NAME: ……..…… INDEX NO: ..…...……

SCHOOL:……..

231/1
BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
2 HOURS

BOMET DISTRICT MOCK EXAMINATION
Kenya Certificate Of Secondary Education 2012

231 / 1
BIOLOGY
PAPER 1

INSTRUCTIONS TO CANDIDATES

- *Answer **ALL** questions in this paper in the spaces provided.*

For Examiner's Use Only

Questions	Maximum Score	Candidate's Score
1-27	80	

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

1. **Give three** examples of continuous variations in human beings. (3mks)

   ……

   ……

2. **State** the changes that take place in the skin to reduce heat loss when it gets cold. (3mks)

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3. (i) **Name** the **main** product of the dark stage of photosynthesis. (1mk)

   ……

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

   ……

   ……

4. **State** the function of the following

   (i) Coarse adjustment Knob. (1mk)

   ……

   ……

   (ii) Diaphragm. (1mk)

   ……

   ……

5. (a) **What** is fertilization? (2mks)

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   (b) **Explain** how double fertilization takes place in plants. (2mks)

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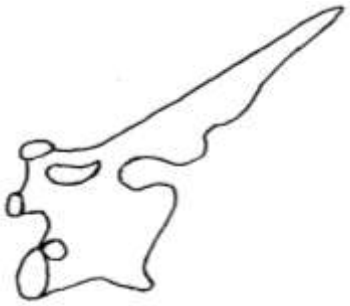
6. The diagram below represents a mammalian vertebra.



(a) **What** is a vertebra? (1mk)

……

……

(b) (i) **Identify** the vertebra represented above. (1mk)

……

(ii) **Give two** reasons for your answer in b (i) above. (2mks)

……

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7. **State two** reasons why blood flows under high pressure in arteries than veins. (2mks)

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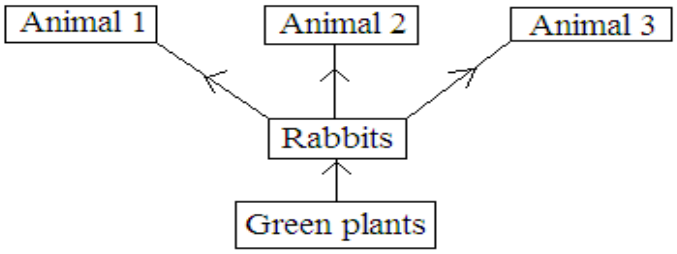
8. The flow chart shows part of a food relationship in an ecosystem.



(a) (i) **Name** the food relationship shown. (1mk)

……

(ii) **How many** trophic levels are shown in the diagram? (1mk)

……

(b) **What** is the **main** source of energy in the ecosystem? (1mk)

……

9. (i) **State two** regions in the human alimentary canal where starch is digested. (2mks)

……

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(ii) **Give** a reason for your answer in 9 (i) above (1mk)

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10. **State** the structural adaptation of the shape of the following. (3mks)

(i) Tilapia fish

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(ii) Mitochondria

……

(iii) Pinna of the mammalian ear

……

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

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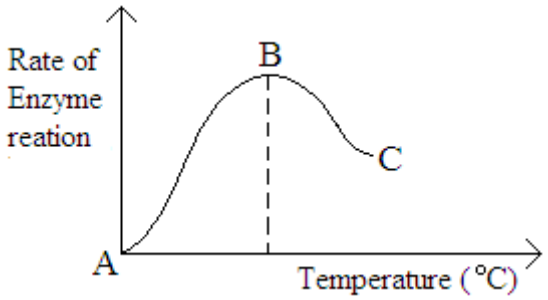
12. The graph below shows action of heat on enzyme reaction.



(a) **What** is the effect of temperature on the rate of enzyme reaction? (2mks)

……

……

……

(b) **State** the relationship between temperature and enzyme activity. (2mks)

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13. (a) **Distinguish** between pyramid of numbers and Pyramid of biomass. (2mks)

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(b) **Give** a reason why pyramid of biomass is a better representation of an ecological relationship.

(1mk)

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……

14. **State** the functions of each of the following parts of male reproductive system. (3mks)

(a) Sertoli cells

……

……

(b) Epidydimis

……

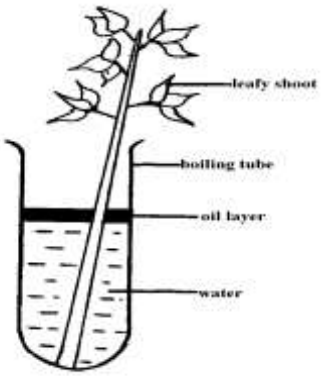
……

(c) Seminiferous tubules.

……

……

15. Some students set up the experiment shown below to investigate a certain physiological process in plants. After one hour they place cobalt chloride paper on leaf surface.



(a) **What** process was being investigated? (1mk)

……

……

(b) **State** the role of the oil layer in the experiment. (1mk)

……

……

(c) **Suggest** the changes observed on the cobalt chloride paper after one hour. (1mk)

……

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16. **Explain** why student visits latrine to urinate more frequently on cold days. (2mks)

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17. **Name** the type of skeletons found in the following animals. (3mks)

(i) Insects

……

(ii) Earthworms

……

(iii) Man

……

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

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

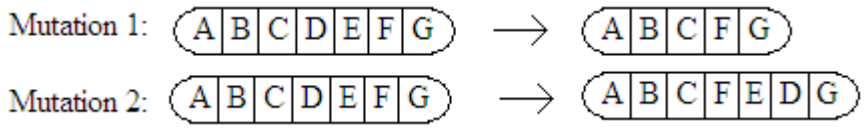
……

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

……

……

19. The diagram below shows various types of gene mutations..



(a) **Identify** the type of gene mutation shown above. (2mks)

Mutation 1 ……

Mutation 2 ……

(b) **Distinguish** between gene and chromosomal mutations. (2mks)

……

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

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

……

21. **Explain** how marine fish regulate their osmotic pressure. (3mks)

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22. **Name three** types of nerve cells found in the nervous system of vertebrates. (3mks)

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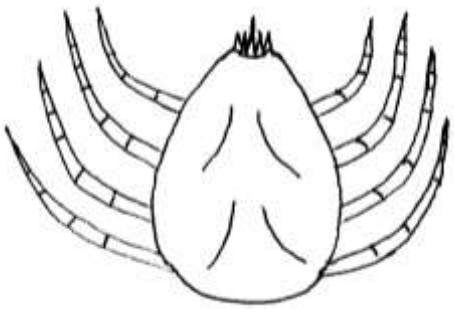
23. The diagram below represents a certain organism



(a) **Name** the class to which the organism belongs. (1mk)

……

(b) **Name two** other organisms which belong to the class named in (a) above. (2mks)

……

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24. **State three** ways in which tracheole system in insects is adapted for its functions. (3mks)

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25. **Name** the cell organelle that performs each of the following functions. (2mks)

(i) Destroy worn out organelle

……

(ii) Tissue respiration

……

26. **State** the type of solution that makes the plant cell:- (2mks)

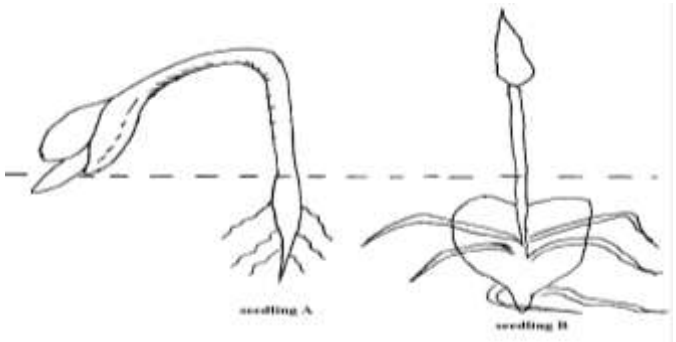
(i) Flaccid

……

(ii) Turgid

……

27. The diagram below represents a stage of growth in two different seeds.



(a) **Identify** the type of germination exhibited by seedlings A and B. (2mks)

Seedling A ……

Seedling B ……

(b) **State** the role of oxygen in germination. (1mk)

……

……

NAME: ……ADM NO:……

CLASS: ……

BIOLOGY
PAPER 2
THEORY
APRIL,2012
TIME 2 HOURS

KAPSABET GIRLS' HIGH SCHOOL
PRE-MOCK EXAMINATION
Kenya Certificate Of Secondary Education 2012

INSTRUCTIONS TO CANDIDATES

- *Write your name and Index number in the space provided above.*
- *Answer **ALL** the questions in section **A** in the spaces provided on the question paper.*
- *In section **B** answer question **6(compulsory)** and either question **7 or 8** in the spaces provided after question **8.***

For Examiner's Use Only.

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

SECTION A(40 MARKS)

Answer* all *the questions in the spaces provided.

1. In an experiment to investigate a factor affecting photosynthesis, a leaf of a potted plant which had been kept in the dark overnight was covered with aluminium foil as shown in the diagram below.

The setup was kept in sunlight for three hours after which a food test was carried out on the leaf.

(a) **Which** food test was carried out? (1mk)

……

(b) (i) **State** the results of the food test. (2mks)

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(ii) **Account** for the result of the food test. (2mks)

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(c) (i) **Why** was the set up kept in sunlight for three hours. (1mk)

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(ii) **Why** was it necessary to keep the plant in the darkness before the experiment? (1mk)

……

(d) Other than light **state one other** factor that affects the rate of photosynthesis. (1mk)

……

2. (a) **Write** the sequence of messenger RNA (m – RNA) that would be coded from the DNA strand shown below.

C – A – T – G – A – A – G – T

Sequence of m-RNA

…… (1mk)

(b) (i) **What** is gene mutation? (1mk)

……

……

(ii) **State two** disorders in human beings caused by gene mutations. (2mks)

……

……

(c) A cow produced a calf with an extra tail.

(i) **What** is the genetic name given to the calf? (1mk)

……

(ii) **What** name is given to the factors in the environment that encourage or speed up mutation? (1mk)

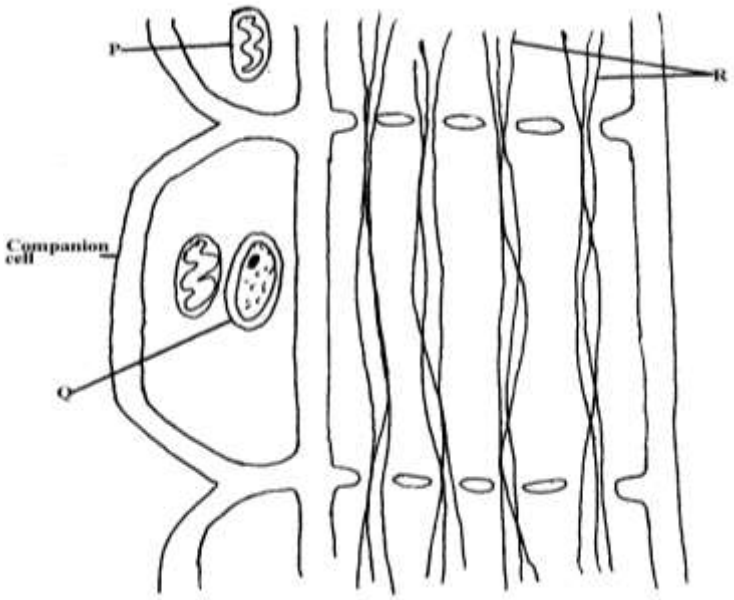
……

(d) **State** the significance of chiasma formation during meiotic cell division. (2mks)

……

……

3. The diagram below represents part of a phloem tissue. (3mks)



(a) **Name** the structures labelled P, Q, and R (3mks)

P ……..

Q ……

R ……

(b) **State** the function of the phloem tissue. (1mk)

……

……

(c) (i) **State** how the functioning of the phloem tissue is affected if the companion cell is destroyed. (1mk)

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

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(d) **State two** structural differences between phloem and xylem tissues. (2mks)

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4. The table below shows different percentage composition in inhaled, alveolar and exhaled air.

	Percentage of total volume			
	Oxygen	Carbon (IV) oxide	Water vapour	Temperature (^{0}C)
Atmospheric	20.85	0.04	Variable	Variable
Alveolar	13.8	5.5	Saturated	37
Exhaled	15.30	4.0	Saturated	37

(a) Using the table **explain** why :-

(i) The volume of oxygen decreases in exhaled air. (2mks)

……

……

(ii) The volume of carbon (IV) oxide increases in the exhaled air. (1mk)

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……

(b) **Suggest** the reason for the sarutation of water vapour in exhaled and alveolar air.

(3mks)

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(c) Other than health status, **state two** other factors that affect the rate of breathing in man.

(2mks)

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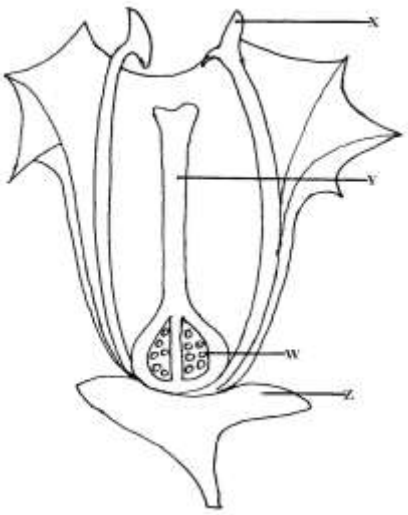
5. The diagram below represents a flower.



(a) **Name** the parts labelled X and Y. (2mks)

X ……

Y ……

(b) **Describe** the ovary position. (1mk)

……

……

(c) (i) **Suggest** an agent of pollination of the flower above. (1mk)

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

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……

(d) On the diagram above, which part do you expect to find haploid nucleus after meiosis? (1mk)

……

(e) In the flower above its sepals cell was found to have 20 chromosomes. **What** would be the number of chromosomes found in the endosperm cell of the flower embryo sac after fertilization? (1mk)

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……

(f) **State one** way in which flowers prevent self – pollination. (1mk)

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SECTION B (40 MARKS)

Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided.

6. A group of students estimated the population of grasshoppers in the school compound. The table below shows the number of grasshoppers collected from the eight sites within the compound.

Site	1	2	3	4	5	6	7	8
No. of grasshoppers	280	50	190	220	85	300	175	30

(a) **Draw** histograms to represent the number of grasshoppers collected from each site. (5mks)

(b) The students caught 240 grasshoppers marked them and then released them. After five days they caught 160 grasshoppers and found that 40 were marked. **Work** out the grasshoppers population in the compound. (2mks)

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(c) **Identify** the method used in (b) above. (1mk)

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(d) **Name** the instrument the students used to collect and mark the grasshoppers. (2mks)

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(e) **State** the limitations of the method identified in (c) above. (3mks)

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(f) **State** observable adaptations the students would have noted in the grasshopper regarding.

(i) Locomotion. (3mks)

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(ii) Protection. (2mks)

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(iii) Feeding. (2mks)

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7. (a) **Name Five** methods of excretion in plants. (5mks)

(b)**Give Three** reasons why plants lack complex excretory system (3mks)

(b) **State six** excretory products in plants and give their economic uses. (12mks)

8 . Describe the adaptations of the mammalian heart to it' s functions (20 mks)

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Name…… **Index No. …….**

School ……...

231/1
BIOLOGY
Paper 1
THEORY
July/August- 2012
Time: 1 ½ Hours

BONDO DISTRICT SECONDARY SCHOOLS EVALUATION EXAMINATIONS – 2012
Kenya Certificate of Secondary Education (K.C.S.E)

231/1
BIOLOGY
Paper 1
THEORY
July/August- 2012
Time: 1 ½ Hours

INSTRUCTIONS

- *Write your name, school and Index number in the spaces provided above.*
- *Answer all questions in the spaces provided.*

For Examiner's Use only

Question	Maximum Score	Candidates Score
1 – 27	**80**	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. Explain how sunken stomata lower the rate of Transpiration. (2mks)

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2. a) Which structures make Angiospermaphyta more efficient in transport of water and mineral salts than the Gymnospermaphyta. (1mk)

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b) How are the structures named in (a) above adapted to that function? (3mks)

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3. Differentiate between guttation and transpiration. (2mks)

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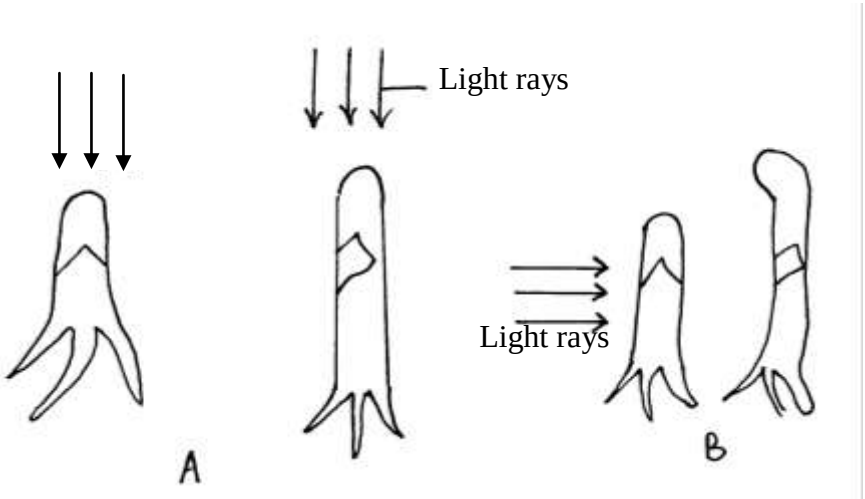
4. An experiment was carried out to investigate a growth response in a maize seedling as shown in the diagrams below.



a) State the type of response being investigated. (1mk)

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b) Explain the response exhibited by the shoot. (4mks)

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5. The oxidation of a certain substrate is represented by the chemical equation shown below.

$C_{57}H_{104}O_6 + 80O_2 \longrightarrow 57CO_2 + Energy$

a) Calculate the respiratory quotient (RQ) of the substrate. (2mks)

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b) Identify the above substrate. (1mk)

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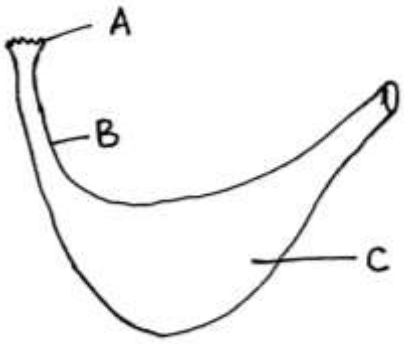
6. The following diagram represents apart of a flower.



a) Name the parts labelled B and C. (2mks)

……

……

b) State the function of part A. (1mk)

……

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7. a) Name the process in human beings that may lead to addition or loss of one or more chromosomes. (1mk)

……

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b) State three benefits of polyploidy in plants to a farmer. (3mks)

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8. State the functions of each of the following organelles.

a) Nucleolus (1mk)

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b) Golgi apparatus (2mks)

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9. The paddles of whales and fins of fish adapt the animals to aquatic habitats.

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

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b) What name is given to such structures? (1mk)

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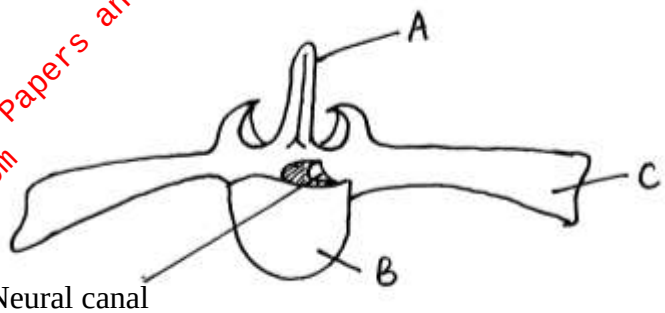
10. Study the diagram shown below of the anterior view of a lumbar vertebra of a mammal.



Neural canal

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

A ……

B ……..

b) State the function of part C. (1mk)

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11. What are the limitations of the use of the quadrat method in estimating population? (3mks)

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12. What are the functions of the following hormones in the female reproduction.

a) Follicle Stimulating Hormone (FSH) (1mk)

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b) Oxytocin (1mk)

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……

13. Name the respiratory surfaces of the following organisms:

(i) Spider …… (1mk)

(ii) Mosquito larvae …… (1mk)

(iii) Nile Perch …… (1mk)

14. a) Give a reason why glucose does not normally appear in urine even though it is filtered in the mammalian Bowman's capsule. (2mks)

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b) Which hormones are involved in the salt-water balance in the human body. (2mks)

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15. Explain why the presence of carboxyhaemoglobin in the blood leads to death. (2mks)

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16. The relative rates of photosynthesis in a certain plant were determined at different temperatures. The results were as shown in the table below.

Temp. ^{0}C	**Relative rate of photosynthesis (mg/hr)**
25	20
30	70
35	100
40	25

Account for the rate of photosynthesis at

(i) 35^0 C (1mk)

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(ii) 40^0C (1mk)

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17. Explain how the following are adapted to their functions.

(a) Guard cell (3mks)

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(b) Spony mesophyll (1mk)

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18. a) Differentiate between incomplete and complete metamorphosis. Give example in each case. (2mks)

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b) State the functions of Ecdysone hormone. (2mks)

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19. Study the equation below and answer the questions that follow:

$$\text{Sucrose} \xrightarrow[\text{Heat}]{\text{Enzyme}} \text{Glucose} + A$$

a) Identify the product represented by A. (1mk)

……

……

b) Name the region in the alimentary canal where this process occurs. (1mk)

……

c) Name the enzyme responsible for the above reaction. (1mk)

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……

20. When preparing plant sections to be observed under the microscope:

a) Water is used to mount the tissues

b) Very thin sections of the plant should be cut

Give a reason why each of these steps are carried out. (2mks)

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21. Explain two ways in which the trachea of an insect is adapted to perform its functions. (2mks)

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22. Outline two ways in which bisexual flowers are adapted to cross-pollination. (2mks)

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

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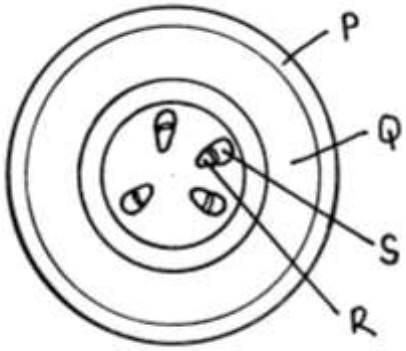
24. The diagram below shows a cross section of a dicotyledonous plant stem. Study it and answer the questions that follow.



a) Identify parts labelled P and Q. (2mks)

P ……

Q ……

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

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……

……

c) What differences would you expect to observe between this section and that of a root from the same plant? (2mks)

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25. State how the human beings sperm cell is adapted to its function. (3mks)

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26. a) Name the compound that stores energy released during oxidation of glucose. (1mk)

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b) A goat weighing 15.2kg requires 216KJ while a rat weighing 50g requires 2736KJ per day. Explain. (2mks)

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27. a) Explain why mosquitoes become resistant to insecticides with time. (2mks)

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b) Other than the example in (a) above, give two other examples of natural selection in action. (2mks)

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NAME: ……..…… INDEX NO: ..…...……

SCHOOL:……..

231/1
BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
2 HOURS

BUNGOMA DISTRICT MOCK EXAMINATION
Kenya Certificate Of Secondary Education 2012

231 / 1
BIOLOGY
PAPER 1

INSTRUCTIONS TO CANDIDATES

- *Answer **ALL** questions in this paper in the spaces provided.*

For Official Use Only

1	2	3	4	5	6	7	8	9	10	11	12	13	14
15	16	17	18	19	20	21	22	23	24	25	26	27	**TOTAL**

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

1. (a) **State** the role of the DNA in a cell. (1mark)

……

……

(b) **Give two** structural adaptations of the chloroplast to its function. (2marks)

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2. (a) **Define** the term balanced diet. (2marks)

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(b) **State** the importance of roughage in a diet. (1mark)

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3. (a) **State** the composition of an ecosystem. (2marks)

……

……

(b) **Explain** why the ecosystem is said to be a self- sustaining natural unit. (2marks)

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4. (a) **Differentiate** between the apical meristern and the cambium. (2marks)

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(b) **State** the role at the following in germination. (2marks)

(i) Hypocotyl in epigeal germination

……

(ii) Coleoptiles in hypogeal germination.

