 marks)

.....
4. State the functions of centrioles in a cell.

(2 marks)

.....
5. Study the flow diagram below



Name the substance U, V and W.

(3 marks)

U.....

V.....

W.....

6. (a). State the deficiency diseases of each of the following vitamins.

(3 marks)

(i). B₁

(ii). B₂

(iii). B₆.....

(b). What is the role of roughage in a diet?

(1 mark)

7. State two differences between osmosis and Active transport.

(2 marks)

8. In a certain experiment, the following observation was made:

When red blood cell was placed in certain solution, the solution exerted more osmotic pressure leading to cell losing water molecules to become (crenated/shrunk)

(a). What type of solution was the cell placed in respect to the cell's cytoplasm?

(1 mark)

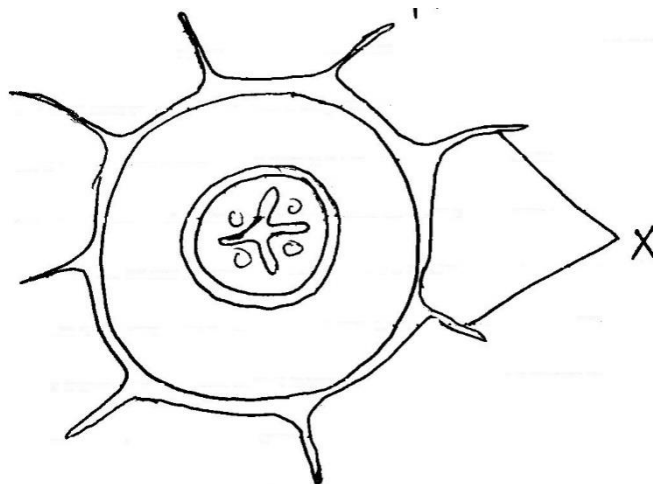
(b). By which physiological process did the cell lose water molecules?

(1 mark)

(c). Name two substances that make a cell membrane.

(2 marks)

9. The diagram below represents a transverse section of a plant part. Study it and answer the questions that follow.



- (a). Name the class in which the plant belongs. (1 mark)
-
- (b). Give a reason for answer (a) above. (1 mark)
-

- (c). State three adaptations for the structure labeled X to their functions. (3 marks)
-
-

10. State THREE structural differences between arteries and veins in mammals. (3 marks)
-
-

11. (a). Why does carboxyhaemoglobin lead to death? (3 marks)
-
-

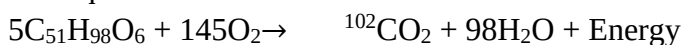
- (b). Name two gaseous exchange sites in higlier plants. (2 marks)
-

12. State the importance of the following features in gaseous exchange

- (i) cartilage in the trachea (1 mark)
-

- (ii) Moisture on the surface of the alveoli. (1 marks)
-

13. The equation below shows an oxidation reaction of flow food substances



- (i) (a) Determine respiratory quotient of the Oxidation of the food substance above (3 marks)
-

(ii) Identify the food substance.

(1 mark)

14. (a). A dog weighing 15.2kg requires 216kg while a mouse weighing 50g Explain.

(2 marks)

(b). Under what condition is lactic acid formed in human muscles?

(1 mark)

15. Equal amounts of crushed Irish potato were placed in equal volumes of hydrogen peroxide solution at indicated PH. The volume of the gas produced was measured and recorded as shown in the table below.

(3 marks)

PH	4.0	7.0	9.0
Volume of gas (cm ³)	2.7	7.0	9.0

(a). Name the gas that was produced.

(1 mark)

(b). Account for the difference in the volume of the gas produced in PH 4.0 and PH 9.0

(3 marks)

(c). Name two components of blood that are not present in the glomerular filtrate. (2 marks)

(16). Define the following terms

(2 marks)

(a) Entomology

(b) Sensitivity

(17). Give two examples of continuous variations in humans.

(2marks)

(18). (a) State the causative agent of the following diseases

(2 marks)

(i). Typhoid

(ii). Pneumonia

(b). State three preventive measures of schistosomiasis in human beings

(3 marks)

19. Describe capture-recapture method of estimating population.

(3 marks)

20. State three advantages of asexual reproduction in organisms.

(3 marks)

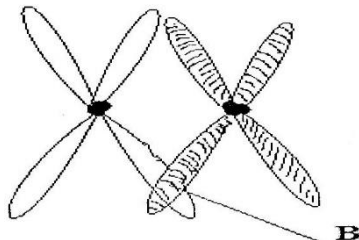
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21. The diagram below shows a phenomenon which occurs during cell division.



- (a). Identify the stage of cell division in which the phenomenon occurs. (1 mark)
-
- (b). State the importance of phenomenon taking place in the part labelled B. (2 marks)
-

22. Name the region in plants where the following take place

- (a). Primary growth.....(1 mark)
- (b). Secondary growth (1 mark)

23. State three parameters that can be used to estimate growth in seedlings. (3 marks)

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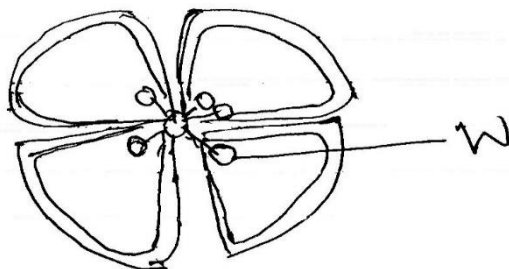
24. State three reasons for classifying organism. (3 marks)

.....

.....

.....

25. The diagram below represents a transverse section of an ovary from certain flower.



- (i) Name the structure labeled W. (1 mark)
-
- (ii). Name the type of placentation illustrated in this diagram. (1 mark)
-

GOLDLITE ONLINE SUPPLIES

Kenya Certificate of Secondary Education

KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name Admission number

Candidate's Signature.....Date.....

MOI GIRLS ELDORET TRIAL SERIES 1

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

INSTRUCTIONS TO CANDIDATES

- o)* Write your name, school and admission number in the spaces provided above.
- p)* Sign and write date of examination in the spaces provided above.
- q)* Answer **all** the questions in the spaces provided.
- r)* Additional pages **must not** be inserted.
- s)* Candidates may be penalized for false information and even wrong spellings of technical terms.
- t)* This paper consists of **8** printed pages.
- u)* 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	

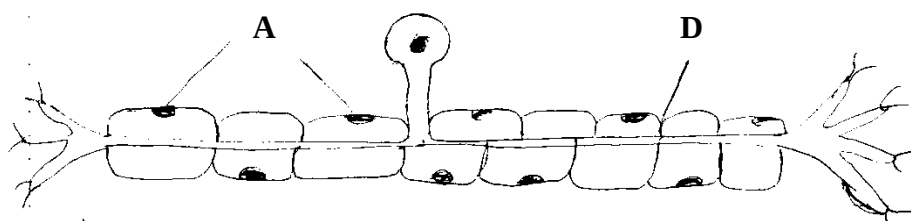
1. Explain the meaning of the following branches of biology.

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)

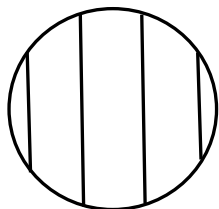
b) Identify the parts labeled A and D. (2marks)

A _____

D _____

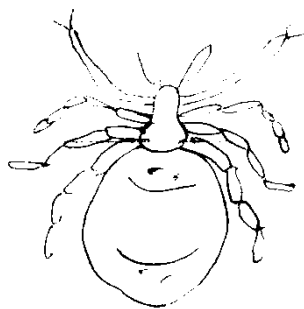
c) State the function of neuron. (1mark)

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)

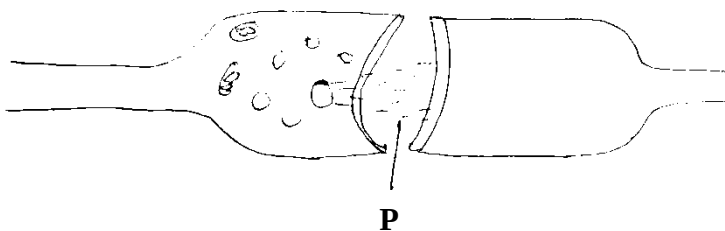
b) Give **two** reasons for your answer 5(a) above (2mark)

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



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

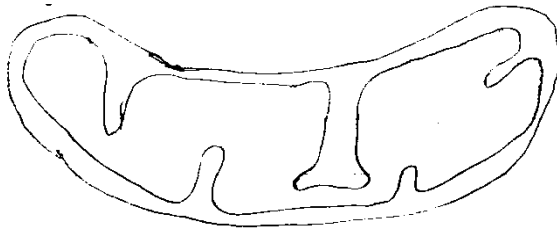
b) State **two** significances of a synapse in the body (2marks)

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)

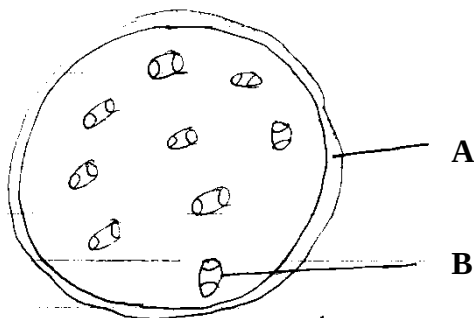
b) State **one** adaptation of the above organelle to its function (1mark)

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)

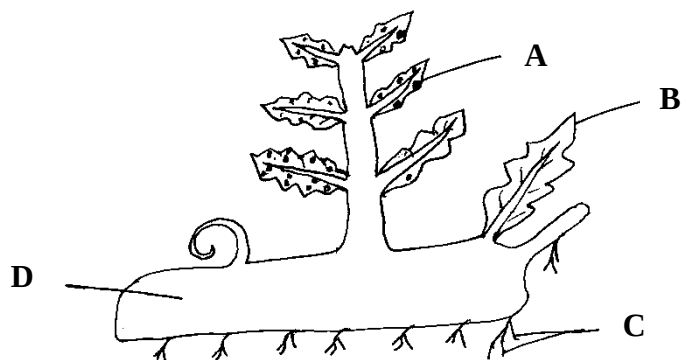
A _____

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.

(i) 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)

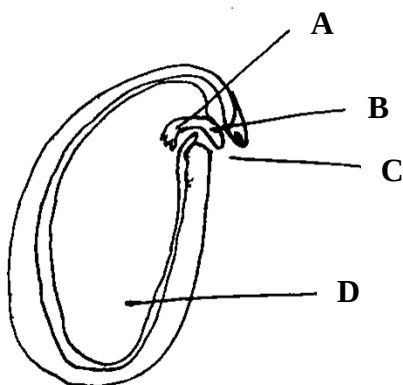
c) Homozygous dominant_____

d) Homozygous recessive_____

e) 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)

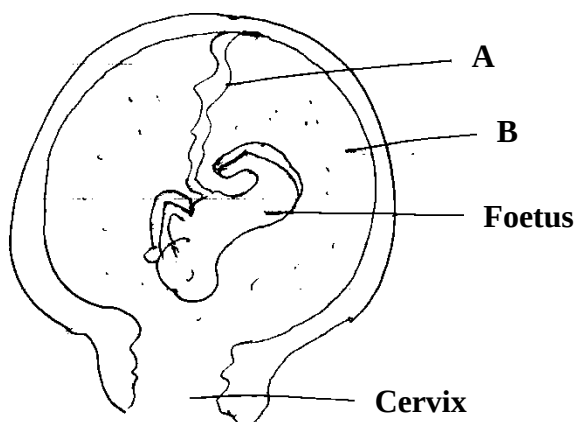
21. State the causative agent of;

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 discarded. (2marks)

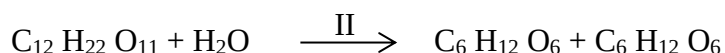
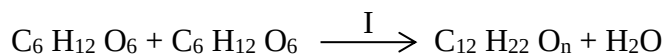
25. Explain why the following process is essential in living organism.

- 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.



- 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)

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Kenya Certificate of Secondary Education
KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name Admission number
Candidate's Signature.....Date.....