……

5. **Give three** structural differences between the skeletal muscles and smooth muscles. (3marks)

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6. (a) **State** the functions of the placenta in a pregnant mammal. (2marks)

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……

(b) **Give one** function of amniotic fluid during pregnancy. (1mark)

……

……

7. (a) **How** are the wind pollinated flowers adapted to their function? (2marks)

……

……

(b) **State two** advantages of cross – pollination. (2marks)

……

……

……

8. **Explain** how fossil records can be used as evidence for evolution. (3marks)

……

……

……

……

9. **State** how the leaf of the hydrophyte is adapted to its function. (3marks)

……

……

……

10. **Explain** the role of antidiuretic hormone when there is less water in the human body. (3marks)

……

……

……

11. (a) A form two student observed the skull of a carnivorous mammal; **State two** observable features that the student used to classify the skull as that of a carnivore. (2marks)

……

……

……

(b) **State** the function of the two features named in (a) above. (2marks)

……

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……

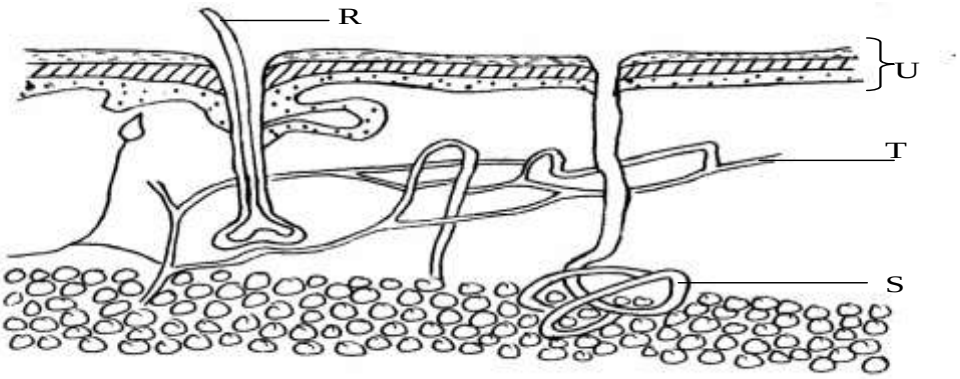
12. The plant shoot was observed to have curved towards unilateral source of light. **Explain** what happened. (3marks)

……

……

……

13. The diagram below represents a vertical section through a mammalian skin.



(a) **Name** the structure labeled **U** (1mark)

……

(b) **State** the physiological changes that would occur in the following structures when the surrounding temperature was raised towards 40^0C (3marks)

(i) **R :** ……

……

(ii) **T:** ……

……

(iii) **S:** ……

……

14. **State three** distinguishing features for members of phylum chordata. (3marks)

……

……

……

15. (a) **State the** reasons for the following adaptations of the xylem vessels. (2marks)

(i) Narrow lumen: ……

……

(ii) Lack of cross walls: ……

……

(b) **State two** distinguishing features of the phloem sieve tubes. (2marks)

……

……

……

16. **Study** the table below and till the blank spaces (3marks)

ORGAN	**HORMONE**	**FUNCTION**
Pituitary		(i) Causes ovulation (ii) Stimulate production of progesterone
Ovarian tissue	Oestrogen	
Pituitary	Follicle stimulating Hormone	

17. **State three** ways in which the vessels that link arterioles with venules are suited to carrying out their functions. (3marks)

……

……

……

……

18. (a) **How** do the following factors affect the rate of diffusion? (3marks)

(i) Surface area to volume ratio

……

(ii) Diffusion gradient

……

(iii) Temperature

……

(b) **Name** the physiological process that requires energy to occur. (1mark)

……

……

19. (a) **Define** the term habitat (2marks)

……

……

(b) **Explain** how competition is a factor that regulate the animal population in a habitat. (2marks)

……

……

……

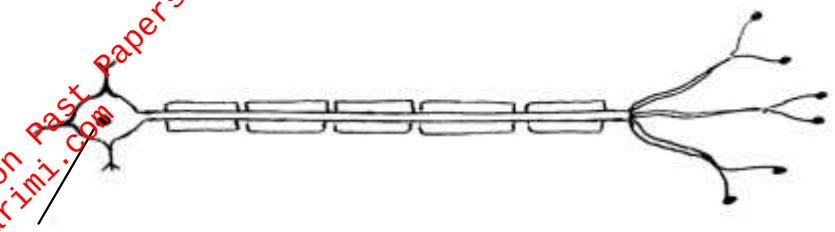
20. **State three** adaptations of the mammalian Nephron to reabsorption of useful substances into the blood stream. (3marks)

……

……

……

21. The diagrams below repents a nerve cell



(a) **Identify** the nerve cell. (1mark)

……

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

……

……

(ii) **Show** by use of an arrow the direction of flow of the nerve impulses. (1mark)

22. **State how** excessive use of agrochemicals affects the large water bodies. (2marks)

……

……

23. (a) **State** the functions of each of the following cell organelles (2marks)

(i) Golgi bodies

……

……

(ii) Smooth Endoplasmic

……

……

(b) **Name two** structures that are found in plant cells but absent is animal cells. (2marks)

……

……

24. **Explain** how the Mammalian alveoli are suited to gaseous exchange (3marks)

……

……

……

25. (a) **Name three** limiting factors that affect the rate of photosynthesis (3marks)

……

……

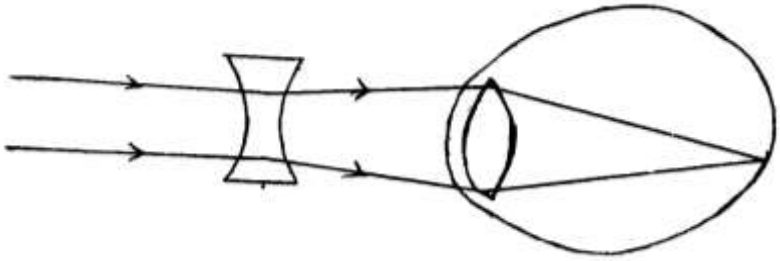
……

(b) **Which** of the limiting factor is used in the dark stage of photosynthesis? (1mark)

……

……

26. The diagram below illustrates a certain **eye defect**.



(a) State the eye defect in the above diagram (1mark)

……..

(b) (i) **State** the cause of the above eye defect (1mark)

……

……

(ii) **What role** does the concave lens play in the correction of the above defect? (2marks)

……

……

27. (a) Nitrogen in the atmosphere can not be directly utilized by plants. **State two** ways by which this Nitrogen is made available for plant use. (2marks)

……

……

(b) **State** the importance of saprophytic bacteria in the environment. (2marks)

……

……

NAME: …… INDEX NO:……

SCHOOL: ……

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME 2½ HOURS

BUNGOMA DISTRICT MOCK EXAMINATION
Kenya Certificate Of Secondary Education 2012

231 / 2
BIOLOGY
PAPER 2

INSTRUCTIONS TO CANDIDATES

- *Write your name and Index number in the space provided above.*
- *This paper has **two** sections **A** and **B**.*
- *Answer **ALL** the questions in section **A** in the spaces provided on the question paper.*
- *In section **B** answer question **6(compulsory)** and either question **7 or 8** in the spaces Provided after question **8.***

For Examiner's Use Only.

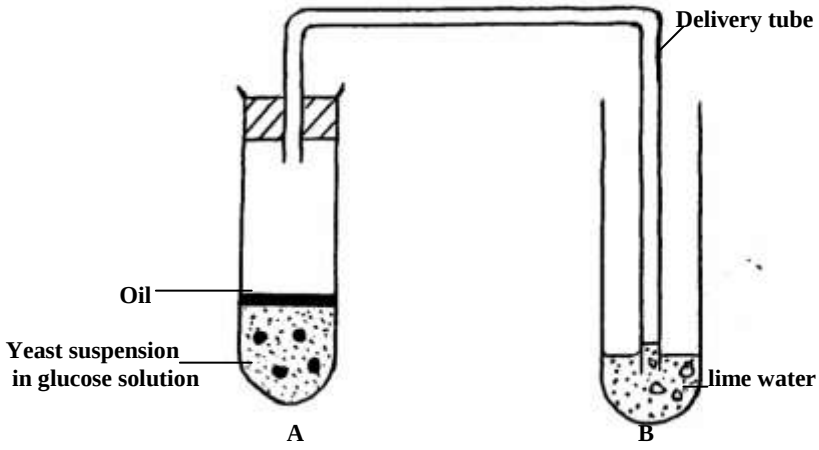
SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

This paper consists of 12 printed pages. Candidates should check the question paper to ensure that all the pages are printed as indicates and no questions are missing.

SECTION A (40 MARKS)

Answer ALL the questions in this section in the space provided.

1. The diagram below illustrates an experiment to demonstrate a certain biological process.



Before adding yeast suspension in tube **A**, the glucose solution was first boiled and cooled.

(a) **What** biological process was being demonstrated? (1mark)

……

……

(b) (i) **What** observation would be made in tube **B** after 20 minutes of the experiment? (2marks)

……

……

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……

……

(ii) **Account** for the observations made in (b) (i) above (2marks)

……

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……

(c) **Write** down an equation to summarise the reaction taking place in tube **A**. (1mark)

(d) **State two** industrial applications of the chemical reaction taking place in tube **A**. (2marks)

……

……

……

2. Haemophilia is due to a recessive gene located on the X- chromosome. A phenotypically normal male married a normal female and one of sons was a haemophilic.

(a) **Work out** the genotype of the other children (use letter **H** to denote the gene for normal blood clotting) (4marks)

(b) **Explain** why in a human population there will be more cases of haemophilia in males than females. (2marks)

……

……

……

……

(c) Apart from haemophilia, **name one** other genetic disorder of human blood caused by gene mutation (1mark)

……

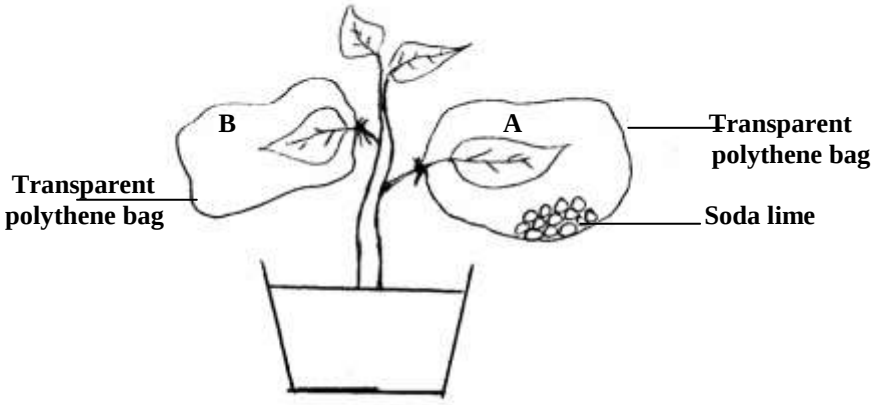
……

(d) **State** the importance of vitamin K in blood clotting. (1mark)

……

……

3. The diagram below represents an experimental set-up to investigate an aspect of photosynthesis.



The set up was placed in darkness for 24 hrs and then exposed to light for 5 hrs.

(a) **What** was the aim of the experiment? (1mark)

……

……

(b) Leaves **A** and **B** were tested for starch.

(i) **What** would be the expected results? (2marks)

……

……

……

(ii) **Give** reasons for your answer in (b) (i) above. (2marks)

……

……

……

(c) **What** was the role of leaf **B** in the experiment? (1mark)

……

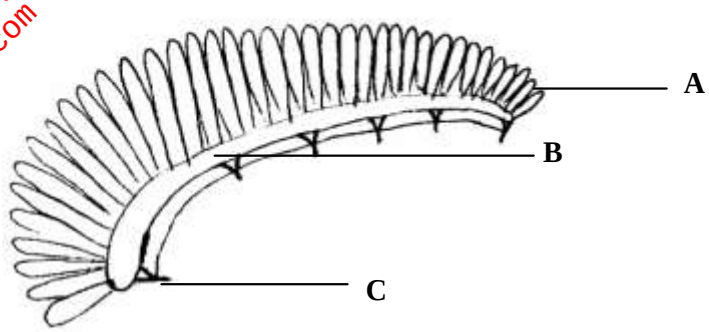
(d) **Why** was the set – up placed in darkness for 24 hours? (1mark)

……

(e) **Name** the organelle in a plant where photosynthesis takes place (1mark)

……

4. The diagram below represents the structure of a gill from a bony fish.



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

A: .....

B: .....

(b) **State** the function of the part labelled **C.** (1mark)

.....

.....

.....

(c) **Describe** the importance of counter flow system in the structure labelled **A**.

(2marks)

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.....

(d) **Describe the mechanism** of gaseous exchange in a protozoa. (3marks)

.....

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5. (a) **What** are halophytes? (1mark)

……

……

(b) **How** are halophytes able to overcome the problem of water absorption? (2marks)

……

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……

(c) **Explain** the role of each of the following feature on xerophytes.

(i) Sunken stomata (2marks)

……

……

……

……

(ii) Short life cycle (1mark)

……

……

(iii) Succulent stems and leaves (1mark)

……

……

(iv) Extensive superficial roots (1mark)

……

……

SECTION B (40 marks)

Answer question 6 (compulsory) in the space provided and either question 7 or 8 in the spaces provided after question 8.

6. In an experiment to investigate the effect of temperature on the activity of salivary amylase enzyme, test tubes containing 5 cm^3 of starch solution were placed in water baths maintained at different temperatures. After 30 minutes, 0.1cm^3 amylase solution was added into each of the tubes.

   At one minute intervals, a drop of the mixture in each tube was tested for presence of starch. The time taken for all the starch to be digested was taken and recorded. The results were as shown in the table below.

Temperature (^{0}c)	5	10	15	20	25	30	35	40	45
Time taken to digest all starch (mins)	80	60	48	26	18	9	3	14	75

(a) On the grid provided **plot** a graph of time taken to digest all the starch against temperature.

(6 marks)

(b) **What** was the optimum temperature range for this enzyme? (1mark)

……

……

(c) **Account** for the results obtained at

(i) 5^0C (2marks)

……

……

……

(ii) 45^0C (2marks)

……

……

……

(d) Apart from temperature **name three** other factors that would affect the above reaction.(3marks)

……

……

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(e) **Name two** regions in a human body where digestion of starch occurs. (2marks)

……

……

(f) (i) **Give three** metallic ions that act as enzyme co- factors in a human body. (2marks)

……

……

……

(ii) **What** is the role played by enzyme co- factors in the physiology of human body? (1mark)

……

……

(g) **Name** the major respiratory substrate in a mammalian body during severe starvation. (1mark)

……

7. (a) **What** is pollution? (2marks)

(b) **Describe** the effects of the various pollutants in water and soil to living organisms.(18marks)

8. **How** is the fish adapted to movement in water? (20marks)

Name…… **Index No. …….**

School ……...

231/1
BIOLOGY
(THEORY)
PAPER 1
JULY / AUG. 2012
2 HRS

BUTERE-MUMIAS DISTRICT MOCK EXAMINATION-2012

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

231/1
BIOLOGY
(THEORY)
PAPER 1
JULY / AUG. 2012
2 HRS

INSTRUCTIONS TO CANDIDATES

- Write your name and Index number in the spaces provided.
- Answer ALL the questions in the spaces provided.

For Examiner's Use Only.

Question	Maximum Score	Candidate's score
1 – 27	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. a) Other than through sexual intercourse state two other ways one can contract HIV and AIDS. (2mks)

……

……

……

……

b) State one control measure that can be taken to reduce the spread of HIV \ AIDS (1mk)

……

……

2. Explain why blood clotting does not occur inside the blood vessels. (1 mk)

……

……

3. Why is wilting important to plants on a hot sunny afternoon. (2mks)

……

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……

4. The equation below represents a metabolic process that occurs in a mammalian liver.

Amino acids $\xrightarrow{\text{Enzyme}}$ Organic compounds + Urea

a) Name the process represented by the equation above (1 mk)

……

……

b) What is the importance of the above process in mammals? (2mks)

……

……

……

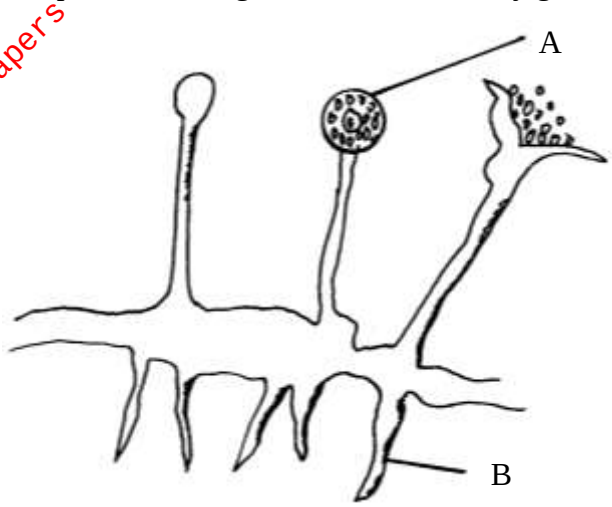
……

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

……

……

5. The diagram below represents an organism that commonly grows on damp rotting matter.



a)Identify the part labeled A (1mk)

……

……

b) Give two functions of the part labelled B. (2mks)

……

……

6 Explain why plants growing in low attitude areas grow faster than those in high attitudes (2mks)

……

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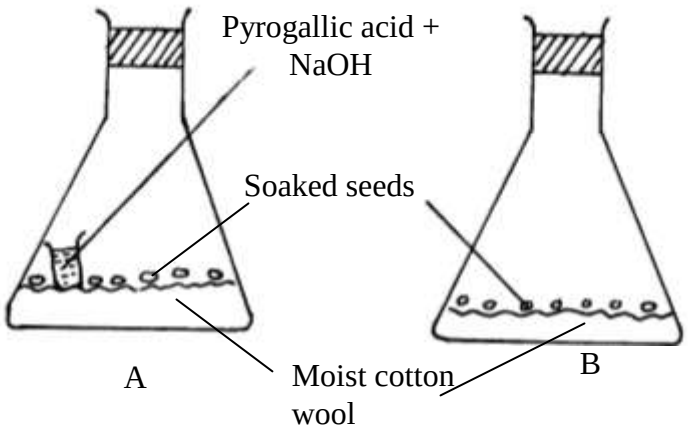
……

……

7 A student set up an experiment as shown in the figure below.



The set-up was left at room temperature for six days.

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

……

……

b) Explain the expected results after six days. (3mks)

……

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……

8. a) What are:

i) mutations? (1mk)

……

……

ii) mutagens? (1mk)

……

……

b) Name two disorders of human blood caused by mutations. (2mks)

……

……

……

……

9. State two ways in which tracheoles in insects are adapted to their functions. (2mks)

……

……

……

……

10. The diagram below represents a mature fruit

a) To what group of fruits does the specimen drawn above belong? (1mk)

……

……

……

……

b) With a reason name the agent of dispersal. (2mks)

……

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……

11. A certain plant was found to have 22 chromosomes in it's calyx cells. State the number of chromosomes present in the plants.

a) Ovule

……

……

b) Endosperm (2mks)

……

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……

……

12. Name the organelles that performs the following functions.

a) synthesis of RNA.

……

……

b) Formation of spindle fibres.

……

……

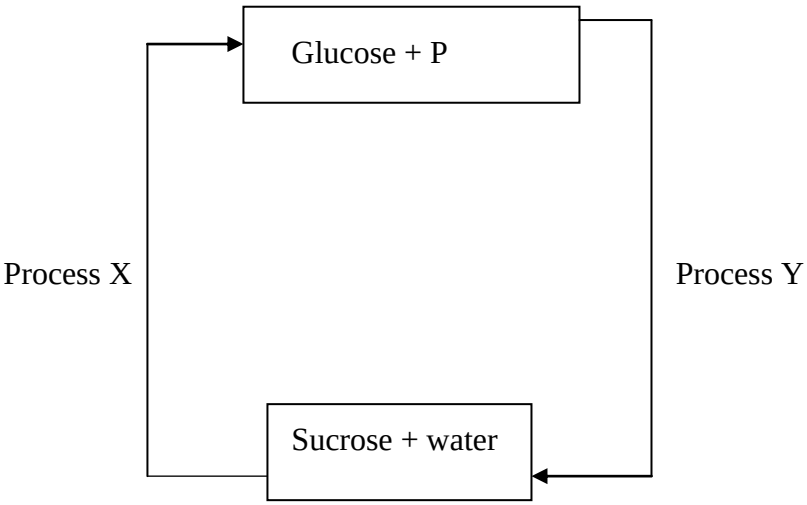
c) Synthesis of lysosomes

……

……

(3mks)

13. Below is a diagrammatic representation of varies processes in animals.



i) Name substance P (1mk)

……

……

ii) Name processes

X

……

……

Y

……

……

(2mks)

iii) Name the enzyme involved in process X. (1 mk)

……

……

14. Name the organism that causes;

a) malaria

……

……

b) cholera.

……

……

15. a) State the origin of corpus luteum. (1mk)

……

……

b) Name the hormone produced by the structure in (a) above and state it's role.during pregnancy.

(2 mks)

Hormone

……

……

Role

……

……

16. Explain four ways in which the skin is adapted to it's protective functions. (4mks)

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17. a) Distinguish between respiration and gaseous exchange. (2mks)

……

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b) The oxidation of a certain fat is represented by the chemical equation shown below.

$C_{57}H_{104}O_6 + 81\ O_2 \longrightarrow 57\ C\ O_2 + 5\ H_2O$ + Energy.

i) Calculate the respiratory quotient (RQ) of the fat molecule above. (2mks)

……

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……

18. Name the hormones that promote growth and maturation during

a) Moulting in insects

……

……

b) Metamorphosis in frog tadpoles. (2mks)

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19. a) Name the type of joint that articulates the pelvic girdle and femur. (1mk)

……

……

b) state the importance of the joint named in (a) above (1 mk)

……

……

……

……

c) Name the structure that attaches muscles to bones. (1mk)

……

……

20. a) state two adaptations of a RBC to it's function. (2mks)

……

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……

b) Name two ways in which carbon (iv) oxide is transported in a human's blood. (2mks)

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21. a) Differentiate between the following terms.

i) Plasmolysis

……

……

ii) Haemolysis. (2mks)

……

……

b) state one role of osmosis in living organisms (1mk)

……

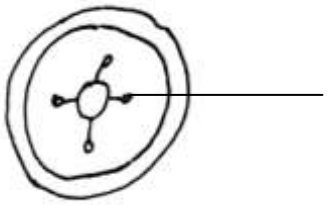
……

22. a) Define placentation. (1mk)

……

……

b) Name the type of placentation shown in the diagram below. (1mk)



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23. Distinguish between

a) Ecology and ecosystem. (2mks)

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b) Habitat and niche. (2mks)

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24. a) List two differences between simple and conditioned reflex actions. (2mks)

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b) Give one example of a simple reflex action. (1mk)

……

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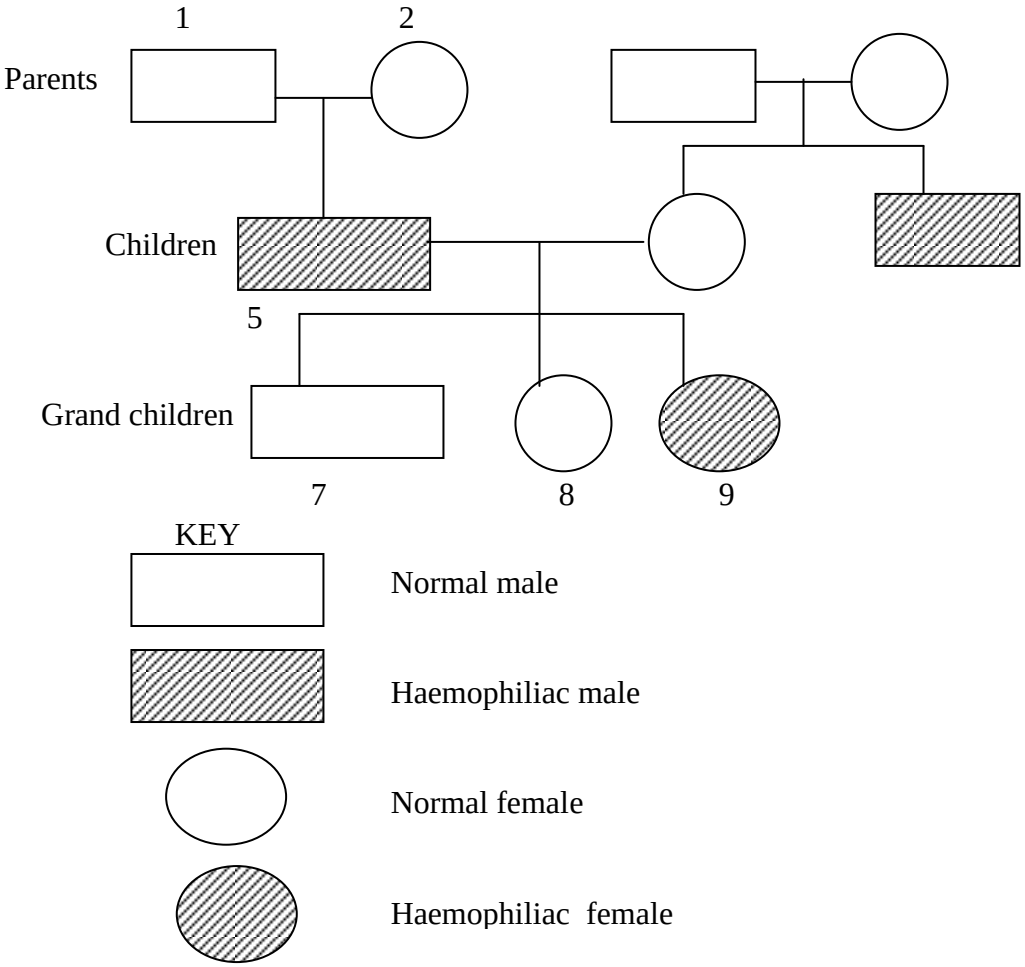
25. The following is a human pedigree showing the transmission of haemophilia. Study the diagram and answer the questions that follow. Let H represents normal conditions and h allele for haemophilia.



a) Write the genotypes of

i) Parents 1 and 2 (2mks)

……

……

ii) Grand child member 9 (2mks)

……

……

iii) Child number 5

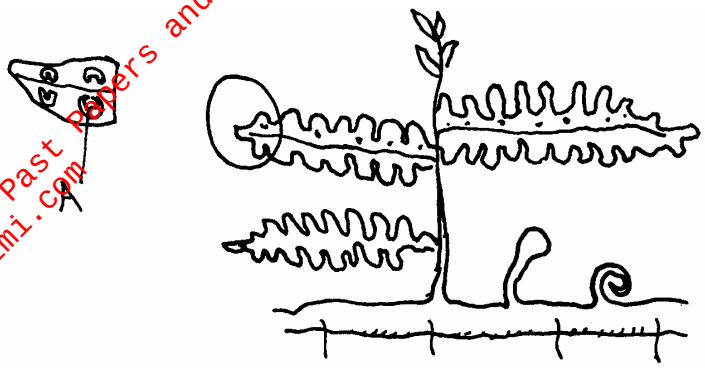
……

……

……

……

26. The diagram below shows a certain plant. Study it and answer the questions that follow..



a) i) Name the kingdom to which the plant belongs. (1mks)

……

……

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

……

……

b) Name the part labelled A. (1mk)

……

……

27. Explain comparative embryology as evidence of evolution. (2mks)

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END

Name…… **Index No. …….**

School ……...