ASUMBI GIRLS TRIAL MOCKS

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

Instructions to candidates

- a) Write your name and admission number in the spaces provided above.
- b) Sign in the spaces provided above.
- c) Answer **ALL** questions in the spaces provided.
- d) All workings **MUST** be clearly shown where necessary.
- e) This paper consists of **11** Printed pages.
- f) **Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing**

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1-34	80	

1. I) Which type of a joint is found at the articulation of

a) Pelvic girdle and femur.

(1 mark)

b) Humerus and ulna

(1 mark)

c) Name the fluid found in the in between the joints above

(1 mark)

d) Name the structure which attaches the muscles to the bones

(1 mark)

2. Name the blood vessels that transports blood from

i) Heart to the lungs

(3 marks)

ii) Liver to heart

iii) Small intestine to the liver

3. What is the function of the cells in the cells retina of the human eye

(2 marks)

a) Cones

b) Rods

4. Name three types of chromosomal mutations. (3 marks)

5. A) During which phase of meiosis does crossing over occur. (1 mark)

B) How do identical and functional twins arise (4 marks)

i. Identical twins

ii. Fraternal twins

6. Explain how tendrils of climbing plants coil around a support (3 marks)

7. Name the spore producing structure in

a) Bryophytes. (2 marks)

b) Pteridophytes. (2 marks)

8. A) Account for the loss of dry weight of cotyledons in a germinating bean seed. (1 mark)

B) State three effects of gibberellins on shoot of plants (3 marks)

9. State the characteristics that can separate the following organisms into respective classes:, Tsetse fly and spider. (2 marks)

Tsetse fly	Spider

10. I) State the function of root hair in plants. (1 mark)

II) State why the cell walls of root hairs are thin. (1 mark)

III) State two benefits of transpiration in plants (2 marks)

11. State the two functions of the cell organelle that contains chlorophyll in plants. (2 marks)

12. Give any three functions of human skin. (1 mark)

13. State two adaptations of the liver to its functions. (2 marks)

14. State three functions of cervix in female mammals. (3 marks)

15. State two preventive measures which would be taken to control hepatitis B. (2 marks)

16. State two views held by the theory of organic evolution on the origin and nature of life (2 marks)

17. Distinguish between tropisms and taxes (2 marks)

18. Name the homeostatic functions carried by hypothalamus (1 mark)

19. Why do guard cells lie in close contact with epidermal cells? (1 mark)

20. Give a reason why mammalian lungs are closed in an airtight pleural membrane. (1 mark)

21. State two adaptations of choroid to its function (2 marks)

22. A) Define the term backcross as used in genetics (1 mark)

B) i) Name the chromosome on which the gene that leads to turf of hairs in the ears is located. (1 mark)

ii) Define disjunction type of chromosomal mutation. (1 mark)

23. i) what do you understand by the cell specialization (1 mark)

ii) Give the function of body tube in a light microscope (1 mark)

24. State three advantages of fossil records. (3 marks)

25. A) What is meant by vestigial structures?. (1 mark)

B) A name two vestigial structure in man. (2 marks)

26. State the function of

i) Seminiferous tubules (1 mark)

ii) Oviduct

(2 marks)

27. Name three components of DNA molecule.

(3 marks)

28. State the changes that take place during inhalation in mammals in the following

(2 marks)

i) Ribcage

ii) Diaphragm

29. I) State the function of Pseudopodia in Amoeba.

(2 marks)

II) Name the type of cells in human body which shows a similar biological process as one shown by amoeba above.

(2 marks)

30. A) State the meaning of HIV in the scientific field

(1 mark)

B) Name three effective ways of preventing HIV transmission to un-infected person.

(3 marks)

31. Name three functions of cerebellum.

(3 marks)

GOLDLITE ONLINE SUPPLIES
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KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name Admission number
Candidate's Signature.....Date.....

ALLIANCE GIRLS HIGH SCHOOL TRIAL 1

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

Instructions to candidates

- g) Write your name and admission number in the spaces provided above.*
- h) Sign in the spaces provided above.*
- i) Answer **ALL** questions in the spaces provided.*
- j) All workings **MUST** be clearly shown where necessary.*
- k) This paper consists of **11** Printed pages.*
- l) Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing*

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Question	Maximum score	Candidate's score
1-34	80	

Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing.

1. In mitosis in animals chromatids failed to separate and moved to the opposite poles

i) Name the organelle that the cell was lacking.

(1 mark)

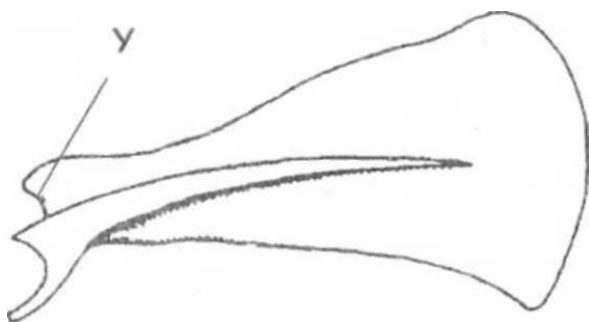
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ii) State **one** function of the named organelle.

(1 mark)

.....

2. Study the part of the mammalian skeleton represented by the diagram below.



a. Name the bone

(1 mark)

.....

b. Which bone articulates with the

above bone at point Y? (1 mark)

.....

c. Name the type of joint formed at

point Y. (1 mark)

3. List down **two** functions of placenta in mammals.

(2 marks)

.....

.....

.....

4. Explain why food is stored in an insoluble form in the cells of living things.

(2 marks)

.....

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5. State **two** homeostatic functions of the liver.

(1 mark)

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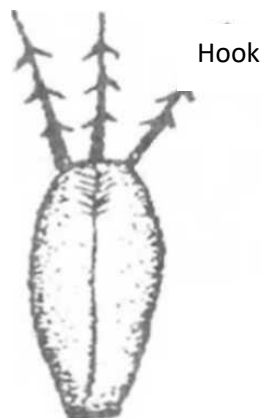
6. State how the tracheoles of insect are adapted to their functions.

(2 marks)

.....

.....

7. The diagram below shows a mature fruit from a dicotyledonous plant.



a) To what a group of fruits does the specimen belong? **(1 mark)**

.....

b) Name the method of dispersal of fruit **(1 mark)**

.....

8. State the functions of each of the following parts of microscope.

a) Diaphragm **(1 Mark)**

.....

.....

b) Eye piece lens. **(1 Mark)**

.....