231/2
BIOLOGY
(THEORY)
PAPER 2
JULY / AUG. 2012
2 HRS

BUTERE-MUMIAS DISTRICT MOCK EXAMINATION-2012

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

231/2
BIOLOGY
(THEORY)
PAPER 2
JULY / AUG. 2012
2 HRS

INSTRUCTIONS TO CANDIDATES

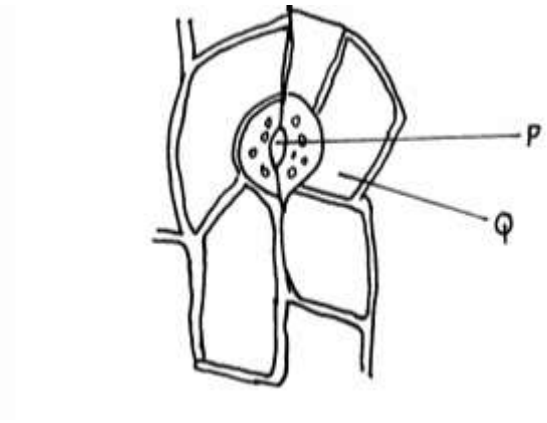
- Write your name and Index number in the spaces provided above.
- This paper consists of 2 sections: A and B.
- Answer ALL the questions in section A in the spaces provided.
- In section B, answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

For Examiner's Use Only.

Section	Question	Maximum Score	Candidate's score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
		80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. The diagram below shows a portion of a lower epidermis of a sukuma wiki leaf.



a) Name the parts labelled P and Q. (2mks)

P _____

Q _____

b) Briefly describe the photosynthetic theory of stomatal opening. (5mks)

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c) State one modification in the stomata of xerophyte plant other than being sunken and hairy.

(1mk)

……

……

2 a) What is sickle cell anaemia? (2mks)

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……

……

b) Give two advantages of a human being having a sickle cell trait. (2mks)

……

……

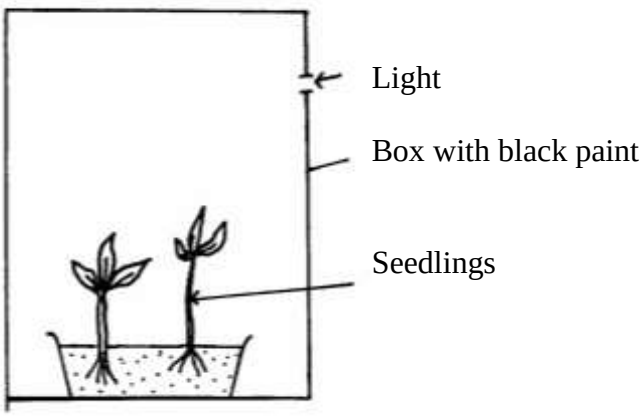
……

……

c) A normal male with respect to sickle cell anaemia marries a heterozygous female. What is the probability that their first born will be heterozygous like the mother? (show your working)

(4 mks)

Q3. A student set up an experiment as shown in the diagram below.



The set up was left for 4 days.

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

……

……

b) i) State the expected results after 4 days. (1mk)

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ii) Account for the results you have stated in (b) (i) above. (4mks)

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c) In another experiment, a student placed a seedling horizontally on moist cotton wool. Later the shoot grew upwards while the Radicle grew downwards. Explain why the radicle showed a downward curvature. (2mks)

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Q4 a) Birds have different shapes of beaks. Briefly explain how this came about with respect to evolution. (2mks)

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b) A farmer used a certain acaricide to spray his cattle over a long period of time. Initially, his cattle never suffered from east coast fever disease spread by ticks. Later, his cattle frequently suffered from this disease despite the spraying. Explain. (4mks)

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c) With an example in human beings define a vestigial structure. (2mks)

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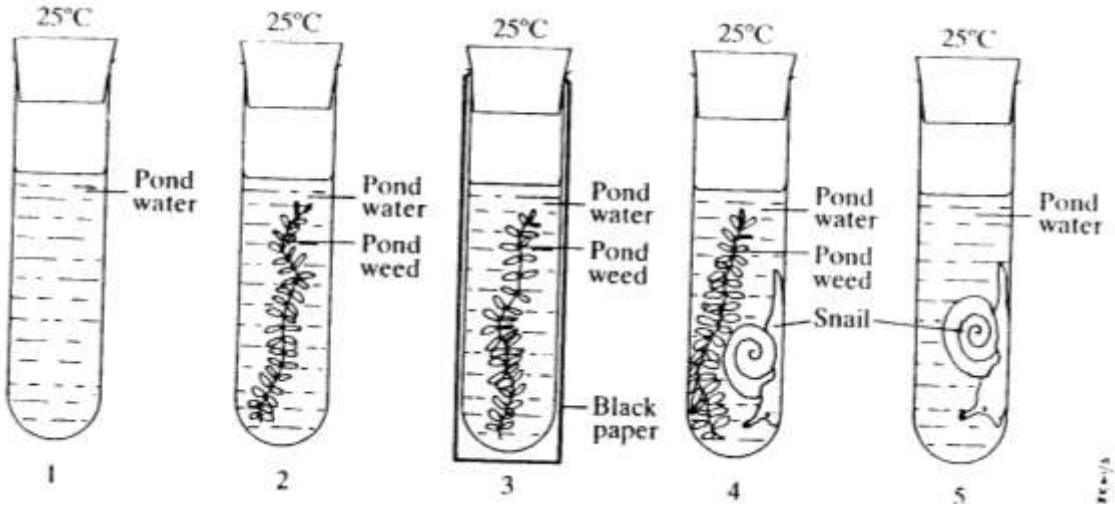
Q5 An experiment was set up as shown below using test- tubes, pond water , pond weeds, black paper and snails. All the tubes were placed in light at 25° C for sometime. A liquid called carbon dioxide indicator was added to each tube at the experiment. This liquid turns yellow in a high concentration of carbon dioxide, pink in a medium concentration of carbon dioxide and purple in a low concentration of carbon dioxide.



a) Complete the following results table. (2mks)

	Tube 1	Tube 2	Tube 3	Tube 4	Tube 5
Colour	Pink			Pink	Yellow

b) Explain why tube 1 was used in the experiment (1mk)

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c) Account for the results in tubes:

i) 3 (2mks)

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ii) 4 (2mks)

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d) Give one reason to explain why a terrestrial plant cannot be used in the above experiment

(1mk)

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SECTION B (40 marks)

Answer question 6 (compulsory) in the spaces provided and either question 7 or 8 in the spaces provided after question 8.

6. An experiment was carried out to investigate the growth rate of pollen tube of a morning glory flower over a period of time. The results are as shown in the table below.

Time (mins)	0	20	40	60	80	100	120	140	160
Growth of pollen tube (mm)	00	02	06	12	17	19.2	20.4	21	21.4

a) Using a suitable scale, draw a graph of growth of pollen tube against time. (6mks)

b) i) What was the length of the pollen tube at 90 minutes. (1mk)

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ii) At what time was the length of the pollen tube 9 mm? (1mk)

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b) With reasons, describe the growth pattern of the pollen tube between-;

i) O to 80 minutes (2mks)

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ii) 100 to 160 minutes (2mks)

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c) State the importance of the growth of pollen tube to the morning glory flower. (2mks)

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e) Describe the process of fertilization in a flowering plant. (6mks)

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7. Explain the sources of water pollution and their effects on aquatic ecosystem. (20 mks)

8. Describe the adaptations of the mammalian heart to it' s functions (20 mks)

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Name…… **Index No.** …….

School ……...

231/1
BIOLOGY
Paper 1
THEORY
July / August 2012
Time: 2 Hours

HOMABAY/SUBA DISTRICT MOCK EXAMINATION-2012

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

231/1
BIOLOGY
Paper 1
THEORY
July / August - 2012
Time: 2 Hours

INSTRUCTION TO CANDIDATES

- Answer All the questions in the spaces provided.

For Examiner's Use only

Question	Maximum Score	Candidate's Score
1 – 28	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. A student was viewing a slide preparation of an onion cell under high power of a light microscope and observed that the features of the cell were blurred.

a) Name the part of the microscope the student would use to obtain sharper focus of the features. (1mk)

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b) State the function of mirror in a light microscope. (1mk)

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2. a) Guard Cells are specialized epidermal cells. State two structural features which suit them to their functions. (2mks)

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b) Apart from gaseous exchange, give one other function of stomata. (1mk)

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3. The diagram below is a specialized mammalian cell.

a) Name the parts labelled B and D. (2mks)

B …….. D ……

b) State the functions of the following:

(i) Part labelled A. (1mk)

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(ii) the portion marked C. (1mk)

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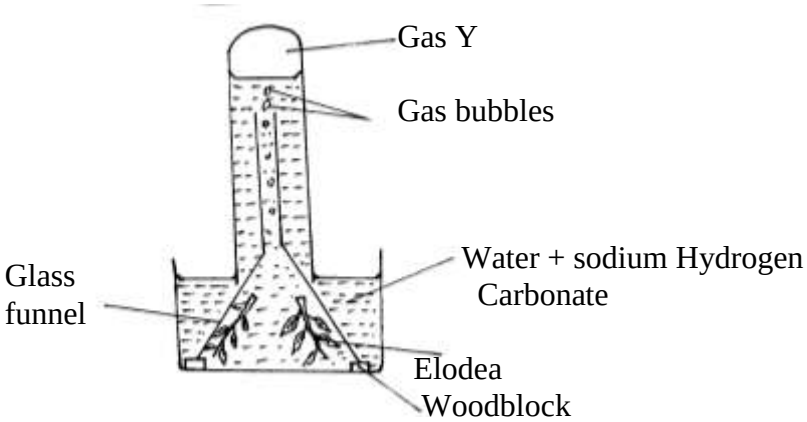
4. In an experiment to investigate a product of photosynthesis, the set up was as shown in the diagram below. The apparatus was placed in the sun.



a) State the confirmatory test for gas Y. (1mk)

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b) Explain why Elodea is the most suitable plant for this experiment. (2mks)

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c) State the function of the sodium hydrogen carbonate in the experiment. (1mk)

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

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

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6. A student measured the diameter of a mitochondrion on a photomicrograph whose magnification was x50000 to be 1mm. What was the actual size of the mitochondrion in micrometres? (2mks)

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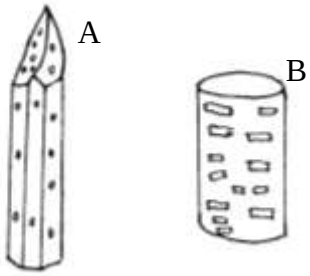
7. The diagrams below are of two conducting elements of the xylem tissue.



a) Identify each of them. (2mks)

A …… B……..

b) What makes the cellulose side wall of both A and B impermeable to water and solutes. (1mk)

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8. State two advantages of natural selection to organisms. (2mks)

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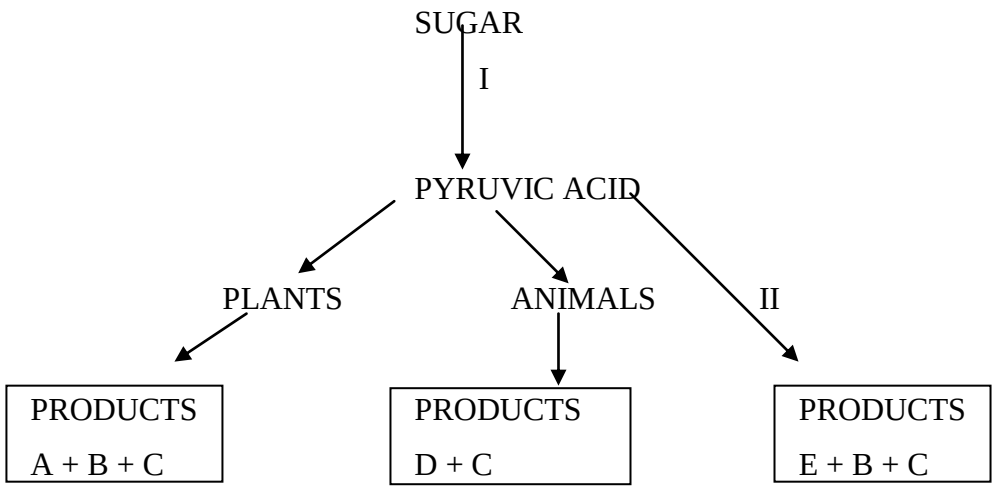
9. Study the flow chart below and answer the questions that follow.



a) Name the process taking place in step labelled I. (1mk)

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b) Give two reasons why accumulation of substances D in the body leads to an increase in the heartbeat. (2mks)

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c) Identify substance E. (1mk)

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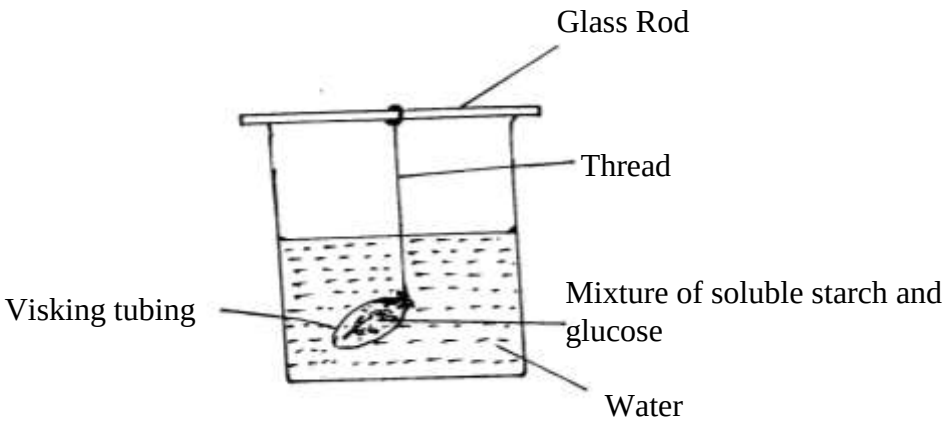
10. In an experiment to investigate certain physiological process, a student had his experiment set up as shown below.



To a certain the occurrence of the physiological process investigated he carried out food test on the water in the beaker. Both starch test and reducing sugar test at the beginning of the experiment were negative. After the set up was left undisturbed for 20 minutes, starch test was still negative but that of reducing sugar was positive.

a) State the physiological process which takes place in the human body illustrated by the set up above. (1mk)

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b) Name the part of the human body where the processes stated in (10) (a) above takes place. (1mk)

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11. A group of students were walking in the forest and they came across two organisms A and B showing the following characteristics

A	B
- Two pairs of walking legs per segment - One pair of antennae - Jointed appendages	- One pair of walking legs per segment - One pair of antennae - Jointed appendages

State the class to which each organism belongs. (2mks)

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12. a) Name the principal site of gaseous exchange in the lungs of humans. (1mk)

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b) State two ways in which the structure named in (12) (a) above is adapted to its function (2mks)

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13. An investigation was carried out on a terrestrial ecosystem. The population sizes and species biomass were determined and recorded as shown in the table.

SPECIES	POPULATION SIZE	SPECIES BIOMASS
A	1×10^3	1×10^3
B	1×10^3	1×10^{-1}
C	1×10^5	1×10
D	1×10	1×10^4

a) If these organisms had feeding relationships, construct a simple food chain involving all the organisms. (1mk)

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b) Construct pyramid of numbers using the data provided above. (2mks)

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c) State one disadvantage of using pyramid of numbers in expressing feeding relationships in ecological ecosystem. (1mk)

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14. Why is excretion of nitrogenous wastes more of a problem to animals than plants? (2mks)

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15. a) Give two possible ways of establishing the genotype of an organism whose genotype is unknown. (2mks)

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b) Why is it that a father can only transmit haemophilia to his daughter but not to his son? (1mk)

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16. a) Explain why swallowing and breathing in can not occur at the same time. (2mks)

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b) Why is it necessary that pepsin be produced in its inactive form? (1mk)

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17. a) Name the part of the brain which deals with regulation of body temperature. (1mk)

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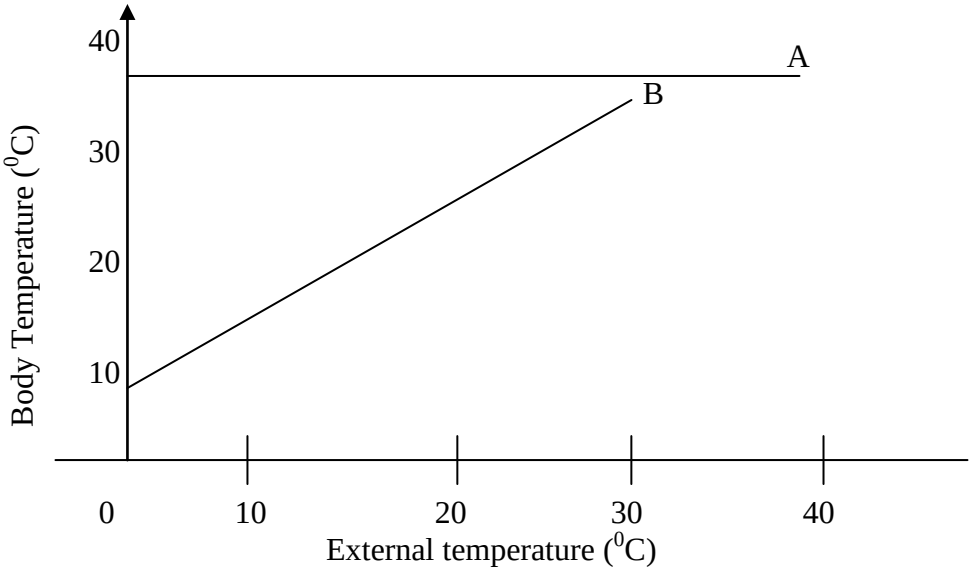
b) The graph below shows the temperature of two organisms A and B under different external temperatures. Study it and answer the questions that follow.



b) Give the terms used to describe organisms A and B. (2mks)

A ……

B ……

c) What advantage does organism A have over B. (1mk)

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18. State the distinguishing features used in separating members of the phylum Arthropoda into various classes. (2mks)

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19. a) Name two kinds of nuclei found in a mature pollen grain. (2mks)

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b) State what is meant by double fertilization in flowering plants. (2mks)

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20. Carbon (iv) oxide can be transported from the tissues to the lungs within the red blood cells. Give two advantages of this mode of transport. (2mks)

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21. a) Differentiate between the primary growth and secondary growth in woody plants. (2mks)

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

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22. a) State two significance of myelin sheath. (2mks)

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b) Name the cell that secretes the myelin sheath. (1mk)

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c) List the following in order in which they are involved in a simple reflex action.

Motor neurone, effectors, stimulus, Intermediate (relay) neurone, sensory neuron, impulse, receptor. (1mk)

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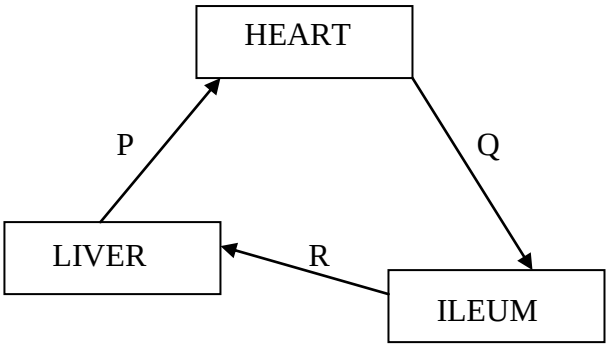
23. The diagram below shows part of the mammalian circulatory system.



a) Identify the blood vessel marked Q. (2mks)

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b) State two differences in the composition of blood in vessel R and P. (2mks)

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24. Name two strengthening tissues in woody plants. (2mks)

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25. State three structural adaptations of a thoracic vertebra to its function. (3mks)

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26. (i) Name the type of response exhibited by the growth of pollen tube towards the ovary in a flowering plant. (1mk)

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(ii) State two importance of response named in 26 (i) above to the plants. (2mks)

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27. Explain why sweat accumulates on a person's skin in a hot humid environment. (2mks)

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28. Name the deficiency disease caused by lack of vitamin A in human. (1mk)

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END

Name…… **Index No.** …….

School ……...

231/2
BIOLOGY
Paper 2
THEORY
July / August 2012
Time: 2 Hours

HOMABAY/SUBA DISTRICT MOCK EXAMINATION-2012

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

231/2
BIOLOGY
Paper 2
THEORY
July / August - 2012
Time: 2 Hours

INSTRUCTION TO CANDIDATES

- This paper consists of two sections A and B.
- Answer all questions in section A
- Answer question 6 [compulsory] and any other one question [7 or 8] in the spaces provided after question 8 from section B

For Examiner's Use Only

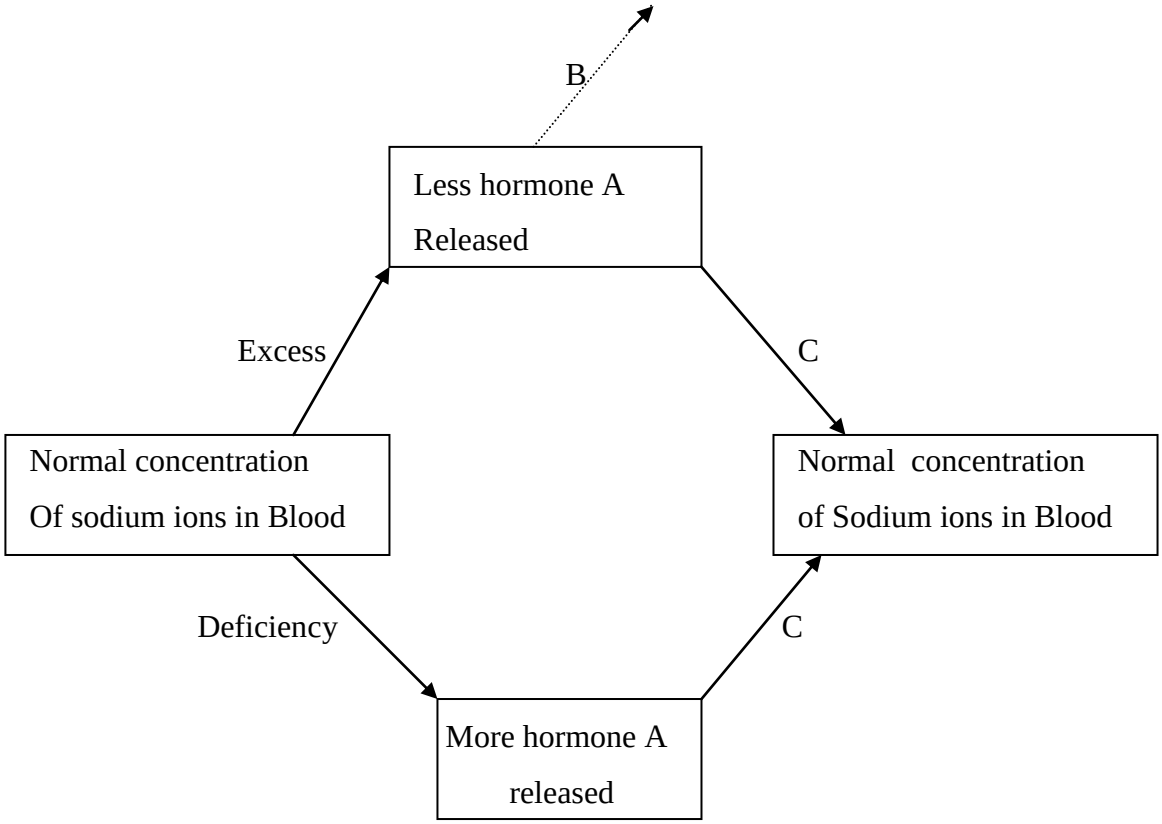
Section	Question	Max. Score	Candidates Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A [40 MARKS]

Answer all questions in this section

1. Study the homeostatic scheme below and use it to answer the questions that follow.



a) Identify the hormone labelled A. (1mk)

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b) Name the gland which releases hormone A. (1mk)

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c) Outline two major sites of action of hormone A. (2mks)

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d) Identify the feedback labelled C. (1mk)

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e) State the effect of the feedback labelled B in humans. (1mk)

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f) Name the self regulatory process represented by the above schematic diagram. (1mk)

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g) A person was found to pass out large volumes of dilute urine frequently. Name the disease the person was suffering from. (1mk)

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2. In an experiment a black mouse was mated with a brown mouse, all the springs were black. The offspring's grew and were allowed to mate with one another. The total number of F2 generation were 192.

a) Using the letters symbols B for genes for black and b for genes for brown, work out the genotypes of the F1 generation. (3mks)

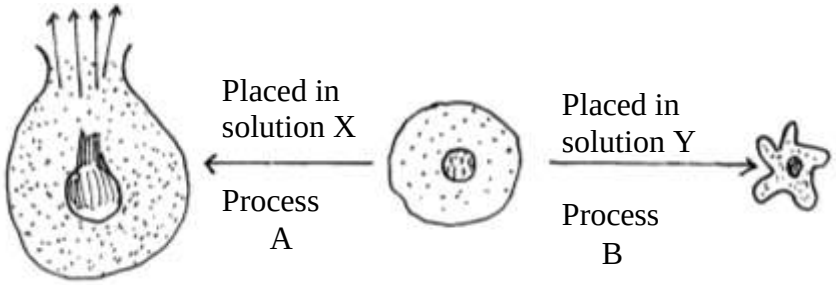
b) From the information above, work out the following for the F2 generation.

(i) Genotypic ratio (2mks)

(ii) Phenotypic ratio (1mk)

(iii) The total number of brown mice. (2mks)

3. The diagrams below illustrates the behaviour of Red Blood Cells when placed into two different solutions X and Y.



a) Suggest the nature of solutions X and Y. (2mks)

X …… Y ……

b) Name the processes A and B (2mks)

A …… B ……

c) what would happen to normal blood cells if they were placed in an isotonic solution. (1mk)

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d) Explain the mechanisms by which water moves from the soil into the root hair cell in plants (3mks)

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4. a) Outline the muscular movements in man that occur during the following breathing process.

(i) Inhalation (3mks)

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(ii) Exhalation (3mks)

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b) Give one reason why insect blood has a low capacity for carrying oxygen. (1mk)

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c) Name two other respiratory surfaces in amphibians apart from using lungs. (1mk)

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5. a) Explain the role of Genetic mixing in evolution. (2mks)

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b) The ability of some members of a species to survive depends on how fit they are. Explain the expression survival of the fittest. (3mks)

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c) State three limitations of using fossil records as an evidence of evolution. (3mks)

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SECTION B (40 MARKS)

Answer question 6 (compulsory) and any other one question (7 or 8) in the spaces provided after question 8

6. In an experiment, 900 viable seeds of a certain species were divided into groups of 100 seeds each. Each group of seeds were placed at different temperatures but same conditions of air and moisture. The percentage germination was determined after 10 days. The table below shows percentage germination at the various temperatures.

Temperature ^{0}C	0	5	10	15	20	25	30	35	40	45
% Germination	0	0	2	5	16	50	84	30	2	0

(a) Using a suitable scale, draw a graph of percentage germination against temperature on the graph paper provided below. (6mks)

b) Account for germination at

(i) 5^0C (3mks)

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(ii) 30^0C (3mks)

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(iii) 45^0C. (3mks)

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c) Explain the role played by each of the following factors in the germination of seeds.

(3mks)

(i) Water

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(ii) Air

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7. a) Describe how mammalian heart structure is adapted to its function. (15mks)

b) Describe the process of blood clotting in man when blood is exposed to air. (5mks)

8. Explain how:

a) Desert plants are adapted to their habitats. (12mks)

b) Hydrophytes are adapted to their habitat. (8mks)

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END

NAME …… INDEX NO……..

SCHOOL ……..

231/1
BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
1 ½ HOURS

KAKAMEGA DISTRICT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2012

231/1
BIOLOGY
PAPER 1
JULY / AUGUST 2012
TIME 1 ½ HOURS

INSTRUCTIONS TO CANDIDATES

- *Answer **ALL** questions in this paper in the spaces provided.*
- *Additive pages must not be inserted.*
- *Candidates may be penalized for false information.*

1. Account for the differences in thickness of cell walls of a guard cell. (2mks)

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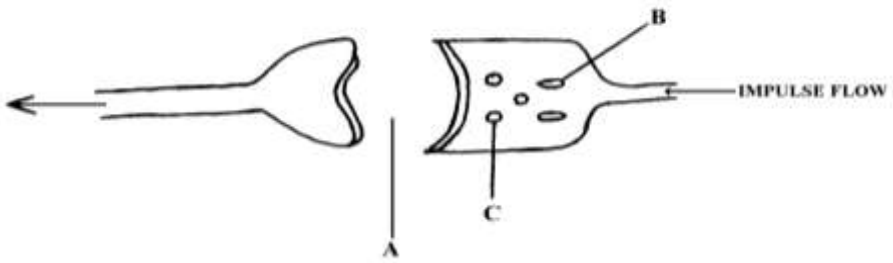
2. Below is a diagram showing parts of a synapse observe and other the questions that follow.



(a) **Name** the parts labeled: (2mks)

A……

……

B……

……

(b) **What** is the role of part labeled **C**. (1mk)

……

……

3. **State four** ways by which the structure of phloem is adapted to its function. (4mks)

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4. **Name the two** nucleic found in a mature pollen grain. (2mks)

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5. (a) **What** is a food web? (2mks)

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(b) **State two** methods that you could use to approximate a population of grass in a field. (2mks)

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6. (a) **State** the name of a graph showing growth in an insect. (1mk)

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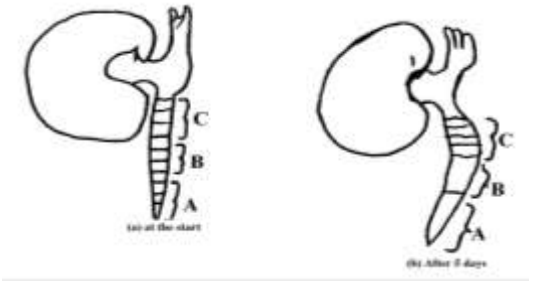
(b) The diagrams below shows the results obtained in an experiment on growth of a bean seedling.



(i) **State** the aim of the experiment. (1mk)

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(ii) **State** the process that takes place at each of the regions labeled A, B and C. (3mks)

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7. **Define** the term Sex-linked characteristics and name one characteristic that is Sex-linked in Man. (3mks)

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8. (a) **State** the function of the ear ossicles. (1mk)

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(b) **What** is the name of the fluid found in the cochlea? (1mk)

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9. **What name** is given to the tissue that joins? (2mks)

(a) Bone to bone?

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(b) Muscle to bone?

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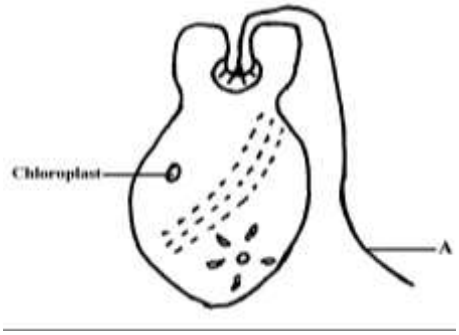
10. **The diagram** below represents an organism in the lower levels.



(a) **In which** Kingdom does the organism belong? (1mk)

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……

(b) **Name** the structure labeled **A** and state its function. (1mk)

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11. Bony fishes have streamlined body and have a lateral line. **Give** a reason why they have these characteristic Features. (2mks)

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12. **Briefly explain** why active transport rate increases when oxygen concentration is increased in water plants. (2mks)

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13. A man had an accident and he lost balance and memory. **Name** the part of the brain that might have been damaged. (2mks)

……

……

14. In cold weather Kittens feed frequently than adult cuts. **Give** a reason for this observation. (2mks)

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15. (a) The tracheal have a liquid at the endings. **State one** reason for this. (2mks)

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(b) **Why** is the skin of amphibians like frogs highly folded? (2mks)

……

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……

16. **Distinguish** between diabetes insipid us and diabetes mellitus. (2mks)

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17. The diagram below represents the structure of a leaf.

Identify the leaf represented in the diagram. (1mk)

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18. When raw sea wage is disposed in a river the population of mobile aquatic animals reduce down the river. **Briefly explain** the effect of raw sea wage on the population of aquatic animals in the river. (2mks)

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19. When a mammal feeds on a heavy protein meal, the liver starts being overworked immediately the soluble products of protein digestion are absorbed.

(a) **Name** the process that takes place in the liver. (1mk)

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(b) **Explain** the process in Q 19 (a) above and name the products formed. (2mks)

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20. **Name** the organelles that would be present in large numbers in the following tissues.

(a) Actively photosynthetic tissue. (1mk)

……

(b) A secreting tissue. (1mk)

……

21. **Explain** how the rate of transpiration is affected by the following factors.

(a) Size of leaf. (2mks)

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(b) Relative humidity. (1mk)

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22. **Identify two** features that adapt the stomach of man to its functions. (2mks)

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23. **State two** advantages of a closed circulatory system over an open circulatory system. (2mks)

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24. A hemophiliac man married a carrier woman and had four offspring. **What** is the probability the fifth born shall be a hemophiliac son. (1mk)

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25. The diagram below is a structure of a unicellular organism Y and X are arrows showing direction of movement of soluble materials.

Name the substances represented by X and Y. (2mks)

X

Y

26. **Briefly describe** how water moves to the root xylem from the root hair cells. (2mks)

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27. An athlete who was preparing for a marathon decided to prepare on a high altitude Zone. He chose to climb up a mountain where he stayed practicing for a month. Name the changes that occurred in the circulatory and gaseous exchange systems of the athlete. (3mks)

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28. The first HIV/ AIDS patient was discovered in Kakamega general hospital in 1982. Since then the number of victims has risen to thousands. Name the ways that HIV/ AIDS has been spread. (3mks)

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29. **Give three** events that follow a flower after fertilization. (3mks)

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30. A DNA strand with the following base sequence was used in the formation of RNA.

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

(a) **Give** the base sequence on the **RNA**. (1mk)

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(b) **Give two** differences between **DNA** and **RNA**. (2mks)

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31. (a) **Define** the term Binomial nomenclature. (1mk)

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(b) **Name two** rules used in Binomial nominative. (2mks)

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32. **State three** adaptations of erythrocytes that make them to fulfill the functions. (3mks)

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……

33. **State** the functions of human lungs. (2mks

……

……

……

……

NAME …… INDEX NO……..

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BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME: 1¾ HOURS

KAKAMEGA DISTRICT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2012

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY /AUGUST 2012

INSTRUCTIONS TO CANDIDATES

- *Answer all questions in section A by filling in the spaces provided.*
- *Answer **Q and either or from section B.***

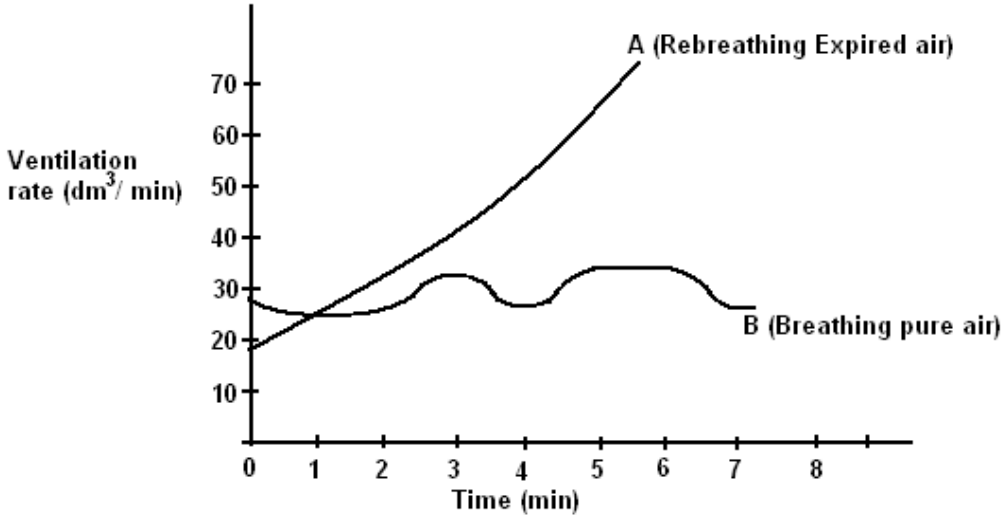
For Examiner's Use Only.

Section	Questions	Maximum score	Candidates score
A	1 2 3 4 5 6 7 8		
B	9	20	
	10	20	
	11	20	

SECTION A: 40 MARKS

Answer all questions in this section by filling in the space provided.

1. **The diagram** below shows the effect of rebreathing expired air on ventilation rate in a mammal.



(a) **How** does rebreathing expired air affect ventilation rate? (1mk)

……

……

(b) **Identify** the gas which is highly concentrated in rebreathed expired air. (1mk)

……

……

(c) Account for the rate of ventilation in graph A. (1mk)

……

……

(d) (i) **Name** the type of respiration likely to take place in the body cell of a mammal if rebreathing of expired air persisted for some times. (1mk)

……

……

(ii) Write a word equation to illustrate the type of respiration named in d (i) above. (1mk)

……

……

(e) **Which two** factors affect the rate of ventilation as illustrated on the graphs. (1mk)

……

……

2. (a) In plants, lateral buds do not sprout into side brandies in the presence of a growing terminal bud. **Explain** why this happens. (1mk)

……

……

(b) **Name one** area in agriculture where the knowledge in 2 (a) above is applied and **give** a reason why. (1mk)

……

……

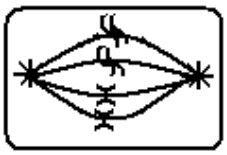
(c) **Explain** the effect of removing the terminal bud from a plant. (1mk)

……

……

3. **The diagrams** below represent a stage of cell division.

A



B

(a) **Identify** the type of cell division represented by the cells **A** and **B**. (1mk)

A ……

……

B……

……

(b) **Which** stage of cell division is represented by the cells **A** and **B.?** (1mk)

A ……

……

B……

……

(c) **Name two** regions in mammals where the type of cell division in cell **A** occurs. (1mk)

……

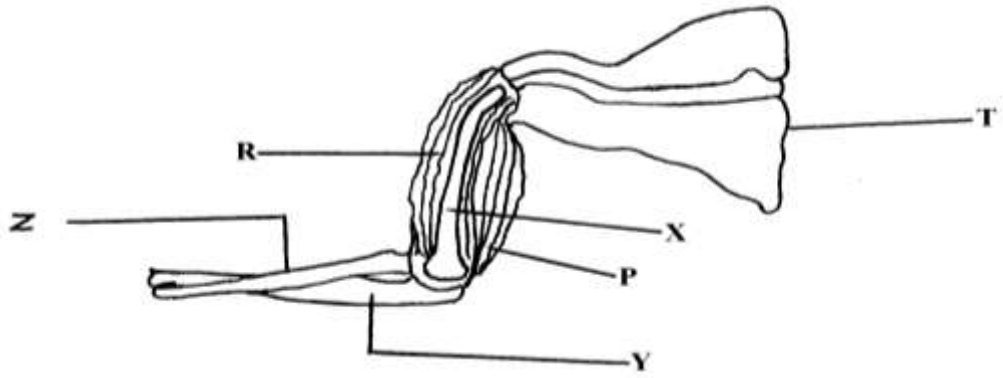
……

(d) **State** the significance of the type of cell division in **A**. (1mk)

……

……

4. **Below** is a diagram showing the fore arm bones and muscles covering them?



(a) **Name** the bones represented by **T, X, Y**, and **Z**. (2mks)

T

X

Z

(b) **Name** the joints formed between;

(i) **T** and **X**. (1mk)

……

……

(ii) **Y** and **X** (1mk)

……

……

(c) **Name** the muscles labeled **P** and **R**. (1mk)

……

……

(d) **What** happens to each muscle as the arm is straightened. (1mk)

……

……

(e) **Name four** strengthening tissues in woody stems. (2mks)

……

……

……

……

5. (a) **What** is meant by the following terms? (1mk)

(i) Adaptive radiation

……

……

(ii) Vestigial structures.

……

……

(b) Evolution is an ongoing process and is still going on even today. **State two** pieces of evidence which suggests that evolution is still taking place. (2mks)

……

……

……

(c) **Explain** how the following factors influence natural selection. (2mks)

(i) Predators

……

……

(ii) Diseases

……

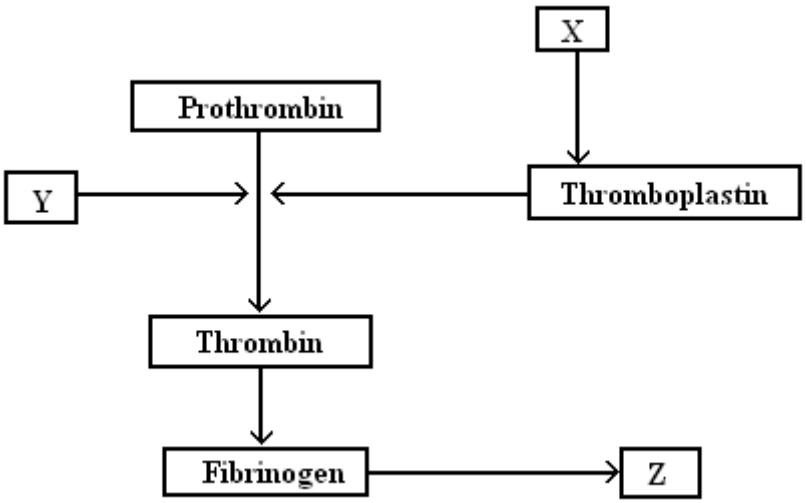
……

6. (a) **State two** ways by which the skin prevents entry of micro- organisms. (2mks)

……

……

(b) The chart below is a summary of the blood clotting mechanism in man.



Identify the following

(i) **The blood** cells represented by **X** (½mk)

……

……

(ii) **The metal** ion represented by **Y** (1mk)

……

……

(c) **What** is the function of blood clotting in human beings? (1mk)

……

……

7. A plant cell was placed in a hypotonic solution for 15 minutes then transferred to a hypertonic solution for 20 minutes.

(a) **What** happened to the plant cell in the two solutions? (1mk)

Hypotonic

……

……

Hypertonic

……

……

(b) **Explain what** happed to the plant cell in the hypertonic solution. (1mk)

……

……

(c) **What** is the function of the process that occurred when a plant cell is put in hypertonic solution in Plants. (1mk)

……

……

8. In a certain plant species which is normally green, a recessive gene for colour (n) causes the plant to be White when present in homozygous state such plants die at an early stage; The plants are pale green in colour when in latency state and grow to maturity.

(a) **Give** a reason for the early death of plants with homozygous recessive gene. (1mk)

……

……

(b) If a normal green plant was crossed with the pale green plant, what would be the genotypes of the F_1 generation (use punnet square to work out the answer) (2mks)

(c) If seeds from the heterozygous plants were planted and the resulting plants crossed, work out the phenotypic rate of plants that would grow to maturity. (3mks)

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(d) **Explain** the occurrence of the pale green colour in the heterozygous plants. (1mk)

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SECTION B (40 MARKS)

Answer question 9 (compulsory) and either question 10 or 11 in the space provide after question 11

9. In an experiment to investigate the action of salivary amylase on starch, equal amounts of amylase was added to equal amount of starch in different tubes. The test tubes were placed at different temperatures. The table below shows the time taken for the enzyme to digest starch.

Time (mn)	45	27.5	15	05	1.5	1	8	35
Temperature (^{0}c)	0	10	20	30	35	38	40	45

(a) Plot a graph of time (min) against temperature. (5mks)

(b) **What** is the optimum temperature of the enzyme? (1mk)

……

……

(c) Account for the time taken to digest starch at

(i) 5^0c (2mks)

……

……

……

……

(ii) 45^0c (2mks)

……

……

……

……

(d) **Other** than temperature, name two factors that influence the rate of enzyme action. (2mks)

……

……

……

……

(e) **What** is rate of enzyme action at 15^0c? Work out using the graph drawn. (3mks)

……

……

……

……

(f) Salivary amylase continues to digest starch to maltose in the food bolus from the mouth down the esophagus but stops in the stomach. **Explain** this observation. (2mks)

……

……

……

……

(g) **Name** the secretions received in the duodenum from the pane to facilitate the process of digestion. (1mk)

……

……

(h) During a scientific research on a rat, hydrochloric acid was carefully introduced in the pancreatic duct to mix with the secretion before it was received in the duodenum (it was discovered that no digestion took place in the duodenum. **Explain**. (2mks)

……

……

……

……

10. **Describe** how different types of tropisms adapt plants for survival in their habitats. (20mks)

11. **Discuss** the skin under the following headlines. (20mks)

(a) As a thermoregulatory organ

(b) As an excretory organ

(c) As a sense organ

(d) As a protective organ

(e) As an osmoregulatory organ.

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231/1
BIOLOGY
PAPER 1
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KERICHO DISTRICT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2012.

231/1
BIOLOGY
PAPER 1
JULY / AUGUST 2012
TIME: 1 ¾ HOURS

INSTRUCTIONS TO CANDIDATES

- *Answer **ALL** the questions in the spaces provided on the question paper.*
- *Do not insert any other additional paper.*

For Examiners Use Only.

Question	Maximum Score	Candidate's Score
1-24	80	

1. (i) **State** the characteristics that can separate the following organisms into their respective classes:
Millipedes, Tsetse fly, Spider (2mks)

……

……

(ii) **Suggest** the external features which would be used to distinguish between members of the class chilopoda and diplopoda. (1mk)

……

2. **Name** an organelle that:-

(a) Manufacture and transport lipids and steroids in the cell (1mk)

……

(b) That contains enzymes that are capable of destroying old and damaged cells. (1mk)

……

3. **What** is adaptive radiation? **Give** an example.

Adaptive radiation (1mk)

……

……

Example (1mk)

……

4. **Explain** why a rat has a higher food intake compared to a lizard of the same body weight. (2mks)

……

……

5. **Give one** structural and one functional between skeletal and smooth muscle. (2mks)

(i) Structural difference

……

……

(ii) Functional difference

……

……

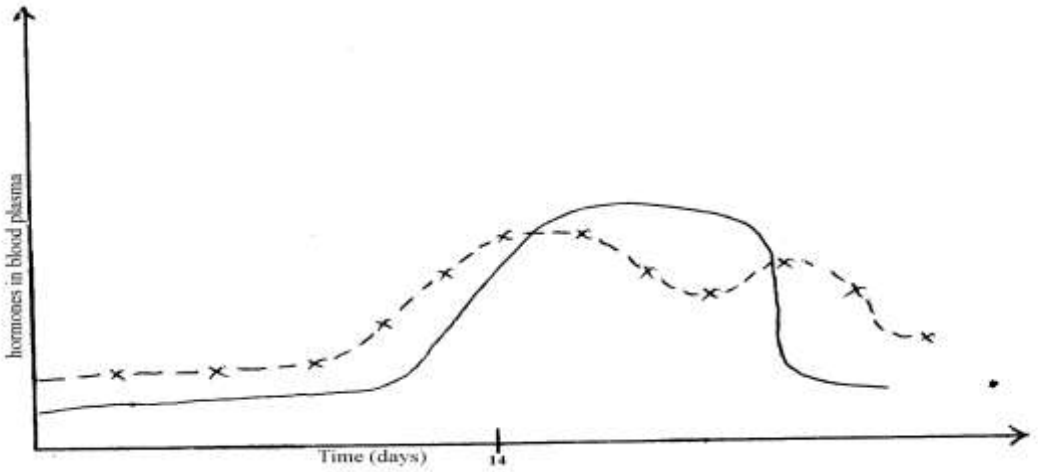
6. **State** the function of cilia found in the mammalian trachea. (1mk)

……

……

7. **State two** physiological changes that take place in the human skin in order to facilitate heat loss from the body. (2mks)

8. The graph above illustrates relative levels of Oestrogens and progesterone during the human menstrual cycle.



(a) Mark on the graph the curves that represents

(i) Progesterone

(ii) Oestrogen (2mks)

(b) **Which** is the most likely day of ovulation from the graph? (1mk)

……

……

9. (i) **What** is biological control of population growth? (1mk)

……

(ii) **Explain** why the number of predators in an ecosystem is less that the number of their prey. (2mks)

……

……

10. (i) **State** the features that adapt Hydrophytes to their habitat. (3mks)

……

……

……

11. i) **List four** causes of seed dormancy in each case; state how such dormancy is broken. (2mks)

Causes

……

……

Ways of breaking dormancy.

……

……

(iii) **Explain** the change that takes place at the beginning of germination. (2mks)

……

……

(i) **State** the Units that constitute a nucleotide of a **DNA** strand. (1mk)

……

(ii) The diagram below shows the base sequence of part of a nucleic acid strand. **Observe** it and answer the questions that follow:

T T A G C T G A

(a) Giving your reasons **state** whether it is part of a **DNA** or an **RNA** strand. (2mks)

……

……

(b) **Show** the complimentary **DNA** strand. (1mk)

……

(c) **Show** the complimentary **RNA** strand. (1mk)

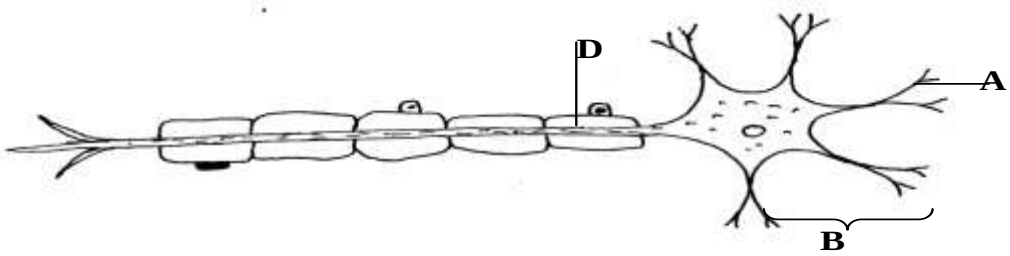
……

12. **Explain** why taking an under dose of antibiotics may lead build up a population of resistant bacteria. (2mks)

……

……

13. **Diagram** below shows the structure of motor neuron.