.....

9. Enzyme + substrate $\longrightarrow$ Enzyme + products.

From the above equations name **two** properties of enzymes shown. **(2 marks)**

.....

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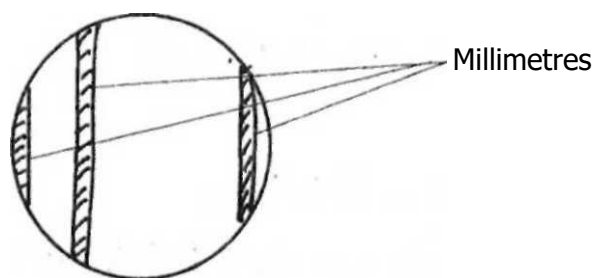
10. Explain why plants shed of their leaves. **(2 marks)**

.....

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11. A form **one** student trying to estimate the size of an onion cell observed the following on the microscope field of view.



He counted 20 cells across the field of view. Calculate the size of one cell in micrometres **(2 marks)**

.....

12. Name **two** organisms that form the biological environment of malaria parasite. **(2 Marks)**

.....

13. Name the organelle that performs each of the following functions in a cell. **(2 Marks)**

a) Break down worn out organelles.

.....

b) Transport proteins

.....

14. An organism with an exoskeleton, segment body, two pairs of legs per segment, a pair of eyes and a pair of short antennae belongs to the class? **(1 mark)**

.....

15. Explain the following

a) When transplanting a seedling, it's advisable to remove some of the leaves.

.....

b) There are generally fewer stomata's on the upper surface of a terrestrial leaf than on the lower surface. **(1 mark)**

.....

16. Name the carbohydrate that is

a) Found in abundance in mammalian blood.

(1 mark)

.....

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

.....

17. Explain why

a) Red blood cells burst when placed in distilled water while plant cells remain intact. (2 marks)

.....

.....

b) Fresh water protozoa like amoeba do not burst when placed in distilled water. (2 Marks)

.....

c) Stored in potato tuber

.....

18. a) The equation below represents oxidation of certain food substrate.



i) Calculate the respiratory quotient.

.....

.....

ii) Which type of food substrate is being oxidised?

.....

b) Explain the meaning of the term oxygen debt. (1 Mark)

.....

19. Define Apical Dominance. (1 Mark)

.....

20. State 3 characteristics of skeletal muscles. (3 Marks)

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21. A person was found to pass out large volumes of dilute urine frequently

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

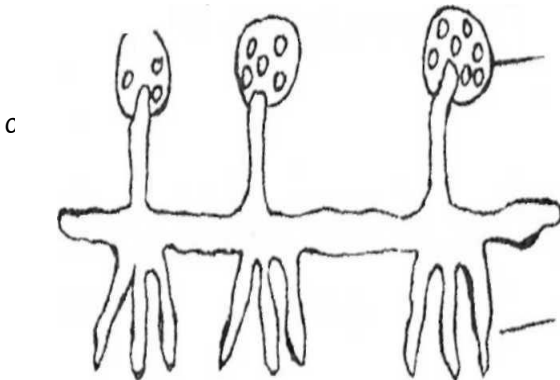
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ii) Name the hormone the person was deficient.

(1 mark)

.....

22. The diagram below represents a mature bread mould (Rhizopus)



a) Name the kingdom to which bread mould belongs (1 mark)

.....

b) Name the structures A and B (2 marks)

.....

.....

c) State the role of the part labelled C. (1 Mark)

.....

23. Explain the meaning of the following terms in human reproduction.

a) Implantation (1 mark)

.....

b) Gestation period (1 mark)

.....

24. Distinguish between genotype and phenotype

.....

25. Give **two** advantages homoiotherms have over poikilotherms. (2 marks)

.....

.....

26. Distinguish between hypogeal and epigeal germination. (2 marks)

.....

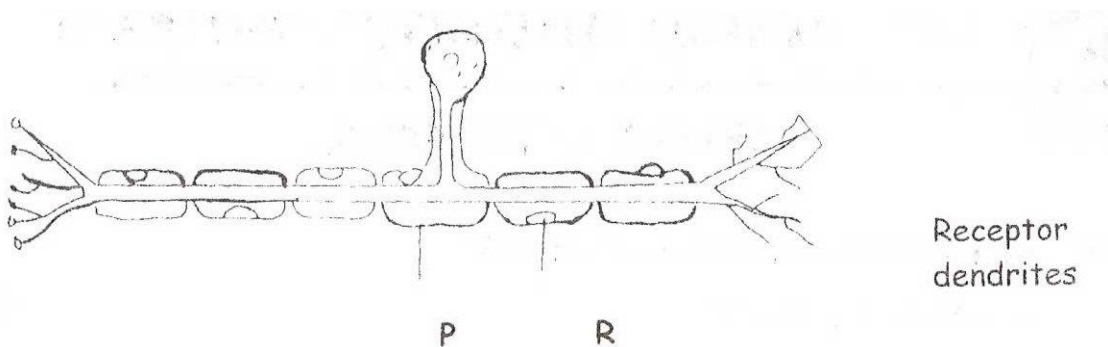
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27. State one weakness of Lamarckian theory of evolution. (2 marks)

.....

.....

28. The diagram below represents a neurone.



a) Name the neurone represented. (2 marks)

.....

b) What is the function of the part labelled P and R. (2 marks)

.....

c) Using an arrow, indicate the direction of the impulse on the diagram. (1 mark)

.....

29. Name **two** structures of gaseous exchange in plant. (2 marks)

.....

.....

30. State **two** roles of water during the process of germination. (2 marks)

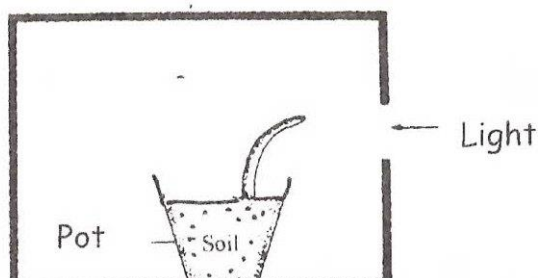
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31. Give **three** structural differences between arteries and veins. (3 marks)

.....

.....