(a) **Name** the parts labelled. (2mks)

A

……

B

……

(b) **State three** adaptations that enable the neurone to carry out its functions efficiently. (3mks)

……

……
……

(c) **State two** features that would distinguish sensory neurone from the above neurone. (2mks)

……
……

14. (a) **Explain** how light ray from a distant and near objects are brought to focus on the retina.
(i) Distant object. (4mks)
……
……
……
……
(ii) Near object. (4mks)
……
……
……
……

15. The leaves of some insectivorous plants make rapid movements when they are touched by an insect.
(i) **Give** an example of such a plant. (1mk)
……
(ii) **What** name is given to this type of response? (1mk)
……
(iii) **What** is the biological significance of this response? (2mks)
……
……

16. (a) **State two** functions of Muscles found in the alimentary canal of mammal. (2mks)
……
……

(b) **Explain** why the stomach has three layer of smooth muscles instead of two layers contained in the rest of the alimentary canal. (1mk)

……

17. **Explain** how water in the soil enters the root hairs of a plant. (3mks)

……
……
……
……

18. **State three** structural adaptations of xylem tissues to their functions. (3mks)
……
……
……

19. (i) **Give three** reasons why the pressure of blood is greater in the arteries than in the veins of mammals. (3mks)
……
……
……
(ii) **Explain two** ways in which capillaries are adapted to carry out their functions. (2mks)
……
……

20. **Name three** sites where gaseous exchange takes place in terrestrial plants. (3mks)
……
……
……

21. **Give two** reasons why accumulation of lactic Acid during vigorous exercise leads to an increase heart beat. (2mks)

……

……

22. **State** the functions of the following part of the mammalian ear;

(i) Tympanic membrane. (2mks)

……

23. **State** the roles of the following plant hormones in growth and development. (4mks)

(i) Indole Acetic Acid (IAA) (1mk)

……

(ii) Gibberellins (1mk)

……

(iii) Ethylene (1mk)

……

(iv) Cytokinins (1mk)

……

NAME: …… INDEX NO:……

SCHOOL: ……

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME 1 ¾ HOURS

KERICHO DISTRICT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2012

231/2
BIOLOGY
PAPER 2
JULY /AUGUST 2012

INSTRUCTIONS TO CANDIDATES

- *This paper contains two sections.*
- *Answer **all** the questions in section **A**.*
- *(Question 1 – 7) Answer question 8 of section B. and either question 9 or 10.*

For Examiner's Use Only.

	Question	Maximum Score	Candidates Score
A	1	4	
	2	8	
	3	4	
	4	5	
	5	3	
	6	8	
	9	8	
B	8	20	
	9	20	
	10	20	

SECTION A (40 marks)

Answer all the questions in this section.

1. (a) **What** is the importance of tissue fluid? (2mks)

……

……

(b) **State two** main differences in composition between tissue fluid and plasma and state how this difference are brought about. (2mks)

……

……

2. A group of students were investigating the number of crayfish in a shallow pond, using the capture – release- recapture method. They caught 50 Crayfish, marked them with a dab of white paint on the cephalothorax, and then released them back into the same pond.
After three days they collected another 50 crayfish from the pond, and of these 3 bore the white paint mark.

(a) Using this data, **calculate** the population of the crayfish in this pond. (3mks)

(b) **State any two** assumptions that were made in this method of estimating the crayfish population in the pond. (2mks)

……

……

(c) **Suggest** another method that could have been used to determining the population size of the cray fish. (1mk)

……

(d) In what form is energy transferred from one trophic level to another? (1mk)

……

(e) In what form does this energy enter the earth's ecosystem? (1mk)

……

3. (a) Mr. Joseph had an accident at the age of seven. A hospital diagnosis revealed that part of his endocrine system had been affected. He is now 30 year old yet he sounds like a boy and has not grown any beard. **Which** gland has been affected? (1mk)

……

(b) **Name** the hormone produced by the gland you have named in (a) above. (1mk)

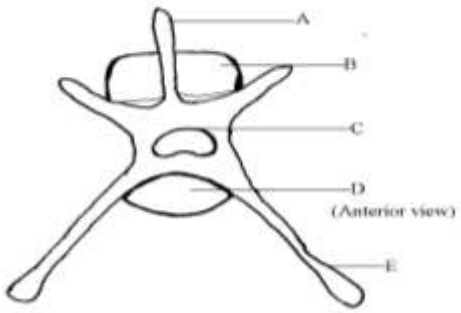
……

(c) **State two** function of the hormone name in (b) above. (2mks)

……

……

4. (a) **Identify** the vertebra shown below giving one characteristic structural feature of this bone. (1mk)



(b) **Name** the parts labelled A to E (3mks)

A ……

B ……

C ……

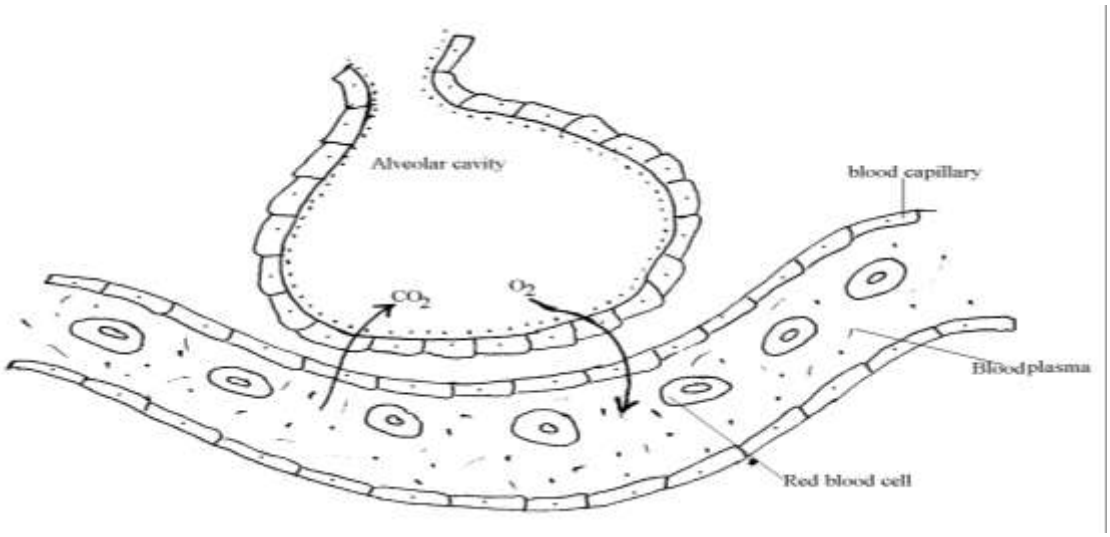
D ……

E ……

c) **Suggest** the type of joint that is formed by the bone in (a) above and its adjacent vertebra. (1mk)

……

5. The wall of the alveolus is the gaseous exchange surface in a mammal. Below is a cross-section through an alveolus.



(a) **What** are the features of the above alveoli that make them efficient gas exchange surfaces? (3mks)

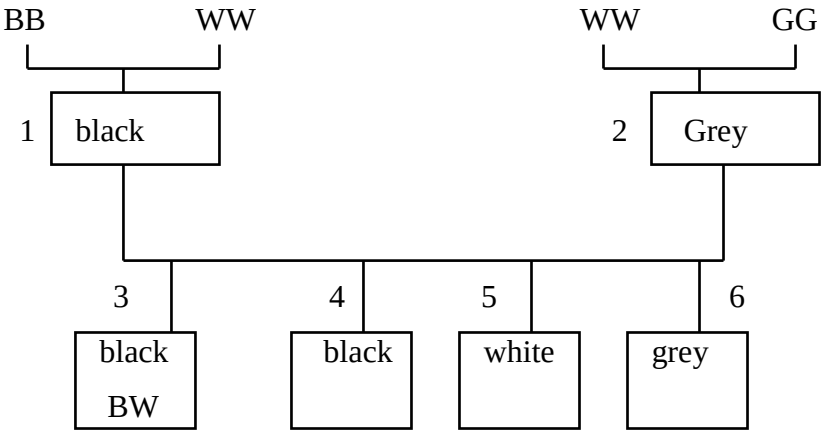
……

……

……

6. The following table represents the results of interbreeding three different breads of cats.

Key:	pure black	pure white	pure grey
	B B	W W	G G



(a) The coat colour of one of the three breeds of cats is recessive to the other two. **Which** one. (1mk)

……

(b) The coat colour of which breed is dominant to the other two breeds? (1mk)

……

(c) **What** is the genetic make-up of the cats marked? (3mks)

(i) 1: ……

(ii) 4: ……

(iii) 6: ……

(d) **Which** of the cats labelled 1 to 6 is pure like the parents given in the key? (1mk)

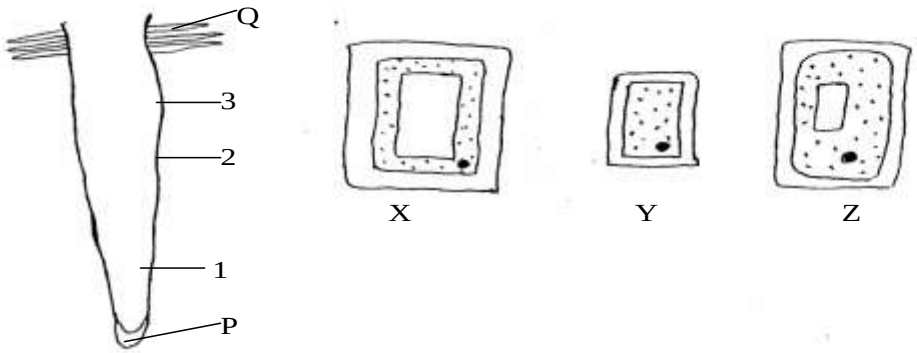
……

(e) **What** generation is represented by cats marked? (2mks)

(i) 1 and 2 ……

(ii) 3 to 6: ……

7. The figure below represents the tip of a root and three cells X, Y, and Z taken from regions 1, 2 and 3.



(a) **Which** of the three cells is taken from region? (3mks)

(i) 1: ……

(ii) 2: ……

(iii) 3: ……

(b) **Name** the regions which are concerned with growth in. (2mks)

(i) Girth ……

(ii) Length ……..

(c) **How** is the root hair cells adapted to their functions? (3mks)

……

……

……

……

SECTION B

Question 8 is compulsory" Choose either Question 9 or 10.

8. The data below shows the population changes in Kenya, Tanzania and Uganda from 1948 to 1997 all figures are given in millions of people.

Country	Population size millions					
	1948	1960	1970	1972	1985	1997
Kenya	5.4	8.4	10.8	11.7	17.9	28.4
Tanzania	7.5	8.8	13.2	14.0	20.3	31.5
Uganda	5.0	6.5	8.6	10.1	13.1	20.18
Total	17.9	23.7	32.6	35.8	51.3	80.7

(a) **Plot** this data on the same axis on a graph to describe the change in population size and population growth rate of each country. (10mks)

(b) From your graph, **estimate** the population of each country and the total human population of East Africa in 1990. (4mks)

……

……

……

……

(c) If the populations continue growing at their current rate **what** would you estimate the population of each country to be in the year 2005? (4mks)

……

……

……

……

(d) **State** the factors that may affect the population of a country. (2mks)

……

……

……

9. **Explain** the mechanism by which a human body maintains a constant body temperature. (20mks)

10. **Explain** how a body fish is adapted for movement in its habitat. (20mks)

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NAME: …… **INDEX NO:**……

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BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
2 HOURS

KISUMU DISTRICT JOINT EVALUATION TEST (KDJET)
Kenya Certificate Of Secondary Education (KCSE) 2012

BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
2 HOURS

INSTRUCTIONS TO CANDIDATES

- *Write your name and index Number in the spaces provided above*
- *Answer all the questions in the spaces provided.*

For Examiners Use Only

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE

This paper consists of 12 printed pages. Candidates should check the questions to ensure that all pages are printed as indicated and no questions are missing.

1. Citrus sinensis is the scientific name of an orange tree.

   (a) **Identify** its generic name (1mk)

   ……

   ……

   (b) **Give one** reason for your answer (1mk)

   ……

   ……

2. (a) **List** down **two** features of the mammalian ileum that increases its surface area. (2mks)

   ……

   ……

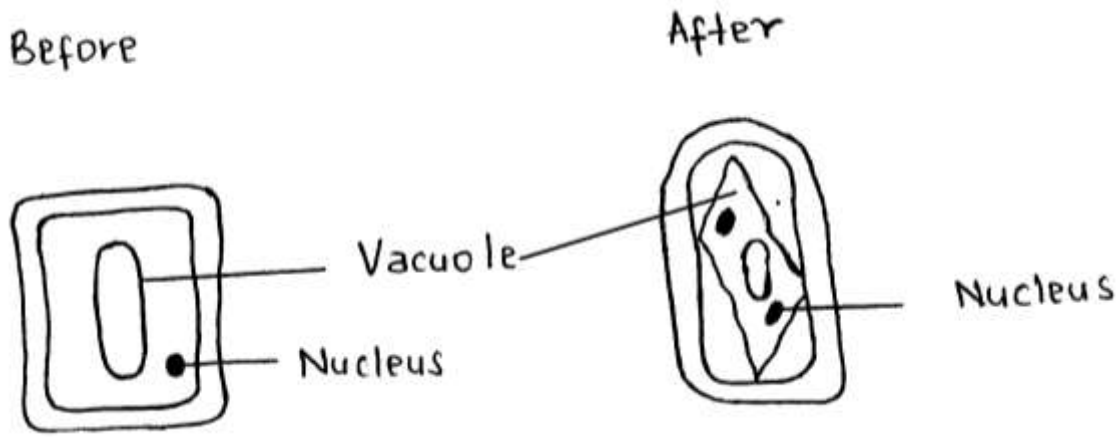
   ……

   (b**) Name** the part of human gut where digestion of lipids begins. (1mk)

   ……

   ……

3. The diagrams below shows the changes in a plant cell when put in a solution **T**.



   (a) **Name** the solution **T**. (1mk)

   ……

   ……

(b) **Explain** the observation at the end of the experiment. (2mks)

……

……

……

4. **Name** any **two** practical applications of Genetics in today's world. (2mks)

……

……

……

5. (a) **Name** the first step of sugar breakdown in cellular respiration. (1mk)

……

……

(b) **Give two** significances of respiratory quotient (R.Q). (2mks)

……

……

……

6. **Give three** reasons why fossils are important in the study of evolution. (3mks)

……

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7. (a) **State two** differences between primary and secondary growth in plants. (2mks)

……

……

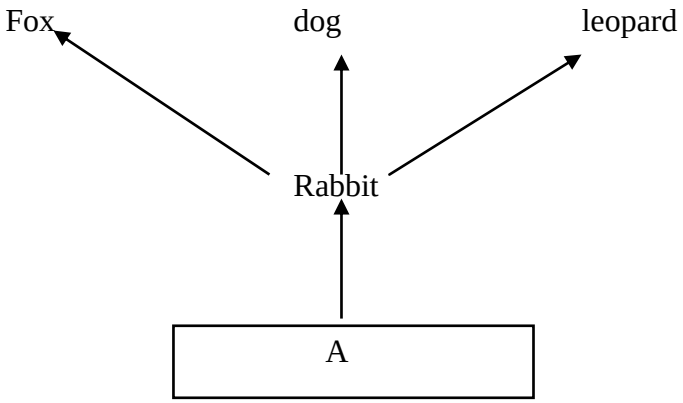
……

(b) **State** the functions of coleoptile in a maize seedling. (1mk)

……

……

8. The diagram below show part of a food relationship in an ecosystem.



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

……

……

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

……

……

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

……

……

9. **State** the function of each of the following:

(a) (i) Co-factors. (1mk)

……

……

(ii) Co-enzymes. (1mk)

……

……

(b) **Briefly explain** how an enzyme inhibitor affects the activity of an enzyme on a given substrate. (1mk)

……

……

……

……

10. (a) **Name** the body structures concerned with the following homeostatic functions.

(i) Secretion of vasopressin. (1mk)

……

……

(ii) Conversion of glucose to glycogen. (1mk)

……

……

(b) **Give one** symptom of diabetes insipidus. (1mk)

……

……

11. **State** the function of each of the following organelles:

(a) Centrioles (1mk)

……

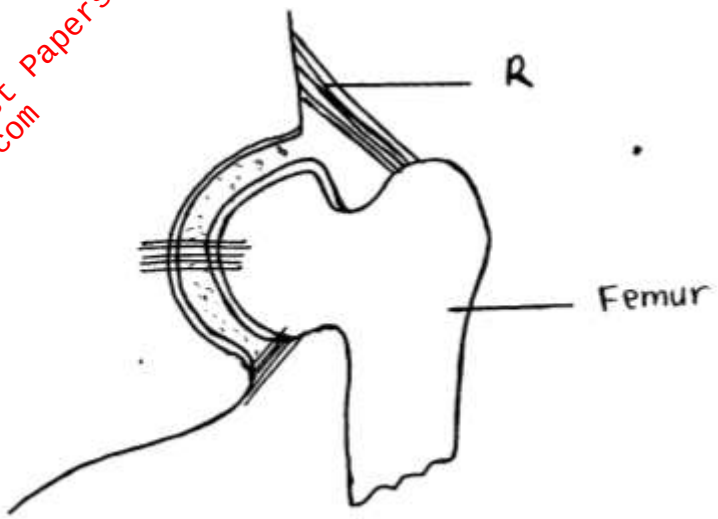
……

(b) Golgi body (1mk)

……

……

12. The diagram below shows some of the features of a synovial joint.



(a) Name the part labeled R. (1mk)

……

……

(b) (i) **State one** advantage that the above joint has over a hinge joint. (1mk)

……

……

(ii) **Give one** disadvantage of the joint shown in the diagram above. (1mk)

……

……

13. (a) **State two** reasons why blood flows at a higher pressure in the arteries than in the veins of mammals. (2mks)

……

……

……

(b) **Why** are the xylem tissue referred to as mechanical? (1mk)

……

……

14. (a) **Give two** advantages of the foetus being surrounded by amniotic fluid during the gestation period. (2mks)

……

……

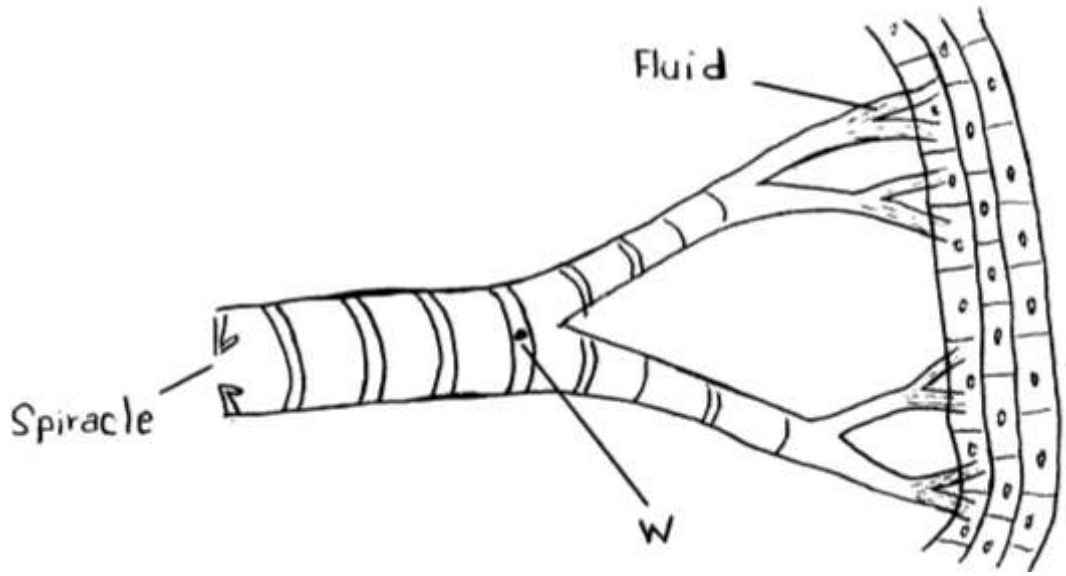
……

(b) Other than its role in menstruation, **state one** other function of oestrogen in the female human body. (1mk)

……

……

15. (a) The diagram below shows the tracheal system in an insect.



(a) (i) **Name** the structure labeled W. (1mk)

……

(ii) **State** the function of the fluid shown in the diagram. (1mk)

……

(b) **Identify two** structures in higher plants used for gaseous exchange. (2mks)

……

……

16. A group of students observed 8 cells across the diameter of the field of view of a light microscope. If the eye piece lens magnification was ×5 and objective lens magnification was ×40.**Work out** the actual diameter of each cell given that the diameter of the field of view was 0.5mm (**Give your answer in µm**). (5mks)

17. (a**) Define** the term apical dorminance. (2mks)

……

……

(b) **State two** applications of plant hormones in crop production. (2mks)

……

……

18. (a) **Define** the term 'carrying capacity' (1mk)

……

……

(b) **Explain** the role played by each of the following bacteria in the nitrogen cycle.

(i) Nitrosomonas (1mk)

……

……

(ii) Rhisobia. (1mk)

……

……

19. An organism was exposed to different environmental temperatures but its body temperature remained constant at 36.7^0C

(a) **Suggest** the type of organism described in the above statement in terms of temperature regulation. (1mk)

……

……

(b) **Explain two** changes that would occur in the skin of this organism at room temperature of 40^0C. (2mks)

……

……

……

20. (a) **What** is test cross in genetics? (1mk)

……

……

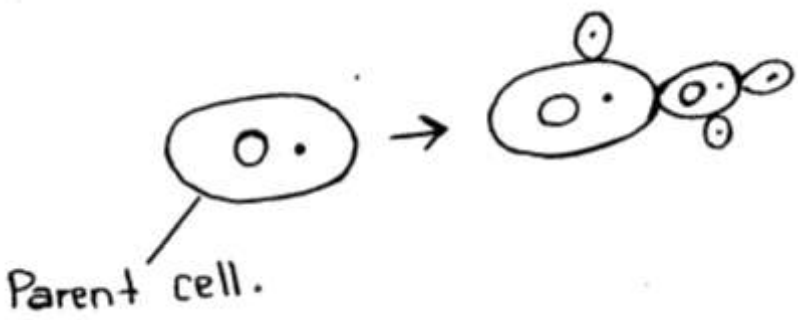
(b) **Give three** disorders due to gene mutations. (3mks)

……

……

……

21. The diagram below illustrates a process in a given species of organisms.



(a) **Name** the organism. (1mk)

……

……

(b) **Suggest** the kingdom to which the organism belongs giving one reason.

Kingdom (1mk)

……

Reason. (1mk)

……

(c) **Identify** the process that is taking place. (1mk)

……

22. (a) **State** the role of Rennin in the stomach. (1mk)

……

……

(b) **Give** a reason as to why cellulose should be included in the human diet. (1mk)

……

……

(c) **What** is the importance of light dependent stage in the process of photosynthesis? (2mks)

……

……

……

23. (a) **Name** the type of skeleton found in the following organisms:

(i) Earthworm. (1mk)

……

(ii) Lady bird. (1mk)

……

(b) **Name** any **two** structures that provide support in flowering plants. (2mks)

……

……

……

24. The table below shows the percentage composition of blood plasma and urine for four substances.

Component substance	**Blood plasma %**	**Urine %**
Urea	0.03	2.0
Water	90	90
Plasma proteins	8.0	0
Glucose	0.1	0

(a) Account for the absence of plasma proteins in urine. (1mk)

……

……

(b) Urea concentration being greater in the urine than in the blood plasma. (1mk)

……

……

25. **Explain two** ways by which the members of the kingdom plantae compensate for their inability to move from place to place in search of food. (2mks)

……

……

……

……

26. **Explain** how the human eye accommodates an image from a far distant object. (2mks)

……

……

……

……

27. **Name** the muscles which bring about breathing process in mammals. (2mks)

……

……

……

……

NAME: ……..……**INDEX NO:**...……

SCHOOL: ...…….

231/2
BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME: 2 HOURS

KISUMU DISTRICT JOINT EVALUATION TEST (KDJET)
Kenya Certificate Of Secondary Education (KCSE) 2012

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- *Write your name and Index Number in the spaces provided above.*
- *This paper consists of 2 sections, A and B*
- *Answer all questions in section A in the spaces provided.*
- *In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.*

For Examiners Use Only

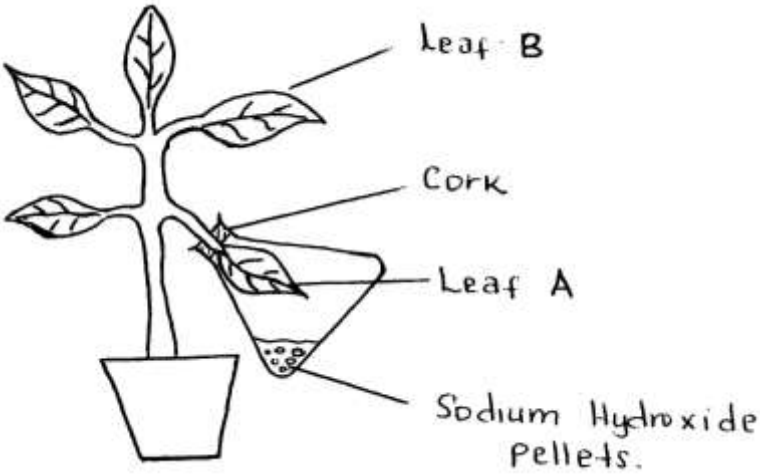
SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1	08	
	2	08	
	3	08	
	4	08	
	5	08	
B	6	20	
	7	20	
	8	20	
	TOTAL	80	

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

SECTION A (40 marks)

Answer ALL the questions in this section in the spaces provided.