32. An experiment was set up to investigate the effect of light on a growing maize seedling. The seedling was covered with a darkened box with only one opening. After one week, it appeared as follows.



Darkened room

a) Name the type of response shown by the seedling **(1 mark)**

.....

b) Explain how the response named in (a) above occurs. **(3 marks)**

.....

.....

.....

33. a) Define photosynthesis **(2 marks)**

.....

.....

b) Name **two** products formed during the light stage of photosynthesis. **(2 marks)**

.....

.....

34. Identify **two** ways through which HIV / Aids virus can be transmitted. **(2 marks)**

.....

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GOLDLITE ONLINE SUPPLIES
Kenya Certificate of Secondary Education
KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name Admission number
Candidate's Signature.....Date.....

KENYA HIGH SCHOOL TRIAL 1

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

Instructions to candidates

- a) Write your name and admission number in the spaces provided above.
- b) Sign in the spaces provided above.
- c) Answer **ALL** questions in the spaces provided.
- d) All workings **MUST** be clearly shown where necessary.
- e) This paper consists of **11** Printed pages.
- f) **Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing**

FOR EXAMINER'S USE ONLY.

Question	Maximum score	Candidate's score
1-28	80	

1. What do the following branches of Biology entail? (2marks)

(a) Cytology

.....

.....

(b) Entomology

.....

.....

2. State TWO characteristics of kingdom Monera that are not found in other kingdoms. (2marks).

.....

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3. Two species in an ecosystem cannot occupy the same niche. Explain. (1 mark)

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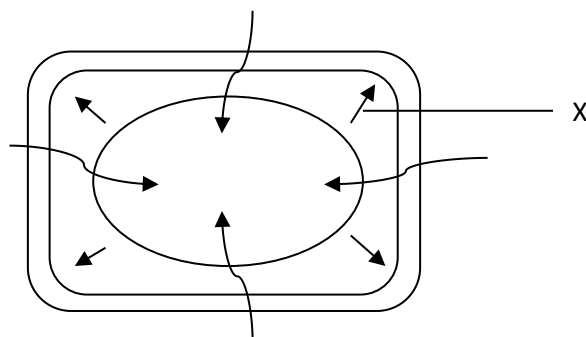
4. State the significance of metamorphosis to the life of insects. (2 marks)

.....

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5. The diagram below shows results of what happens to plant cell when placed in a certain solution.



a) What was the nature of the solution in which the cell was placed? (1 mark)

.....

.....

- b) Identify the force represented by the arrow X and explain how it develops. (2 marks)
-
-
-
6. Which organelle would be numerous in the following cells; (2 marks)
- a) Liver cell
-
-
- b) Palisade cell
-
-
7. The scientific names of three animals leopard, wolf and lion in the family carnivora are; Panthera pardus, Canis lupas and Panthera leo respectively.
- a) Why are scientific names given in Latin? (1 mark)
-
-
- b) What does *Canis* refer to? (1 mark)
-
-
- c) Giving a reason, state the organisms that are MOST closely related. (1 mark)
-
-
8. The word equation below shows a biological process.
- Water $\longrightarrow$ Hydrogen atom + oxygen
- a) Name the process. (1 mark)
-
-
- b) Where does the process named in a) above take place? (1 mark)
-
-
- c) State two conditions necessary for the process to occur. (2 marks)
-
-

9. a) What is the importance of heartbeat in blood circulation? (1 mark)

.....

.....

b) If the nerve supply to the heart of a mammal is severed, the rhythmic heart movement will still go on and the heart continues to beat. Explain this observation. (1 mark)

.....

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10. The ovaries of an expectant woman can be removed after the first four months of pregnancy without terminating the pregnancy. Explain. (2 marks)

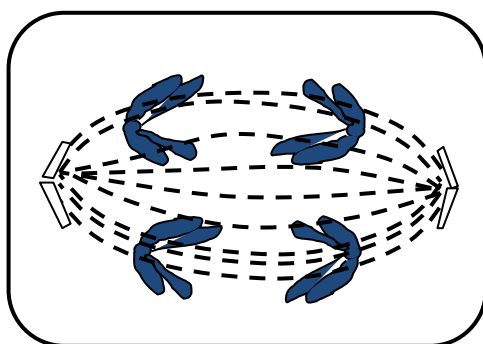
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11. The diagram below represents a stage during cell division.



a) Name the stage of cell division. (1 mark)

.....

.....

b) Give two reasons for your answer in a) above. (2 marks)

.....

.....

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.....

c) State the significance of this stage of cell division in living organisms. (1 mark)

.....

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12.) Name the causative agent for the following diseases;

a) Typhoid

(1 mark)

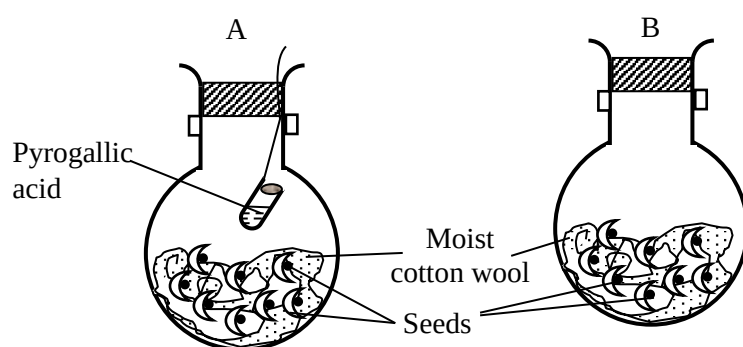
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b) Syphilis

(1 mark)

.....
.....

13. A student set up an experiment as shown in the diagram below. The set up was kept at room temperature for one week.



a) What was the aim of the experiment?

(1 mark)

.....
.....

b) State the expected observation at the end of the experiment.

(2 marks)

.....
.....
.....
.....

c) Account for the observation made in set up A.

(1 mark)

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.....
.....

14. a) Name the respiratory surface for gaseous exchange in insects.