1. A student set up the following experiment using a potted plant which had been kept in the dark for 48hours.



The plant was well watered then leaf **A** was enclosed in a conical flask containing Sodium Hydroxide pellets as shown in the diagram above. The potted plant was then placed in sunlight for 8 hours. Leaf **A** and **B** were then tested for starch.

(a) **Why** was the potted plant kept in the dark for 48hours before setting up the experiment? (1mk)

……

……

(b) **State** the observations made during the test for starch in.

Leaf A…….

…….. (1mk)

Leaf B……

……. (1mk)

(c) **Account** for the observations made in **B** above (2mk)

……

……

(d) **Explain** why leaf B was also tested for starch (1mk)

……

……

(e) **What** role is played by the following factors in the process of photosynthesis?

(i) Water. (1mk)

……

……

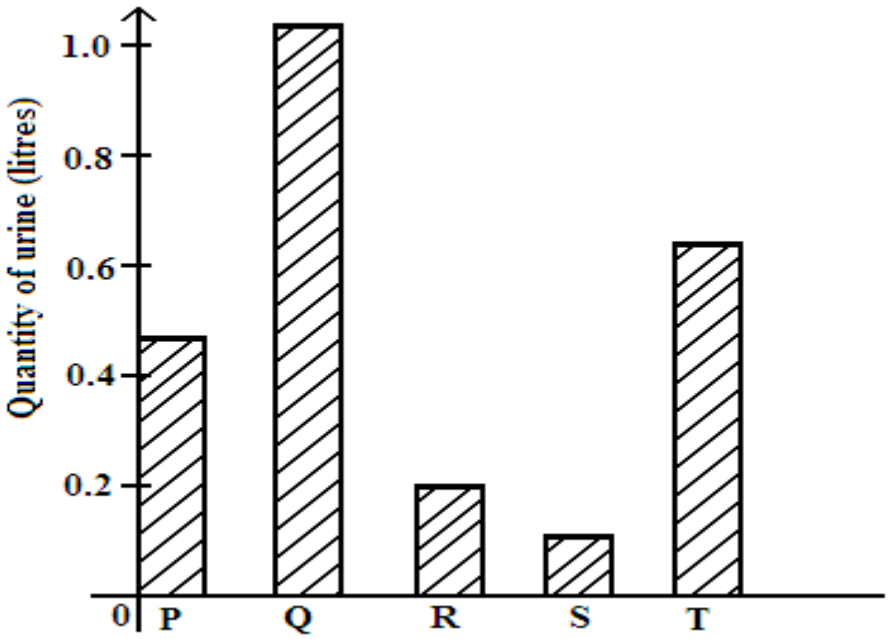
(ii) Carbon(iv)Oxide. (1mk)

……

……

2. The quantity of urine passed out per day was established in five animals P,Q,R,S,and T of same species

in their natural habitat. The results obtained were as shown below.



(a) (i) **Which** of the five animals was likely to be excreting urine very rich in ammonia? (1mk)

……

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

……

(b) (i) **Which** of the five animals was likely to be living in an arid environment? (1mk)

……

(ii) **Give** a reason for your answer (1mk)

……

(c) **State two** structural differences expected in the nephrons of mammals **Q** and **S** (2mks)

……

……

(d) **Explain** how ingestion of very salty food may affect the quantity of urine produced. (2mks)

……

……

(e) **In what** form is nitrogenous waste excreted in a desert animal? (1mk)

……

3. In a certain plant species which is normally green, a recessive gene for colour (n) causes the plant to be white when present in a homozygous state. Such plants die at early age. In heterozygous state, the plant are pale green in colour but grow to maturity.

(a) **Suggest** a reason for the early death of plants with the homozygous recessive gene (2mks)

……

……

……

(b) If a normal green plant was crossed with a pale green plant, **what** would be the genotype of the F1 generation? (**Show your working**) (3mks)

(c) If seeds from the heterozygous plants were planted and the resulting plants allowed to self pollinate, **work out** the phenotypic ratio of the plants that would grow to maturity. (2mks)

(d) **Give** an explanation for occurrence of the pale green colour in heterozygous plants (1mk)

……

……

4. The table below shows the approximate distribution of blood groups in a sample of 100 people in a population.

Blood group	Frequency	Rhesus +ve	Rhesus -ve
A	26	22	4
B	20	18	2
AB	4	3	1
O	50	42	8

(a) **Calculate** the percentage of rhesus negative (Rh-ve) individuals in the population (1mk)

(b) **Account for**.

(i) The large number of blood group **O** individuals in a population (2mks)

……

……

……

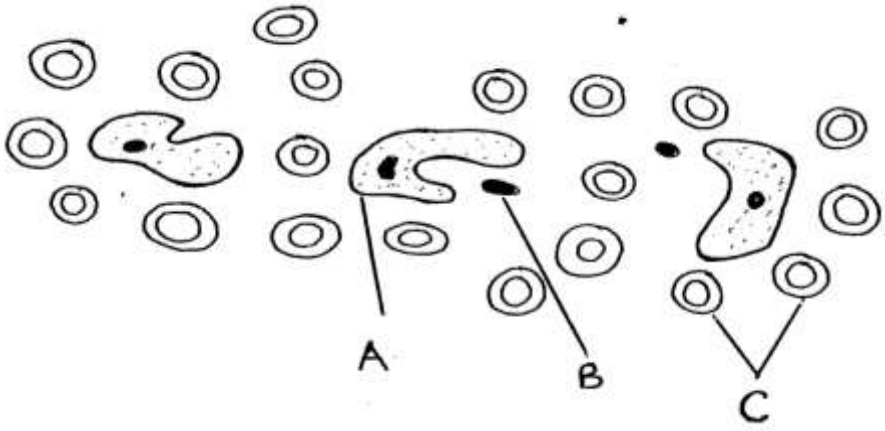
(ii)The small number of individuals with blood group (2mks)

……

……

……

(c) The diagram below represents a blood smear on a glass slide



(i) **State** the importance of structure C being large numbers in the blood smear (1mk)

……

……

(ii) **Give** a reason why structure C would be found in larger numbers at high altitude than at low Altitude (1mk)

……

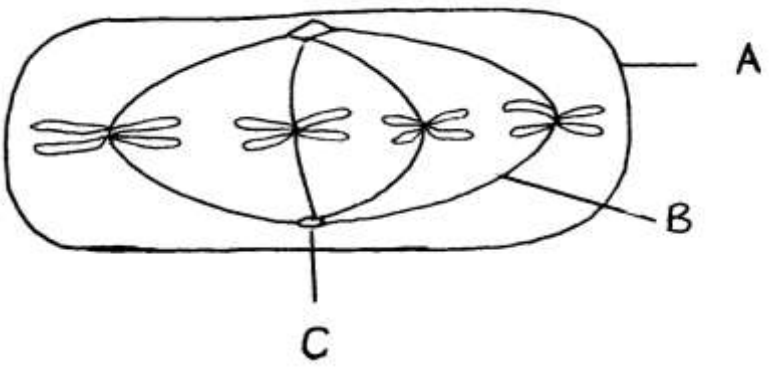
……

(iii) **Name** the process by which structure A would engulf structure B (1mk)

……

……

5. The diagram below represents a stage in cell division. **Study** it and answer the questions below.



(a) **Name** the stage of cell division illustrated in the diagram above (1mk)

……

……

(b)**Name** the parts labelled **A, B**, and **C**

A ……

B ……

C ……

(c**) State three** differences between mitosis and meiosis.

	Mitosis	**Meiosis**
(i)		
(ii)		
(iii)		

(d) **Name** the process during which the exchange of genetic materials occur at prophase I of meiosis (1mk)

……

……

SECTION B(40 MARKS)

Answer question 6 (compulsory) in the spaces provided and either 7or 8 in the spaces provided after question 8.

6. A biologist carried out a study to investigate the growth of a certain species of herbivorous bony fish and the factors influencing plant and animal life in four small lakes A,B,Cand D. The lakes were located in the same geographical area. Two of the lakes A and B were found contain hard water due to the presence of high content of calcium salts. Lake C and D were found to have soft water with low content of calcium salts. The mean body length of 2years old fish amount of plant life and invertebrate biomass in each lake were determined. The data was recorded as shown in the table below.

Lakes	Mean body length of 2 year old fish (cm)	Type of water	Amount of plant life (g/m^3 of water	Invertebrate biomass (g/m^3 of water)			
				worms	insects	Snails	Crustaceans
A	31.2	Hard	1050	180	11	300	10
B	28.6	Hard	950	90	72	100	9
C	18.4	Soft	1.2	20	97	0	2
D	16.3	Soft	0.5	10	99	0	1

(a)**Describe** the procedure that may have been used to determine the mean body length of the fish.

(6mks)

……

……

……

……

……

……

……

……

……

(b) **What** are the likely reasons for the difference in the mean body length of the fish living in lakes **A** and **D** (4mks)

……

……

……

……

……

(c) **Suggest one** reason for the absence of snails in the lakes **A** and **D** (1mk)

……

(d) (i) **Name** any **six** abiotic (physical) factors that are likely to influence the plant and animal life in Lake **A**. (3mks)

……

……

……

……

……

……

……

……

(ii) **Explain** how each of the factors named in d(i) above may influence plant animal life in lake **A** (6mks)

……

……

……

……

……

……

……

……

7. (a) **What** is pollination? (2mks)

(b) **Discuss** the sequence of events that take place from the time a pollen grain falls on the stigma Until a seed is formed. (18mks)

8. **Describe** locomotion in a finned fish. (20mks)

NAME: ……..……ADM NO:……..……

CLASS:…….

231/1
BIOLOGY
PAPER 1
THEORY
MAY,2012
TIME: 1 ½ HOURS

KAPSABET GIRL'S HIGH SCHOOL EXAMINATION
Kenya Certificate of Secondary Education 2012.

231/1
BIOLOGY
PAPER 1

INSTRUCTIONS TO CANDIDATES

- *Answer **all** the questions in the spaces provided on the question paper.*
- *Do not insert any other additional papers.*

For Examiners Use Only.

Question	Maximum Score	Candidate's Score
1-17	50	

1. The diagram below shows part of a plant.

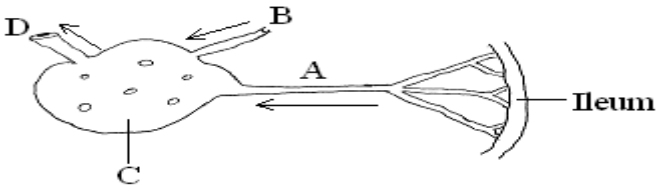
(a) To which class does the plant belong? (1 mark)
.....

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

2. **State** the function of each of the following.
(i) Ribosomes. (1 mark)
.....
(ii) Cristae of mitochondria. (1 mark)
.....
(iii) Centrioles. (1 mark)
.....

3. **State** the role of each of the following in photosynthesis.
(a) Light. (1 mark)
.....
(b) Chlorophyll. (1 mark)
.....

4. The diagram below shows part of a circulatory system. The arrows indicate direction of movement of blood.



(a) **Name** the blood vessels labeled A and B.
A ..... (1 mark)
B ..... (1 mark)
(b) **Explain** why it is important to transport food substances to organ C before being circulated to the rest of the body. (2 marks)
.....
.....

5. **State** the importance of the following features in gaseous exchange.
(i) Cartilage in trachea and bronchus. (1 mark)
.....
(ii) Highly vascularised. (1 mark)
.....

6. **List down two** characteristics whose genes are linked to the Y chromosomes. (2 marks)
.....
.....

7. **Explain** how auxins are utilized as selective weed killers in Agriculture. (2 marks)
.....
.....

8. (a) The equation below shows respiration for certain food substance. Study it and answer the questions that follow.

$2C_5H_{98}O_6 + 145O_2 \rightarrow 10CO_2 + 98H_2O$

(i) **Calculate** the respiratory quotient, RQ. (2 marks)

(ii) **Suggest** the possible food substance. (1 mark)

.....

(b) **State** the significance of the RQ values of an organism to a physiologist. (2 marks)

.....

.....

9. In plants, food is manufactured in the leaves.

(a) **Name any two** mechanisms by which food is translocated in plants. (2 marks)

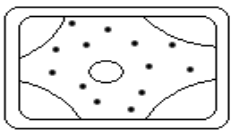
.....

.....

(b) Name the tissue concerned with translocation of food in plants. (1 mark)

.....

10. The diagram below represents a plant cell that had been placed in a certain solution.



(a) **What** term is used to describe the condition of the above cell? (1 mark)

.....

.....

(b) **What** term is used to describe the solution to which the cell had been placed. (1 mark)

.....

(c) **Explain** why the cell did not lose its shape after the experiment. (1 mark)

.....

11. (a) **Suggest** the role of each of the following substances present in saliva during food digestion.

(i) Mucus (1 mark)

.....

(ii) Water (1 mark)

.....

(iii) Amylase (1 mark)

.....

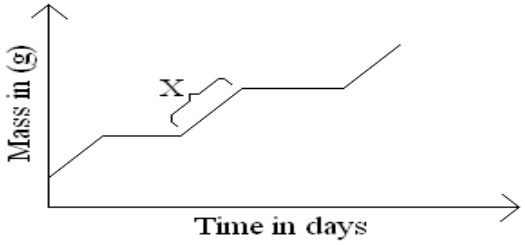
(b) **State one** major function of ileum. (1 mark)

.....

12. **Explain** why a person discharges urine more often when the temperatures are low than when they are high. (2 marks)

.....

13. The graph below represents he growth of animals in a certain phylum.



(a) **Name** the type of growth pattern shown on the graph. (1 mark)

.....

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

.....

(c) **Name** the hormone responsible for the process in (b) above. (1 mark)
.....

14. The following diagram represents embryonic stage of development for various organisms.

(a) **Name** the evidence for organic evolution depicted in the diagram. (1 mark)
.....

(b) In Australia, the placental mammals are not indigenous, but Marsupials occupy all the available ecological Niches. Explain this observation. (3 marks)
.....
.....
.....

15. Small ants form colonies in the gall of some species of acacia.

(a) **What name** is given to this phenomenon? (1 mark)
.....

(b) **How does** each organisation benefit from the relationship above? (2 marks)
.....
.....

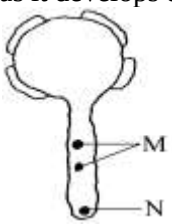
16. Rift Valley fever is transmitted by Aedes Mosquito.

(a) **Name** the causative agent of the disease. (1 mark)
.....

(b) **State any one** symptom of the disease. (1 mark)
.....

(c) **State any one** preventive measure. (1 mark)
.....

17. The diagram below shows a pollen tube as it develops down the style.



(a) **Name** the parts labelled M and N.
M..... (1 mark)
N..... (1 mark)

(b) **State** the function of part M. (1 mark)
.....

NAME: …… INDEX NO:……

SCHOOL: ……

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME: 2 HOURS

LAIKIPIA DISTRICT JOINT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2012

231/2
BIOLOGY
PAPER 2
JULY /AUGUST 2012

INSTRUCTIONS TO CANDIDATES.

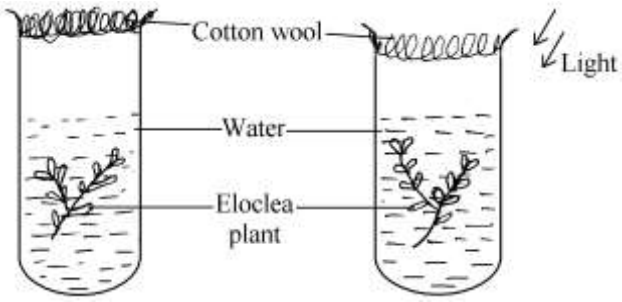
- *This paper contains two sections **A** and **B**.*
- *Answer **all** the questions in section **A** in the spaces provided.*
- *In section **B** answer question **8** (Compulsory) and either Question **9** or **10** in the spaces provided.*

For Examiner's Use Only.

	QUESTION	MAX SCORE	SCORE
SECTION A	1	5	
	2	6	
	3	5	
	4	6	
	5	8	
	6	5	
	7	5	
SECTION B	8	20	
	9	20	
	10	20	
TOTAL		**80**	

SECTION A. (40 MARKS)

1. Bromothymol blue is a laboratory indicator which turns to yellow in acidic conditions and purple in alkaline media. The apparatus shown below were set and kept overnight. Setup A, in dark while B was near a source of light.



(a) **State** the observation made in the morning when Bromothymol blue was added in each test tube. (2 marks)

.....

.....

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

.....

.....

(c) **Why** was it necessary to use wool in the experiment rather than rubber stopper?

(1 mark)

.....

2. A primary school girl whose father is a well known politician accused a form 4 boy of being the biological father to her baby. The girl has blood group B while the baby has blood group O. The accused boy has blood group AB.

(a) Is the accusation valid? **Explain** your answer using at least two correct classes.

(4 marks)

.....

.....

.....

.....

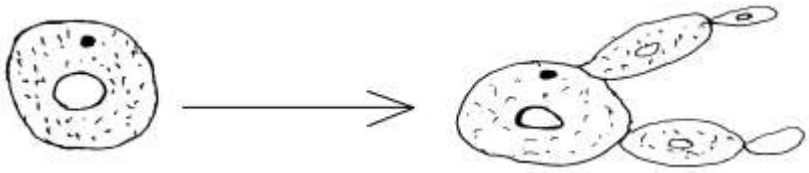
(b) **State two** other scientific methods that can be used to decide the disputed parentage.

(2 marks)

.....

.....

3. The diagram below shows a physiological process occurring in yeast.



(a) (i) **Name** the physiological process illustrated. (1 mark)

.....

(ii) **Describe** how the process is achieved. (2 marks)

.....

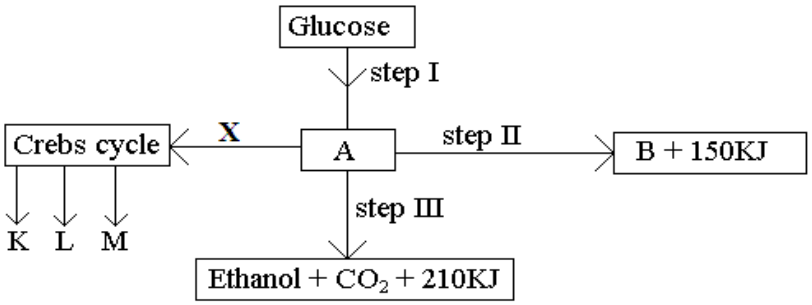
.....

(b) For the process to occur the temperature of the nutrient media should be maintained at 37^0C. **Explain**. (2 marks)

.....

.....

4. The diagram below represents a simple respiratory pathway. Study it and answer the questions that follow:



(a) **Name** the kingdom in which step III takes place. (1 mark)

.....

(b) (i) **Name** the process taking place in step I. (1 mark)

.....

(ii) **Name** the substance A and B. (1 mark)

A.....

B.....

(c) **Name** the products K, L and M. (3 marks)

.....

.....

.....

5. (a) **Name** the **three main** types of skeletons.

(3 marks)

.....

.....

(b) **State any two** significance of the skeleton found in the members of phylum arthropoda. (2 marks)

.....

.....

(c) (i) **Differentiate** between complete and incomplete Metamorphosis. (2 marks)

.....

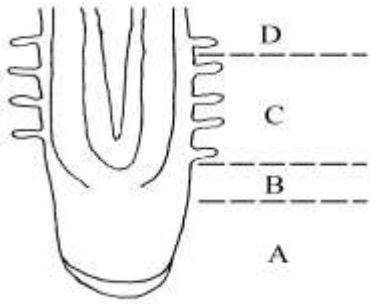
.....

(ii) What advantage does complete metamorphosis have over incomplete metamorphosis. (2 marks)

.....

.....

6. The diagram below represents a root tip.



(a) Label the regions marked A, B, C and D of the root tip and give the functions of each part. (4 marks)

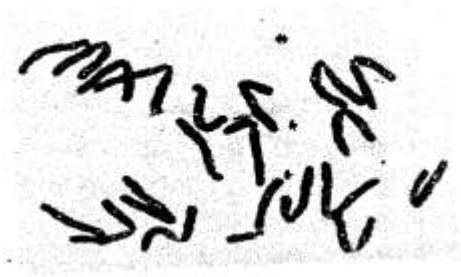
	Region	Function
A		
B		
C		
D		

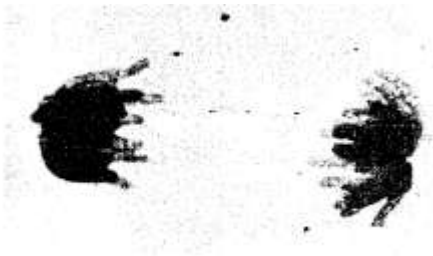
(b) **State** why secondary growth does not take place in tomato plant. (1 mark)

.....

.....

7. The photo micrographs provided below shows various stages in the process of mitosis.





(a) **Identify** the states of mitosis in A and B. (2 marks)

A.....

B.....

(b) **Give a reason** for the identification in 7(a) above. (1 mark)

A.....

B.....

(c) **State one** importance of meiosis. (1 mark)

.....

SECTION B

Answer question 8 (compulsory) in the spaces provided. Then answer either question 9 or 10 in the spaces provided after the questions.

8. (Compulsory). In an experiment, a group of female locust was provided with excess amounts of food from the day they moulted to adult stage up to the 20th day of adulthood. The average weight of dry faeces for each animal was estimated every 2 days. The average fresh weight of each locust was also calculated every second day. It was noted that they all laid eggs between day 12 and day 14 and again between day18 and day 20 of adult life. The data on average dry weight of faeces and weight every two days was presented in the table below.

Days of Adult life	2	4	6	8	10	12	14	16	18	20
Average dry wt of faeces in mg.	240	420	610	740	850	630	540	830	750	620
Average fresh wt of Locust in mg.	530	750	840	970	1020	1160	860	980	1120	820

(a) Using a suitable scale and appropriate axis, **draw** a graph of the average fresh weight against time. (5 marks)

(b) On the same grid paper, **plot** histograms to show the average dry weight of faeces produced by each locust every 2 days. (5 marks)

(c) **What** is the relationship between food consumption and body weight? **Explain** this relationship. (1 mark)

.....

(d) **What** is the relationship between egg production and food consumption? **Account** for this relationship. (1 mark)

.....

(e) **What** is the relationship between body weight and food consumption? (1 mark)

.....

(f) **State two** likely consequences that may happen if the amount of food was reduced to one half of that required by each locust throughout the study period. (2 marks)

.....

.....

(g) **State two** nutrients that must have been present in the locust diet giving a reason for each. (2 marks)

.....

.....

(h) If the population of locusts was established by Capture- recapture method, **state** the formula you would use to get this estimate of population. (3 marks)

.....

.....

.....

9. (a) **Distinguish** between breathing and respiration. (2 marks)

(b) **Describe** breathing mechanism in man. (14 marks)

(c) **Explain any two** adaptations of respiratory surfaces to their functions. (4 marks)

10. (a) **Describe** the Darwin theory of natural selection. (10 marks)

(b) **Explain** why plant breeders encourage cross-breeding and discourage inbreeding. (4 marks)

(c) The ban of Sulphur based malaria drugs is because the plasmodium has developed resistance after long exposure to the drugs. **Explain** how resistance to the drug develops. (4 marks)

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Name…… **Index No. …….**

School ……...

231/1
BIOLOGY
(THEORY)
PAPER 1
JULY / AUG. 2012
2 HRS

NANDI NORTH DISTRICT MOCK EXAMINATION-2012

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

231/1
BIOLOGY
(THEORY)
PAPER 1
JULY / AUG. 2012
2 HRS

INSTRUCTIONS TO CANDIDATES

Answer ALL questions in the spaces provided

For Examiner's Use Only.

Question	Maximum Score	Candidate's score
1 – 33	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. State **two** functions of the substance secreted by sebaceous glands. (2mks)

……

2. Name the regions in plants where the following take place. (2mks)

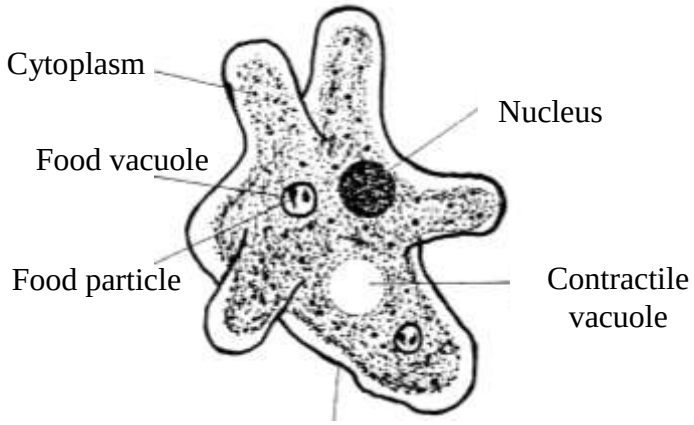
(i) Primary growth.

……

(ii) Secondary growth

……

3. A student observing a drop of water under the high power objective of a microscope observed an organism and drew the following diagram.



a) Suggest the kingdom to which the organism belongs. (1mk)

……

b) Identify the organism. (1mk)

……

c) Give one example of a disease caused by the organism. (1mk)

……

4. The figure below illustrates a portion of chromosome with genes A,B,C,S,Q and R.

A	B	C	S	Q	R

Using diagrams similar to the one above, illustrate the changes that the above chromosome would undergo if the following <u>mutations</u> occurred on gene C and S.