(1 mark)

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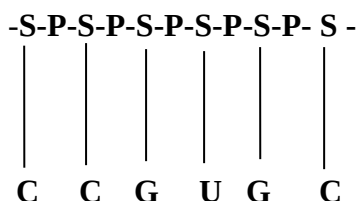
b) State two adaptations of the site named in a) above. (2 marks)

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15. A portion of a nucleic acid is shown below;



a) Name the nucleic acid to which the portion belongs. Give a reason. (2 marks)

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b) Write down the sequence of bases of a complimentary strand to the one above. (1 mark)

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16. Explain the meaning of the following terms;

a) Basal Metabolic Rate (1 mark)

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b) Oxygen Debt (1 mark)

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17. In an experiment, the concentration of ions in the cell sap of reeds growing in a swampy area and the water in the swamp were determined. The data below was obtained. Study it and answer the questions that follow:

Sample	Na ⁺	Mg ²⁺	Cl ⁻	SO ₄ ²⁻
Cell sap	50	11	101	13
Swamp water	1.2	30	10.2	0.67

a) Name the process by which uptake of the following ions by the reeds occurs. (2 marks)

Na⁺ ions

Mg²⁺ ions

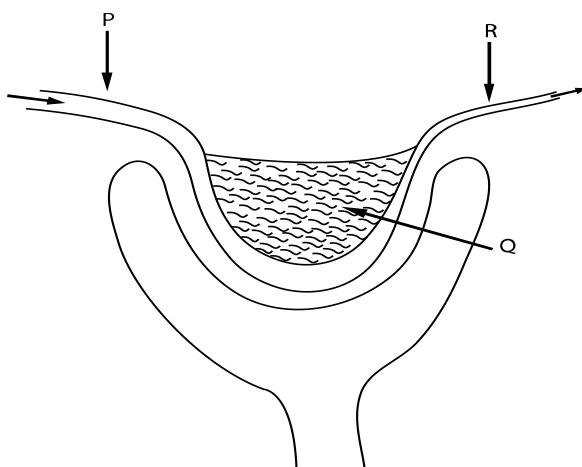
- b) What effect would reduced oxygen supply have on the uptake of sulphate ions? (2 marks)
Explain your answer.

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18. The diagram below shows a part of a nephron.



- a) State TWO differences in composition of blood in parts P and R. (2 marks)

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- b) State a characteristic feature of blood capillaries in part Q that is not found in other capillaries (1 mark)

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19. (a) Name two types of light sensitive cells found in the human eye. (1 mark)

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- (b) State ONE functional difference between the cells you have named in a) above. (1 mark)

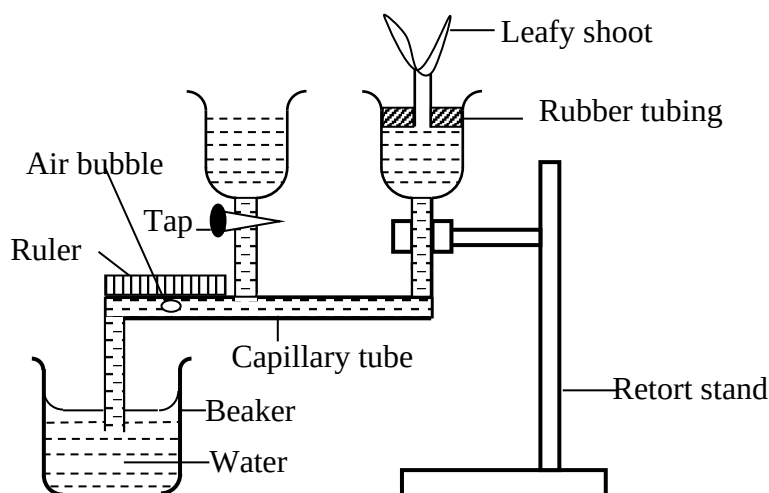
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20. A set up was used to investigate a certain process in plants as shown in the diagram below.



(a) What process was being investigated? (1 mark)

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(b) Giving a reason, state one precaution that should be taken when setting up this experiment. (1 mark)

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(c) How would changes in temperature affect the rate of movement of the air bubble? (1 mark)

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21. Julie observed eight onion epidermal cells across the field of view of a light microscope. If the field of view was 4mm in diameter, estimate the average size of the cells in micrometers (1mm= 1000 μ m). (2 marks)

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22. How is support brought about in herbaceous plants? (2 marks)

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23. State the functions of the following parts of the mammalian ear.

a) Eustachian tube

(1mark)

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b) The utricle and sacculus

(1mark)

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24. In an experiment, a shoot of maize seedling was exposed to light on one side. It was observed that it grew bending towards the direction of the source of light.

a) Explain how the bending towards light occurs.

(2marks)

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b) State the survival value of the response named in a) above.

(1 mark)

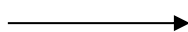
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25. The diagram below show various types of gene mutations.

Mutation I;

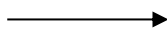
K	L	M	N	O	P	Q
---	---	---	---	---	---	---



K	L	M	P	Q
---	---	---	---	---

Mutation II;

S	T	U	V	W	X	Y
---	---	---	---	---	---	---



S	T	U	N	W	X	Y
---	---	---	---	---	---	---

i) Identify the type of mutations shown above

(2 marks)

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ii) Name one disorder that results from gene mutation II.

(1 mark)

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26. State THREE adaptations of a leaf to gaseous exchange. (3 marks)

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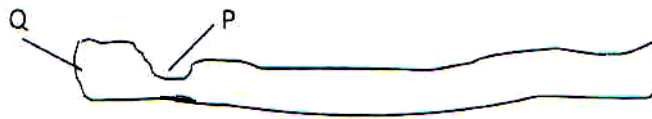
27. Distinguish between analogous structures and homologous structures. For each structure give an example. (4 marks)

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28. The diagram below shows a bone that was obtained from a mammal.



a) Identify the bone. (1 mark)

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b) i) Name the type of joint formed at the part marked P. (1 mark)

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ii) State one characteristic of the joint named in b) i) above. (1 mark)

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29. What is the importance of the pollen tube in fertilization in plants? (1 marks)

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30. a) The action of pepsin stops in the duodenum. Explain. (2 marks)

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b) State two functions of the muscles found in the alimentary canal of mammals. (2 marks)

GOLDLITE ONLINE SUPPLIES
Kenya Certificate of Secondary Education
KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name Admission number
Candidate's Signature.....Date.....