(a) Deletion (1mk)

(b) Duplication (1mk)

5. a) Name the type of skeleton that insects have. (1mk)

……

b) What substance is the insect skeleton made of? (1mk)

6. In an experiment, the pituitary gland of a rat was removed.

a) State the effect this will have on the quantity of urine produced by the rat. (1mk)

……

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

……

7. State **two** ways by which plants compensate for their lack of ability to move from one place to another. (2mks)

……

……

8. The lungs and ileum are adapted for absorption. State **three** features they have in common which facilitate absorption. (3mks)

……

……

9. State the function of the diaphragm in the light microscope. (1mk)

10. In view of modern genetics, explain why Lamarckian theory is unacceptable. (2mks)

……

……

11. How has genetic engineering helped in the field of medicine? State two ways. (2mks)

……

……

12. Collenchyma cells remain strong and maintain their shape even when completely dry. Explain. (1mk)

……

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

……

……

14. A tall garden pea plant crossed with a dwarf one produces offsprings of which, about half are tall and the other half are dwarf. What are the genotypes of the parents? (2mks)

……

……

15. What is the functional difference between a tendon and ligament. (1mk)

……

16. a) How is the fovea centralis adapted for its function in the human eye. (1mk)

……

……

b) A person was not able to see far objects clearly but could view near objects clearly. Name the eye-defect the person had. (1mk)

……

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

……

……

17. Explain why food is stored in an insoluble form in the cells of living things. (1mk)

……

18. Name **two** components of blood that are not present in the glomerular filtrate. (2mks)

……

……

19. State **two** characteristics of skeletal muscles. (2mks)

……

……

20. State **two** functions the cell organelle that contains chlorophyll in plants. (2mks)

……

……

21. State **three** differences between osmosis and active transport. (3mks)

……

……

22. a) State the importance of the following features in gaseous exchange.

(i) Cartilage in the trachea (1mk)

……

……

(ii) Moisture on the surface of alveoli. (1mk)

……

……

b) Name **two** sites where gaseous exchange takes place in terrestrial plants. (2mks)

……

……

23. Explain how the following adaptations minimize the rate of transpiration.

a) Sunken stomata. (1mk)

……

b) leaf drooping. (1mk)

c) State **two** environmental factors that influence the rate of transpiration. (2mks)

24. State the role of decomposers in an ecosystem. (1mk)

……

25. State **three** advantages of asexual reproduction in organisms. (3mks)

……

……

……

26. a) Name a blood vessel that starts and ends as capillaries outside the liver. (1mk)

……

b) Name the blood vessel that has blood with the highest concentration of carbon (IV) oxide. (1mk)

……

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

$C_6H_{12}O_6 \longrightarrow 2C_2H_5OH + 2CO_2 + Energy$

Glucose (Ethanol) (Carbon (IV) oxide)

a) Name the process. (1mk)

……

b) State the importance of the process to living organisms. (1mk)

……

……

c) Name the products of a similar process in animals. (1mk)

……

28. a) State the functions of the stomach in mammals. (3mks)

……

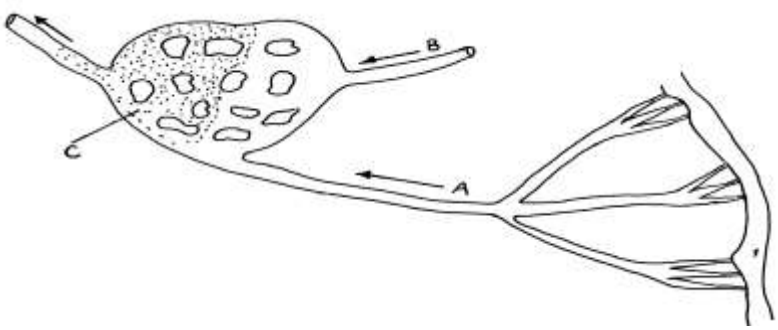
……

……

b) What food substance would be found in the villi of an animal after a meal of boiled potatoes. (1mk)

……

29. The diagram below shows a part of a circulatory system. The arrows indicate the direction of movement of blood.



Ileum

a) Name the blood vessels A and B. (2mks)

……

……

b) Explain why it is important to transport food substances to organ C before being circulated to the rest of the body. (2mks)

……

……

……

30. Define the following terms used in ecology. (4mks)

(i) Biosphere

……

(ii) Population

……

(iii) Synecology

……

(iv) Carrying capacity

……

31. State the functions of vitamins in animals. (3mks)

……

……

32. The diagram shows a metabolic pathway in which substrate A is converted with the aid of enzymes to end product D.

A $\xrightarrow{\text{Enzyme 1}}$ B $\xrightarrow{\text{Enzyme 2}}$ C $\xrightarrow{\text{Enzyme 3}}$ D

a) Suggest what would happen to the rate of production of end product D;

……

……

(i) If the concentration of substrate A was reduced. (1mk)

……

(ii) the concentration of Enzyme 1 was increased. (1mk)

……

b) State **two** other factors that would affect the rate of production of D in the above process. (2mks)

……

33. State the importance of osmoregulation in organisms. (2mks)

……

……

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231/2
BIOLOGY
(THEORY)
PAPER 2
JULY / AUG. 2012
2 HRS

NANDI NORTH DISTRICT MOCK EXAMINATION-2012

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

231/2
BIOLOGY
(THEORY)
PAPER 2
JULY / AUG. 2012
2 HRS

INSTRUCTIONS TO CANDIDATES

- This paper contains two sections
- Answer all questions in section A
- In section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided.

For Examiner's Use Only.

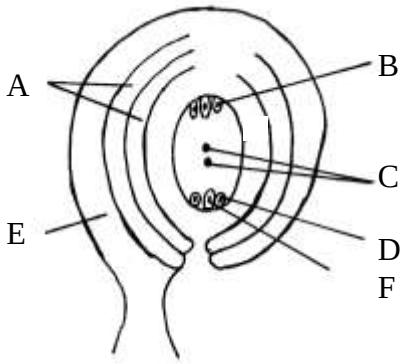
Section	Question	Maximum Score	Candidate's score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
TOTAL SCORE		80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A (40 MARKS)

Answer all questions in the spaces provided.

1. The figure below shows the structure of the embryo sac. (2mks)



a)(i) Name the parts labelled

B …… (1mk)

C …… (1mk)

F …… (1mk)

(ii) State what happens to A and E after fertilization.

A …… (1mk)

E …… (1mk)

b) Name the hormone that promotes fruit development after fertilization. (1mk)

……

……

c) Define the term fruit. (2mks)

……

……

2. a) Name the sugar in

(i) DNA (1mk)

……

(ii) RNA (1mk)

……

b) The figure below shows the sequence of Nitrogenous bases on part of strand of DNA.

Strand of DNA

A A A G C G T A G

c) (i) Draw a complementary strand of the messenger RNA (mRNA) indicating the complementary bases. (1mk)

(ii) Give the name of the mutation type that occurs when the sequence of a base is altered.

(1mk)

……

c) In humans, red-green colour blindness is determined by a sex-linked gene. The allele for normal sight is represented by letter **R** and that of colour blindness is represented by letter **r**. A carrier female married a colour blind male. Work out the genotypes of F1 generation. (4mks)

……

……

……

……

3. a) State one instance when the concentration of carbon (IV) oxide increases in blood.

(1mk)

……

b) Name the site for gaseous exchange in a mammalian lung. (1mk)

……

c) How is the structure above modified to perform its function? (4mks)

……

……

d) Explain the importance of rings of cartilage in trachea of mammals being C-shaped and not complete circular rings? (2mks)

……

……

4. a) What is adaptive radiation? (2mks)

……

……

b) How would *staphylococcus sp* of bacteria develop resistance to antibiotics? (3mks)

……

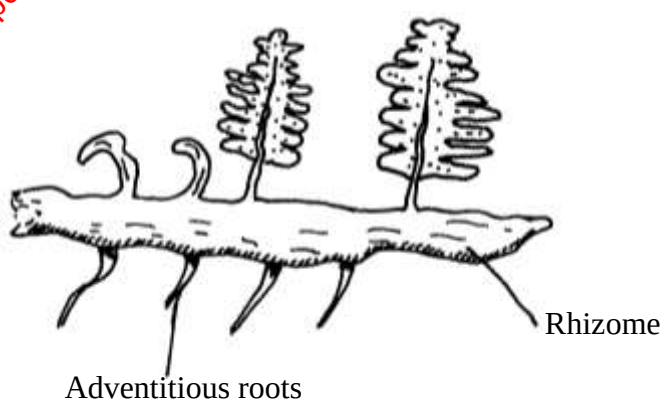
……

……

c) In Malaria infested regions of Africa, infants with sickle cell trait have a better chance of survival than a homozygote. Explain. (3mks)

……

5. Below is a diagram of a plant a form three student collected while carrying out an ecological study.



(a) With reasons identify the division into which the students classified the plant.

Division …… (1mk)

Reasons (2mks)

……

b) (i) Name the structure that produces spores in this plant. (1mk)

……

(ii) State two differences between the plant above and those belonging to the phylum spermatophyta.

……

……

c) State the features of this plant that made the student classify it in the kingdom plantae. (2mks)

……

SECTION B (40 MARKS)

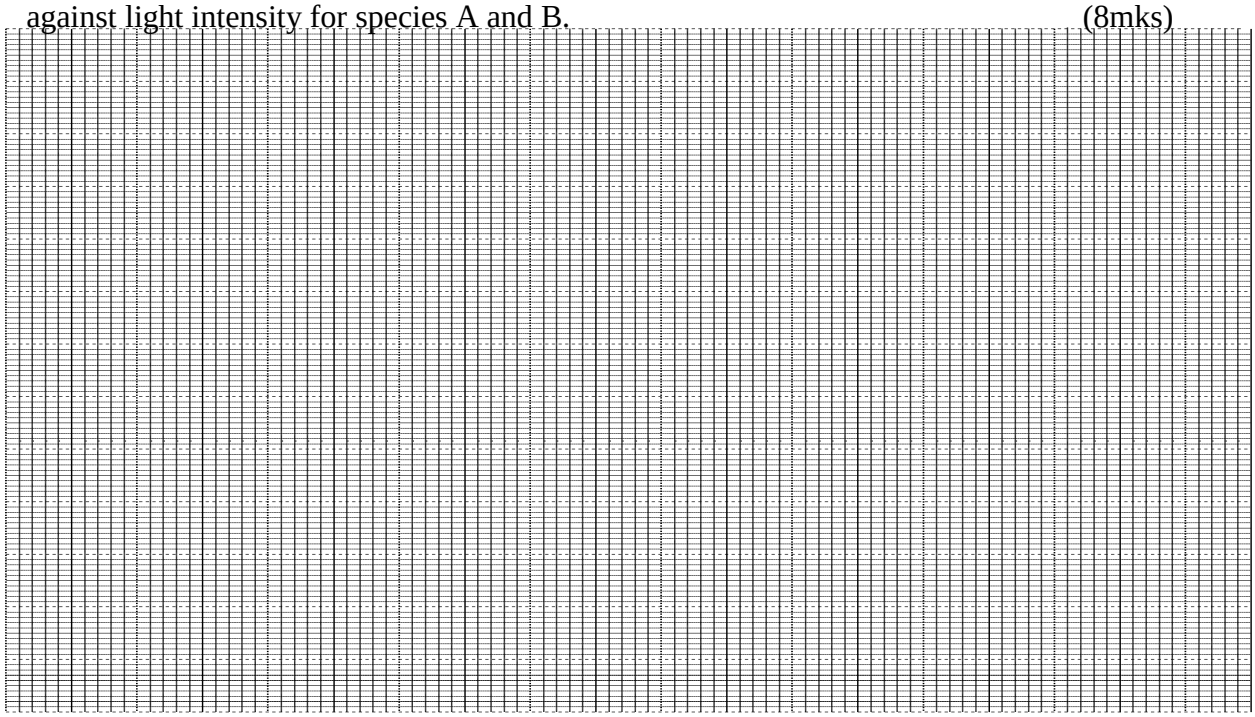
Answer question 6 (compulsory) and either question 7 or 8

6. Plant species A and B grow naturally in different habitats. In an experiment the exchange of carbon (IV) oxide between the atmosphere and species A and B was determined over a range of light intensities from darkness to the equivalent of mean noon sunlight. A constant temperature was maintained throughout the experiment. The data obtained is shown below.

Light intensity as a percentage noon sunlight	Net carbon (IV) oxide absorption in arbitrary units	
	Species A	Species B
0	-0.1	-0.8
10	3.0	0.5
20	5.3	3.5
30	6.5	7.0
40	6.5	9.3
50	6.7	11.5
60	6.8	13.2
70	7.0	15.0
80	6.5	17.0
90	6.8	18.0

100	6.7	19.0

a) Using a suitable scales, Draw graphs of Net Carbon (IV) oxide absorption in arbitrary units against light intensity for species A and B. (8mks)



b) Give a reason for the behaviour of curve B as seen on the graph. (1mk)

……

c) (i) Using the graphs drawn, state the possible habitat of species A. (1mk)

……

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

……

d) Other than light intensity, explain how three the factors affect the rate of photosynthesis. (6mks)

……

……

……

……

e) (i) Define the term photosynthesis. (1mk)

……

……

(ii) Name two important products of light stage in photosynthesis. (2mks)

7. Explain how the various activities of man have caused pollution of air. (20mks)

8. a) Describe secondary thickening in flowering plants. (13mks)

b) Describe one method which can be used to measure the average growth of a root seedling. (7mks)

Name…… **Index No.** …….

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231/1
BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
TIME : 1 ½ Hours

NAROK DISTRICT MOCK EXAMINATION – 2012

Kenya Certificate Of Secondary Education (KCSE)

231/1
BIOLOGY
PAPER 1
THEORY
JULY / AUGUST 2012
TIME : 1 ½ Hours

INSTRUCTIONS TO CANDIDATES

- Answer ALL questions in the paper in the spaces provided

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1 – 32	80	

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

1. How are the anthers of insect pollinated flowers suited to their function. (2mks)

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……

2. State two effects of adrenaline hormone in a human body. (2mks)

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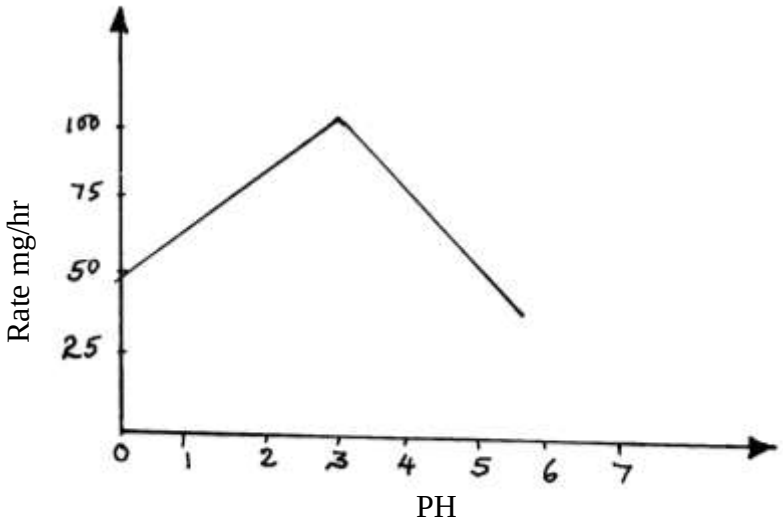
3. The graph below show the effect of pH on the rate of activity of a digestive enzyme found in human.



a) What is the optimum pH for the enzyme? (1mk)

……

……

b) Name the part of the alimentary canal the enzyme would be active. (1mk)

……

……

c) Suggest the name of the enzyme. (1mk)

……

……

4. A student caught an animal with the following characteristics. Two body parts simple eyes four parts of legs.

a) To which class does the animal belong. (1mk)

……

……

b) Name the type of skeleton found in the animal. (1mk)

……

……

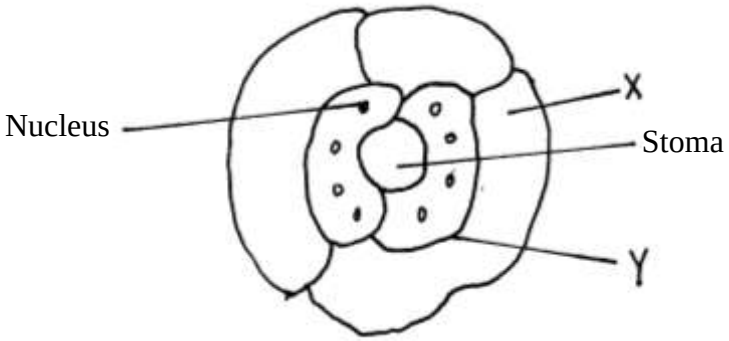
5. Name two mechanical support tissues in higher plants. (2mks)

……

……

……

6. The diagram below represents a part of the lower epidermis of a leaf



a) Name the cells labelled X and Y. (2mks)

X ……

Y ……..

b) State the function of the cell labelled Y. (1mk)

……

……

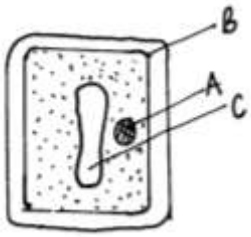
7. State two kinds of materials that would be used in cleaning dirty lenses in the care of microscope. (2mks)

……

……

……

8. The diagram below shows the generalised structure of a cell. Study it and answer the questions that follow.



(i) Identify the parts labelled B and C above. (2mks)

B ……

C ……....

(ii) State one role of the part labelled A (1mk)

……

……

9. State two properties of a cell membrane. (2mks)

……

……

……

10. Mention three animal structures which are used as surfaces of gaseous exchange. (3mks)

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11. State the differences between open and closed circulatory systems. (2mks)

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……

12. Name the method of feeding shown by Amoeba. (1mk)

……

13. In four O'clock flower a pure breed red flowered plant was crossed with a pure breed white flowered plant. All the F_1 plants had pink flowers.

Show how the pink flowered plants were obtained. (Use punnet square) (3mks)

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14. (i) Define the term "eye accommodation". (1mk)

……

……

(ii) State adaptations of the following parts of the mammalian eye. (2mks)

(a) Iris ……..

(b) lens ……

15. Name three applications of genetics. (3mks)

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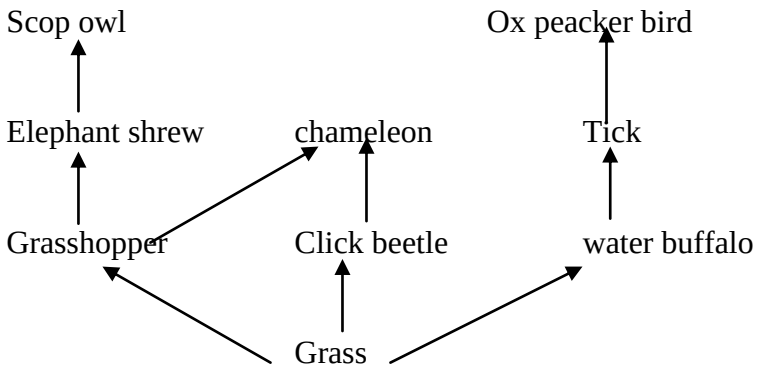
16. The figure shows a food web which includes some organisms in the African grasslands.



a) Draw a food chain consisting of four organisms. The organisms must be part of the food web. (1mk)

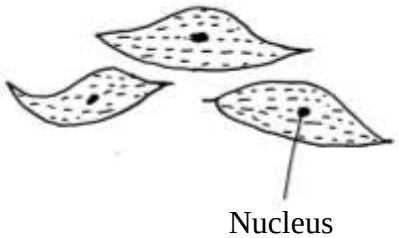
b) Using examples from the food web explain the difference between producers and consumer. (2mks)

……

……

……

17. The figure below represent type of muscles.



a) Identify the type of muscle. (1mk)

……

……

b) Name two parts of the human body where this type of muscle can be found. (2mks)

……

……

18. State two ways in which plants compensate for lack of movement. (2mks)

……

……

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……

19. Give two advantages of natural selection. (2mks)

……

……

……

……

20. (i) Name the gland that secretes juvenile hormone. (1mk)

……

(ii) Name two characteristics of Meristems. (2mks)

……

……

……

……

21. Give two reasons why the bark is important in plant. (2mks)

……

……

……

……

22. (i) Other than corpus luteum, name another site for the secretion of hormone progesterone. (1mk)

……

(ii) Name the two components of the pollen tube. (2mks)

……

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……

23. Describe how you can use the belt transect to estimate the size of a plant population. (3mks)

……

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24. (i) Identify the process through which intercellular fluid is formed in the body. (1mk)

.....

.....

(ii) Name the end products of the following processes in the liver (2mks)

a) Deamination

.....

.....

b) Destruction of worn out red blood cells.

.....

.....

25. (i) Explain how vasodilation increases heat loss through the skin. (2mks)

.....

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26. Give two effects of lactic acid accumulation in the muscles. (3mks)

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.....

.....

27. Give two reasons why diffusion alone is able to meet the gaseous requirements of protozoans. (2mks)

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28. State the role of carbon (IV) oxide in the blood. (3mks)

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.....

29. A certain food is suspected to have proteins. What chemical would you use to confirm the presence of proteins. (1mk)

……

……

(ii) Describe the procedure you would use to give the expected results. (2mks)

……

……

……

……

30. Define the following terms. (2mks)

(i) a synapse.

……

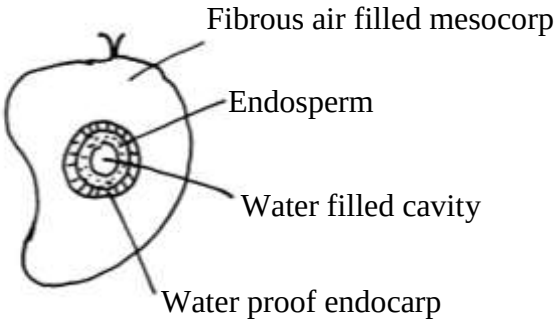
……

(ii) Synapsis

……

……

31. The diagram below represent a vertical section of a fruit.



a) Suggest the possible agent of dispersal of the above fruit. (1mk)

……

……

b) Give features that adapt it to the agent of dispersal named in (a) above. (2mks)

……

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……

32. State two reasons why scientific names of organism are preferred to common names. (2mks)

……

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Name…… **Index No.** …….

School ……...

231/2
BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME : 2 ½ Hours

NAROK DISTRICT MOCK EXAMINATION – 2012

Kenya Certificate Of Secondary Education (KCSE)

231/2
BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2012
TIME : 2 ½ Hours

INSTRUCTIONS TO CANDIDATES

- This paper has two sections A and B.
- Answer all questions in section A in the spaces provided on the question paper.
- From section B answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

For Examiner's Use Only

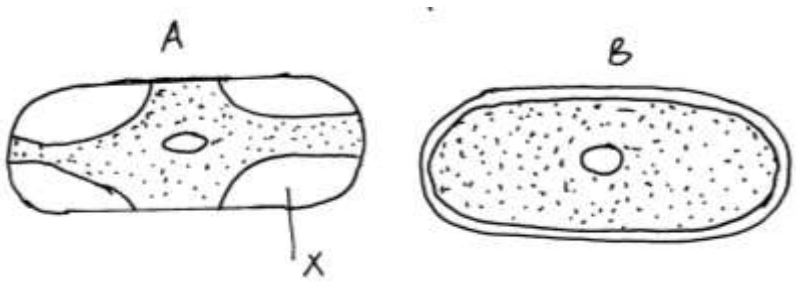
Section	Question	Maximum Score	Candidate's score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A (40 MARKS)

Answer ALL the questions in this section in the spaces provided.

1. The cells shown below were obtained from two different plant cells which were immersed in 2% and 25% salt solutions.



a) Which of the two cells A and B, was immersed in 2% salt solution. Give a reason for your answer. (2mks)

……

……

……

……

b) Name the substance present in the part marked X in cell A. Explain your answer. (2mks)

……

……

……

……

c) Comment on the nature of the 25% salt solution in relation to the cell sap. (1mk)

……

……

d) (i) What biological phenomenon leads to the observations made in A. (1mk)

……

……

(ii) State two importance of osmosis in plants. (2mks)

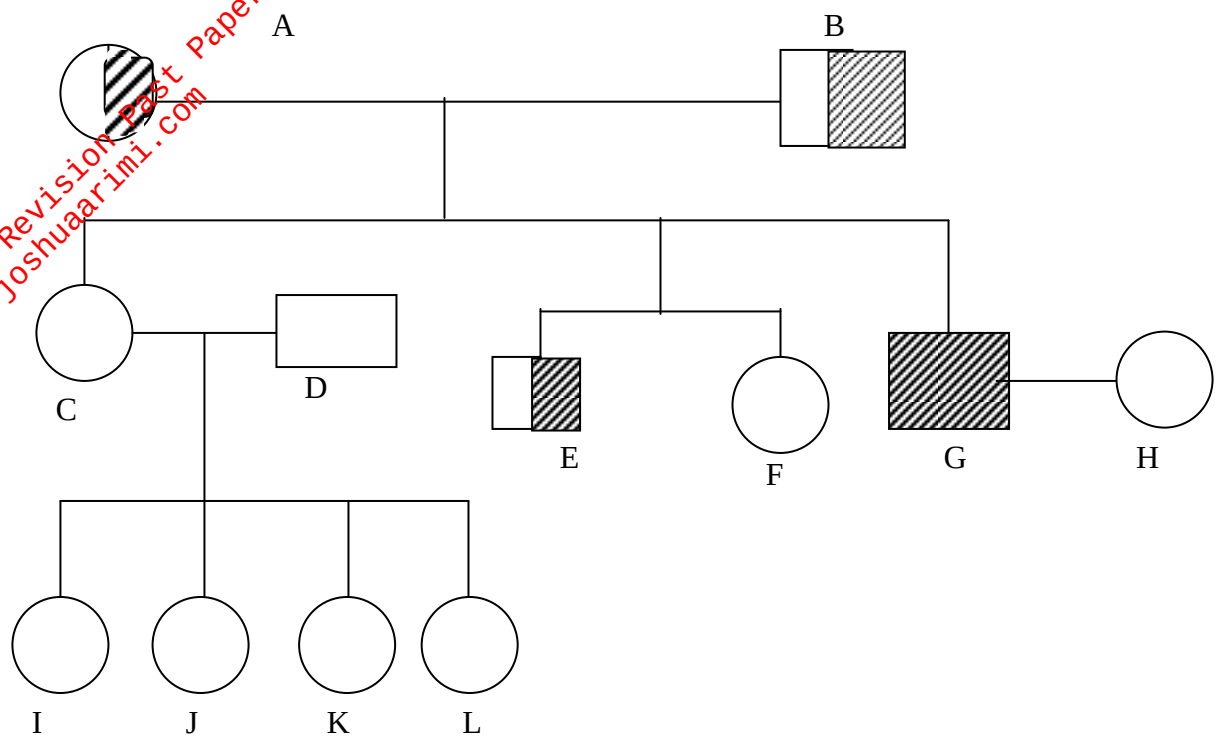
……

……

……

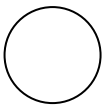
……

2. Phenylketonuria is an inherited disease. The allele (n) for the disease is recessive to the normal allele (N). The diagram below shows how the condition is inherited.