MERU SCHOOL TRIAL SERIES 1

231/1

BIOLOGY

PAPER 1

TIME: 2 hours

Instructions to candidates

- m) Write your name and admission number in the spaces provided above.*
- n) Sign in the spaces provided above.*
- o) Answer **ALL** questions in the spaces provided.*
- p) All workings **MUST** be clearly shown where necessary.*
- q) This paper consists of **11** Printed pages.*
- r) Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing*

FOR EXAMINER'S USE ONLY.

Question	Maximum score	Candidate's score
1-32	80	

1. a) Explain the meaning of the term binomial nomenclature. (1 mark)

- b) Scientific name *Lantana camara* refers to a green herbaceous plant. Other related plants include, *Lantana trifoliata* and *Vitex trifoliata*. From the list identify the plants belonging to the same genus. (2 marks)

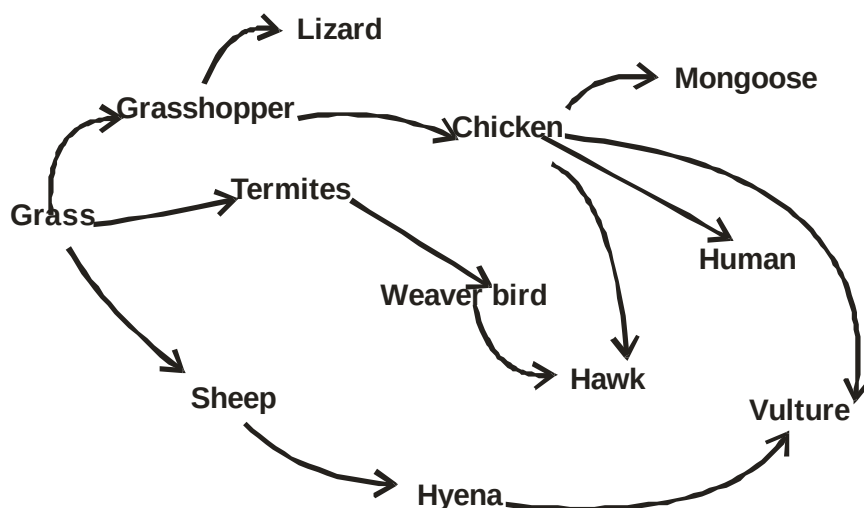
2. Name cell structures that perform the following functions. (2 marks)

- a) Controlling materials, entering and leaving the cell.

- b) Transporting cell secretions.

3. A student estimated the diameter of a field of view to be 2.8mm. The diameter was occupied by four onion cells. Estimate in micrometers the diameter of onion cell. Show your working. (2 marks)

4. The figure below illustrates a food web in a certain ecosystem.



From the food web:-

- a) Draw the shortest food chain. (1 mark)
- b) Identify the organisms with the highest.

i) Number of predators (1 mark)

ii) Biomass (1 mark)

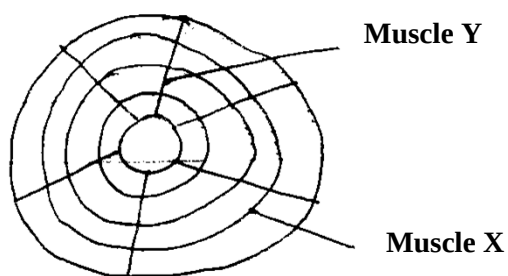
5. Name the type of competition exhibited by the following relationship. (2 marks)

a) Second generation of tobacco plant and the parent plant.

b) Different types of herbivores in an enclosed grass paddock.

6. Name the gamete cells that are produced by the ovaries in mammals. (1 mark)

7. The diagram below shows the iris of a mammalian eye



a) What happens to muscle Y and X when the eye focus at an object in bright light?

i) Muscle X (1 mark)

ii) Muscle Y (1 mark)

b) State how the following parts of a mammalian eye are adapted to their function.

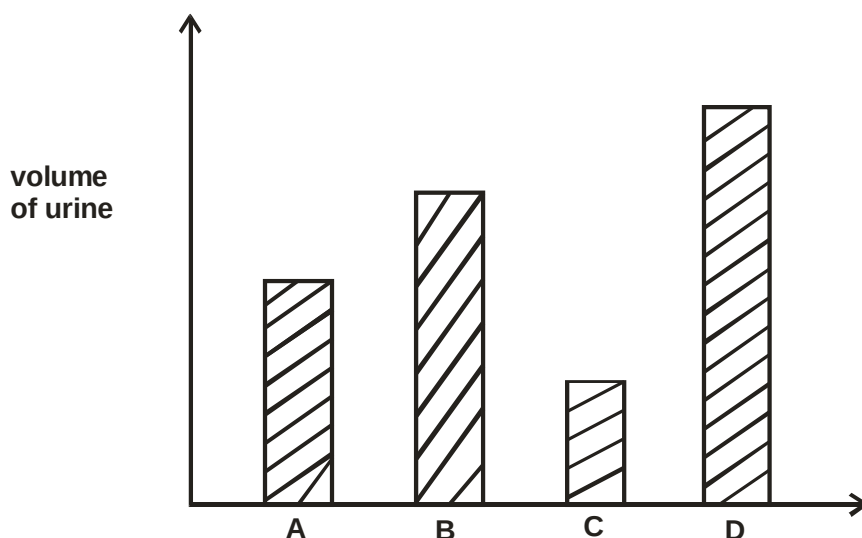
i) Fovea (1 mark)

ii) Choroid (1 mark)

8. State **three** ways in which *Ascaris lumbricoides* is adapted to living in its habitat. (3 marks)

9. Name process through which nitrites are converted into nitrates. (1 mark)

10. The quantity of urine passed per day was measured in four mammals; A, B, C and D of the same species in their natural habitats. The results were as shown below.



- i) In what form is nitrogenous waste likely to be in organism D? Explain. (3 marks)

- ii) Name **one** kidney disease in humans. (1 mark)

11. a) Define the following terms. (2 marks)

- i) Divergent evolution

- ii) Vestigial structures.

- b) State the role of continental drift in evolution. (2 marks)

12. Explain the role of ecdysone hormone. (1 mark)

13. a) What is reflex action? (1 mark)

b) Give **three** components of a simple reflex arc. (3 marks)

14. Where does gaseous exchange take place in terrestrial plants? (2 marks)

15. a) Complete the following table. (3 marks)

	Gland	Hormone secreted	Effect of the hormone
i)	Thyroid		
ii)		Androgen	
iii)	Placenta		

b) Give **two** differences between endocrine and nervous systems. (2 marks)

16. Define the following terms as used in genetics.

i) Heterozygote (1 mark)

ii) Transgenics (1 mark)

Explain why: (2 marks)

i) Wind pollinated flowers produce very high number of pollen grains.

ii) After 4 months of pregnancy, the ovaries of a woman may be removed without ending pregnancy.

17. A DNA strand was found to have the base sequence as shown below.

A – T – T – C

a) What is the base sequence of the mRNA synthesized by the strand? (1 mark)

b) State **two** causes of chromosomal mutations. (2 marks)

18. What is dental formula? (1 mark)

19. In reference to leaves only, state **two** adaptations in each that adapt the following types of plants to their habitats.

i) Xerophytes (2 marks)

ii) Hydrophytes (2 marks)

20. Give **two** advantages of homoiotherms over poikilotherms. (2 marks)

21. Explain why it is advisable to breathe through the nose rather than the mouth in man. (2 marks)

Name the valve which opens during:

i) Systole (1 mark)

ii) Diastole (1 mark)

22. The table below shows the concentration of some mineral ions in the cell sap of root hairs and in soil water.

Mineral ion	Concentration in cell sap	Concentration in soil water
Magnesium	75	115
Nitrates	126	47

a) Give physiological process through which magnesium ions uptake by the plant occurs. (1 mark)

b) The plant was sprayed with a respiratory poison, State with a reason, the ions uptake which was affected. (3 marks)

23. Name the type of vitamins that you would recommend for patients with the following symptoms.

i) Poor night vision (1 mark)

ii) Excessive bleeding after injury. (1 mark)

24. Study the process below.

Amino acid + Amino acid → Product B + Water

a) Name product B (1 mark)

b) Which process is represented above? (1 mark)

25. Give **two** products of light reaction of photosynthesis which are used in dark stage. (2 marks)

26. Explain how the following factors affect the rate of transpiration. (4 marks)

i) Wind

ii) Sunken stomata

27. Name the disease caused by the following microorganisms in man. (2 marks)

i) *Entamoeba histolytica*

ii) *Bordetella pertussis*

28. Students observed an animal with the following features.

- Dorsa-ventrally flattened body
- One pair of legs per segment
- Poison claws on the head

i) Name the class to which the animal belongs. (1 mark)

ii) State the mode of feeding of the animal. (1 mark)

29. Distinguish between active and passive immunity. (2 marks)

30. Explain the importance of the following during preparation of temporary slides. (2 marks)

i) Cutting thin sections

ii) Staining

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KCSE TOP NATIONAL SCHOOLS TRIAL SERIES 2025

Name Admission number

Candidate's Signature.....Date.....

KABARAK HIGH SCHOOL

231/1

BIOLOGY

PAPER 1

TIME: 2 HOURS

Instructions

- a) Write your name, class and admission number in the space provided above.
- b) Write the date of the examination and sign in the space provided above.
- c) Answer **all** the questions in the spaces provided.
- d) You may be penalized for wrong spelling especially technical terms.

For Examiner's Use Only

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1-34	80	

This paper consists of 10 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.

1. Give reasons for the following precautions during collection and after study of specimens. (2 marks)
 - a) Returning specimens to their natural habitat.
 - b) Not destroying the specimen
2. List down reasons for the following importance of carrying out classification of living things. (2 marks)
 - a) Putting living organisms in the correct group
 - b) Arranging information about living things in an orderly manner
3. State **two** differences between modern and artificial classification (2 marks)
4. State **three** distinguishing characteristics of bacteria (3 marks)
5. Enumerate **three** ways of controlling spread of epidemic diseases (3 marks)
6. Explain how the following factors influence distribution of organisms in an ecosystem.
 - (i) Change in pH in soil habitat (2 marks)
 - (ii) Strong wind in the Maasai Mara National park (2 marks)
7. State **two** behavioral adaptations of a lion which makes it efficient for predation (2 marks)
8. Name the parasite that causes amoebic dysentery (1 mark)
9. State any **three** effects of oil spillage in aquatic environment (3 marks)
- 10.
11. Name the respiratory surfaces of the following; (2 marks)
 - a) Mosquito larvae
 - b) Tadpoles
12. a) What name is given to the reaction of the body after coming into contact with pollen grains (1 mark)
 - b) Explain how anaphylaxis occurs (2 marks)
- 13.
14. List down **two** processes that transport manufactured food in plants (2 marks)
15. Describe the function of insulin in the human body (2 marks)
16. Define homeostasis (1 mark)
17. Distinguish between positive and negative feedback as used in homeostasis (1 mark)
18. a) Premature baldness is due to a recessive gene located on one of the sex chromosomes. Construct a genetic cross of marriage where the husband has premature baldness. Use letter h to represent the gene for premature baldness.
 - b) Explain why most of the colour blind people are male (2 marks)
19. Explain how surface area to volume ratio affects the rate of diffusion (2 marks)
20. Distinguish between osmosis and active transport (1 mark)
- 21.
- 22.

- (2 marks)
23. Distinguish between guttation and transpiration (1 mark)
24. Name the tissues in plants responsible for transport of; (2 marks)
- Carbohydrates
 - Mineral ions
25. State the functions of the following plant tissues (3 marks)
- Endodermis
 - Sclerenchyma
 - Piliferous layer
- 26.
27. Define mutation (1 mark)
28. The diagrams below illustrate some of beaks in birds.
- Identify the evolutionary phenomenon displayed by the beaks above (1 mark)
 - Explain how the phenomenon above might have arisen (2 marks)
29. List any **two** limitations of fossil record as evidence of organic evolution (2 marks)
30. Explain why Lamarck's theory of evolution is disputed by modern scientists (1 mark)
31. List **two** hormones that stimulate germination (2 marks)
32. Name **two** parts in a cell where respiration occurs (2 marks)
33. State **two** structural adaptations of anemophilous flowers (2 marks)
34. State the functions of the following in human digestion (2 marks)
- Cholecystokinin
 - Smooth muscles in the stomach wall (1 mark)