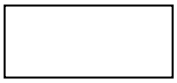


KEY

 - Carrier female

 - Normal female

 - Carrier male

 - Normal female

 - Male sufferer

a) Give the genotype of each individual in the table below.

Individual	Genotype
A	
G	
K	

(3mks)

b) Identify the children of A and B that are homozygous for the condition. (2mks)

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c) i) Name the chromosome in which the gene for hairy ear is located in man. (1mk)

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(ii) State <u>two</u> effects of non-disjunction in humans. (2mks)

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3. a) Why does a membrane form around an egg immediately after fertilization. (1mk)

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b) Give three differences between an human egg and a sperm. (3mks)

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c) (i) What is the difference between fertilization in flowering plants and that in man.

(1mk)

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(ii) State three characteristics of the male parts of an insect pollinated flower. (3mks)

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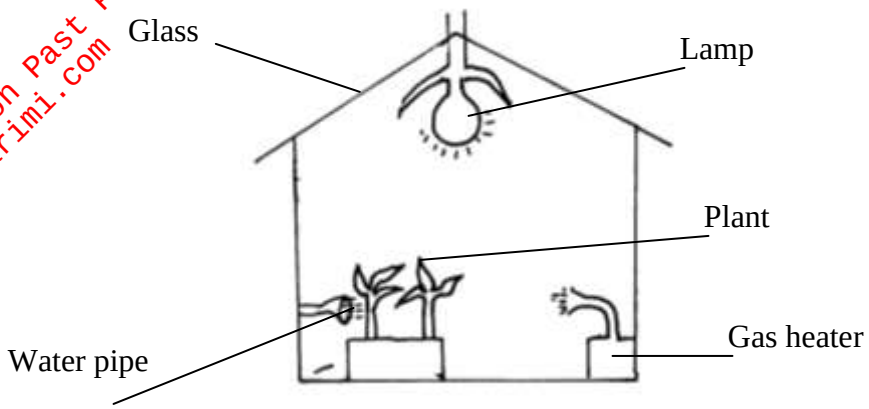
4. a) Complete the balanced symbol equation for photosynthesis.

$$6CO_2(g) + 6H_2O_{(l)} \xrightarrow[\text{Chlorophyll}]{\text{Sunlight}} \text{\_\_\_\_\_} + 6O_{2(g)}$$

(1mk)

b) Market gardeners use automatic control mechanisms in their green houses. The diagram below shows such a commercial mechanism which provide everything the plants need for a high rate of photosynthesis.



Explain two ways in which the gas heater could increase the rate of photosynthesis. (4mks)

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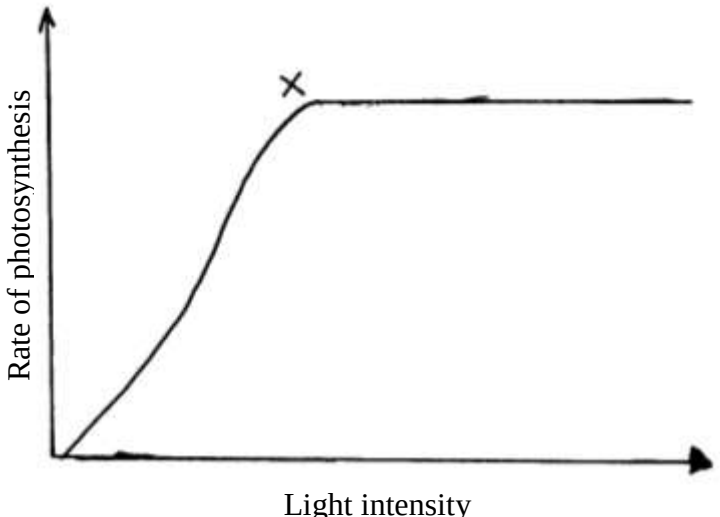
c) The graph below shows the effect of increasing light intensity on the rate of photosynthesis.



i) Explain why the rate of photosynthesis does not continue to increase as light intensity increases. (1mk)

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(ii) Name two factors limiting the rate of photosynthesis at point X. (2mks)

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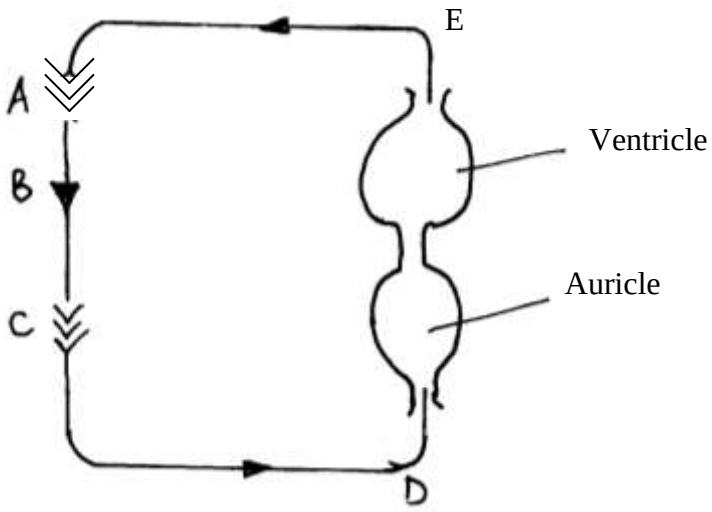
5. The diagram below represent blood circulation in a fish.



a) Name the part of the fish represented by A and C.

A …….. (1mk)

C …….. (1mk)

b) i) State the difference in composition of blood in blood vessel labelled B and E.

(1mk)

……

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(ii) State two ways in which the above circulatory system differs from the one found in mammals. (2mks)

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c) State three adaptations of the cardiac muscles to their function. (3mks)

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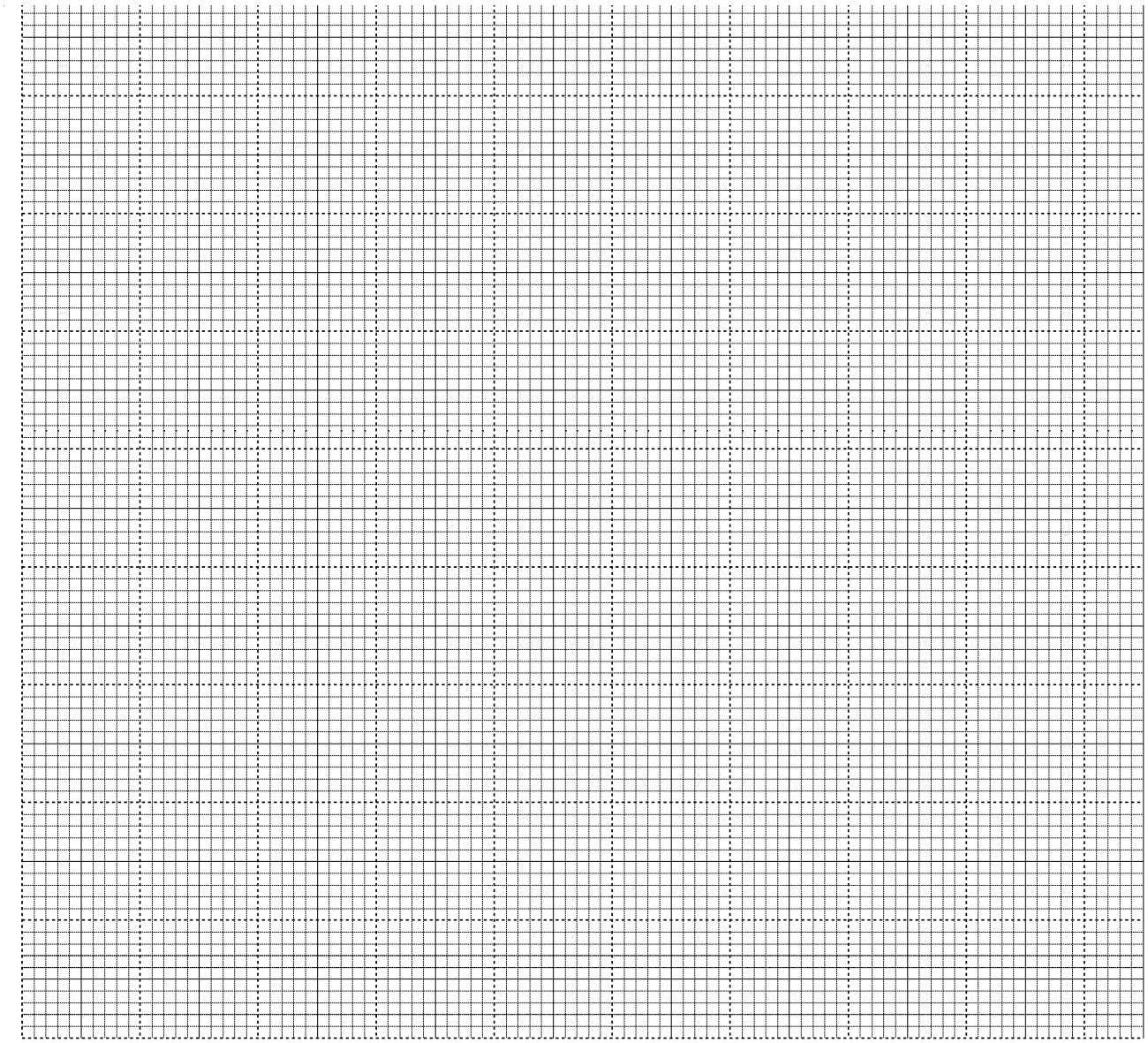
SECTION B (40 MARKS)

Answer question 6 (compulsory) in the spaces provided and either question 7 or 8 in the spaces provided after question 8

6. A research was carried out to determine the trend of growth for boys and girls. Their average body mass in kilograms (kg) was taken separately for a period of 20 years and the results are as shown in the table below.

Age (Years)	Average body mass for boys (kg)	Average body mass for girls (kg)
0	2.5	2.5
2	11.1	11.5
4	15.0	16.0
6	18.5	19.3
8	22.1	27.1
10	25.1	27.1
12	27.5	30.5
14	37.0	35.5
16	44.0	43.0
18	46.9	52.5
20	48.5	55.0

a) On the same axis draw a graph of the average body mass of the girls and boys against age. (7mks)



b) From the graph determine the:

(i) Mass of the boys at the age of 11 years. (1mk)

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……

(ii) Growth rate in girls between 13 and 15 years. (2mks)

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(iii) Account for the change in mass of girls during the age stated in (ii) above. (2mks)

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c) Compare the trend observed in the curves for both boys and girls. (2mks)

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d) Why do girls above 10 years require intake of food that is richer in iron than boys of the same age. (1mk)

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e) (i) Apart from the diet, mention three other factors that affect the rate of growth in both boys and girls. (3mks)

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(ii) Suggest two other parameters, other than average mass, which can be used to estimate rate of growth in humans. (2mks)

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7. a) Differentiate between the following types of nutrition in heterotrophs.

(i) Saprophytism. (2mks)

(ii) Symbiosis. (2mks)

b) Describe how herbivorous mammals are adapted to their mode of feeding. (16mks)

8. Describe how a bony fish is adapted to locomotion in water. (20mks)

END

NYAMIRA DISTRICT MOCK EXAMINATION-2012

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

231/1

BIOLOGY

PAPER 1

1. The diagram shown below is of a specialized cell.

a) Identify the cell. (1mk) *Nym*

b) State its function in the mammalian body. (1mk) *Nym*

2. a) Name two meristematic regions in a flowering plant. (2mks) *Nym*

b) State one characteristic of meristematic region. (1mk) *Nym*

3. Name the organs of the mammalian body that are responsible for the production of gametes (2mks) *Nym*

4. The equation below shows what happens in cellular respiration.

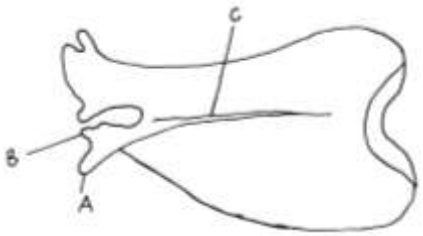
$$C_{18}H_{36}O_2 + 26O_2 \longrightarrow 18CO_2 + 18H_2O + \text{energy}$$

a) In which organelle does such a reaction occur? (1mk) *Nym*

b) Calculate the respiratory quotient of the substrate. (1mk) *Nym*

c) Name the substrate being respired. (1mk) *Nym*

5. The diagram below shows a type of a bone from a mammalian skeleton.



a) Name the parts labelled A and C. (2mks) *Nym*

b) Give the function of the part labelled B. (1mk) *Nym*

c) Name the joint formed between the bone above and the next bone at its anterior region. (1mk) *Nym*

6. a) State the effect of pouring oil into a fish pond. (2mks) *Nym*

b) state one effect of draining raw sewage into a fish pond. (1mk) *Nym*

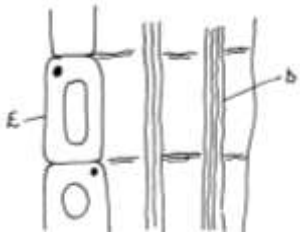
7. State the functions of each of the following parts of the eye. (3mks) *Nym*

Retina

Sclera

Choroid layer

8. The diagram below represents a transport tissue in plants.



a) Identify the parts labelled D and E. (2mks) *Nym*

b) State how the tissue is adapted to its function. (1mk) *Nym*

9. Study the table below and answer the questions that follow

Ion	Concentration in lake water	Concentration in cell sap of aquatic plant
Sodium	120	70
Iodine	0.2	400

a) State the process used to absorb

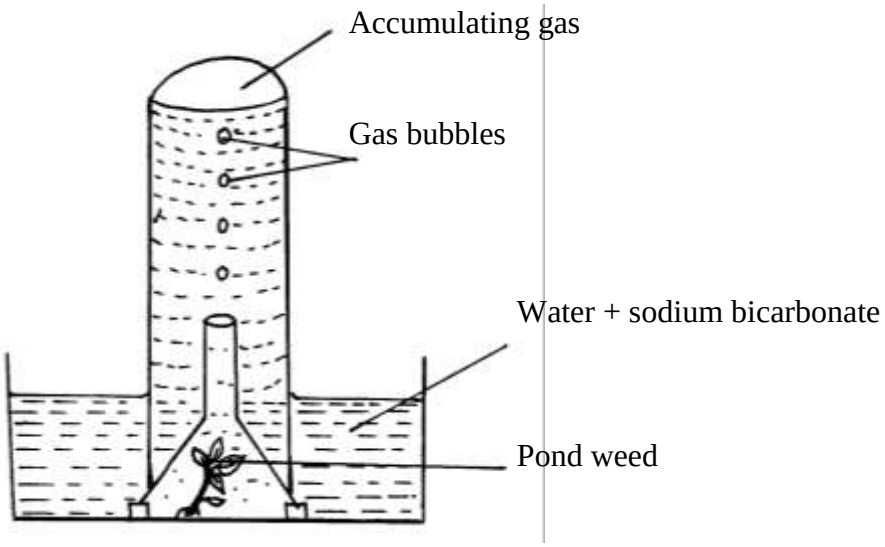
(i) Sodium ions (1mk) *Nym*

(ii) Iodine ions (1mk) *Nym*

b) (i) Name the ion that would fail to be absorbed if the plant is treated with a respiratory inhibitor. (1mk) *Nym*

(ii) State the reason for your answer above. (1mk) *Nym*

10. Study the experimental set up below and answer the questions that follow.



a) Why was sodium hydrogen carbonate added to the water? (1mk) *Nym*

b) Name the environmental factors required in order to obtain positive results.(2mks) *Nym*

11. How are the stems of flowering plants adapted for gaseous exchange? (2mks) *Nym*

12. Identify the type of responses exhibited by the following:

(i) Pollen tube grows towards the ovules. (1mk) *Nym*

(ii) A seedling growing in a darkroom towards an open window. (1mk) *Nym*

(iii)The shoot of a bean seedling pinned on a cork sheet and put horizontally on a wet blotting paper bends upwards while the root bends downwards. (1mk) *Nym*

13. State three reasons why plants do not have an elaborate excretory system. (3mks) *Nym*

14. State why the alveoli in a mammalian lung have the following characteristics.(4mks) *Nym*

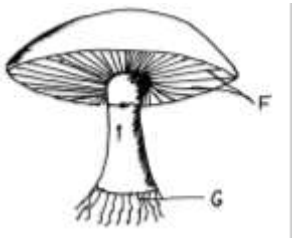
a) Thin walls

b) Moist surfaces

c) Large surface area

d) Highly vascularised

15. Below is a diagram of an organism



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

(b) State the functions of the structures labelled F and G. (2mks) *Nym*

(c) Name the maternal that makes the cell wall of the organism. (1mk) *Nym*

16. State the role of the following hormones in the menstrual cycle in humans

a) Luteinizing hormone. (2mks) *Nym*

b) Follicle stimulating hormone. (2mks) *Nym*

17. State two compounds formed when carbon IV oxide is carried in a red blood cell. (2mks) *Nym*

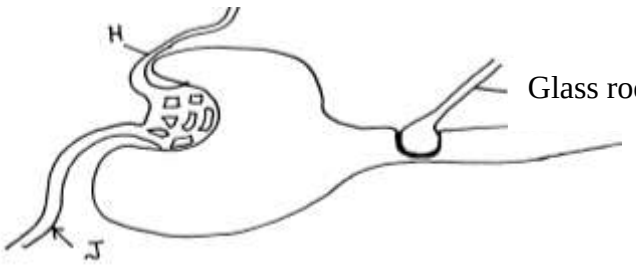
b) Name the compound formed in blood when excess hydrogen ions combine with it to form a buffer in blood. (1mk) *Nym*

18. The following diagrams represents embryonic stages of development for various organisms.

a) Name the type of evidence for organic evolution depicted in the diagram.(1mk) *Nym*

b) Explain the evidence in (a) above. (2mks) *Nym*

19. Study the diagram below which shows part of a kidney nephron and answer the questions that follow.



a) Name the blood vessels labelled H and J. (2mks) *Nym*

b) What is the effect of the glass rod on ultra filtration? (1mk) *Nym*

20. a) Identify the following mammalian tooth. (1mk) *Nym*

b) What is the function of the following during digestion in human beings.(2mks) *Nym*

(i) Teeth……

(ii) Salira ……

21. a) State one advantage of internal fertilization in animals. (1mk) *Nym*

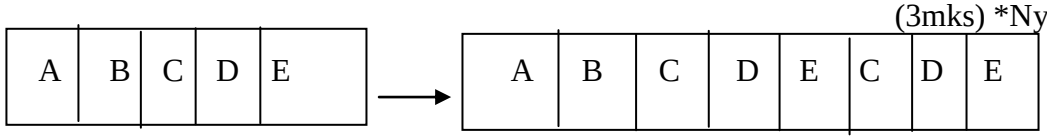
b) What are the advantages of an embryo developing inside a mammalian body?

(2mks) *Nym*

22. Below are some representations of chromosomal mutations. Identify each one of them.

(3mks) *Nym*

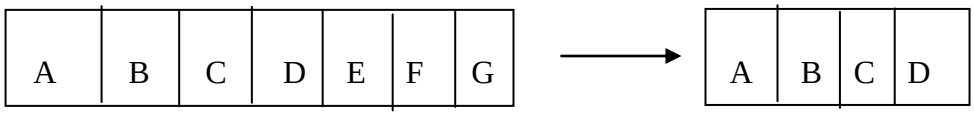
a)



Original Resultant

Identify the mutation ……..

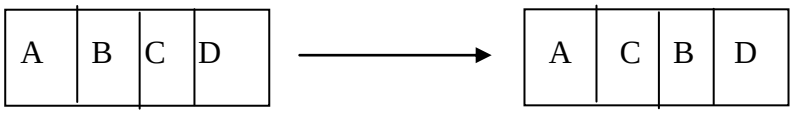
b)



Original Resultant

Identify the mutation ……..

c)



Original Resultant

Identify the mutation ……..

23. a) If the pancreas of a person is not functional;

(i) What hormones are likely to be deficient. (2mks) *Nym*

(ii) Name the disease likely to be suffered by the person. (1mk) *Nym*

24. State two ways by which herbaceous plants attain support. (2mks) *Nym*

25. Differentiate between aerobic and anaerobic respiration. (3mks) *Nym*

26. Name the carbohydrate stored in the:

a) Mammalian liver. …… (1mk) *Nym*

b) Potato tuber …… (1mk) *Nym*

27. A man who had been involved in a road accident had his brain damage. His breathing rate was abnormal and he lost body balance. Which parts of the brain were likely to have been damaged so as to:

a) Have low rate of breathing? (1mk) *Nym*

b) Loss of body balance? (1mk) *Nym*

Name…… **Index No. …….**

School ……...

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY / AUGUST
2 HOURS

NYAMIRA DISTRICT MOCK EXAMINATION-2012

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

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY / AUGUST
2 HOURS

INSTRUCTIONS TO CANDIDATES

- Answer ALL questions in section A. In section B, answer question 5 (compulsory) and either question 6 or 7 in the spaces provided at the end of this paper.

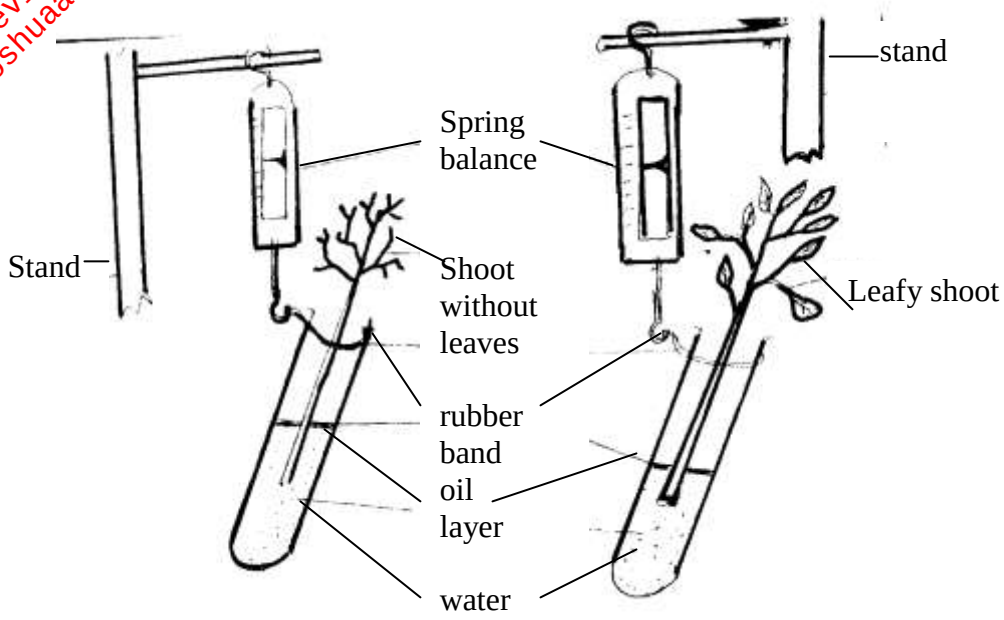
For Examiner's Use only.

Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7 & 8	20	
	Total	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A (40 MARKS)

1. Two leafy shoots from the same plant species were cut under water and placed in two separate boiling tubes. One shoot had its leaves removed. A layer of oil was poured over the water in the boiling tubes. Both boiling tubes were tied by a rubber band to separate spring balances as shown below and placed in bright sunlight.



a) Suggest the aim of the experiment. (1mk)

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……

b) State the observations that would be made on the set ups after a few hours. (1mk)

……

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c) Explain the observation in (b) above (1mk)

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……

d) Give the use of the layer of oil in this experiment. (2mks)

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e) Apart from sunlight, name two other environmental factors likely to influence the process being investigated in this experiment. (2mks)

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f) State one biological importance of this process being investigated to plants. (1mk)

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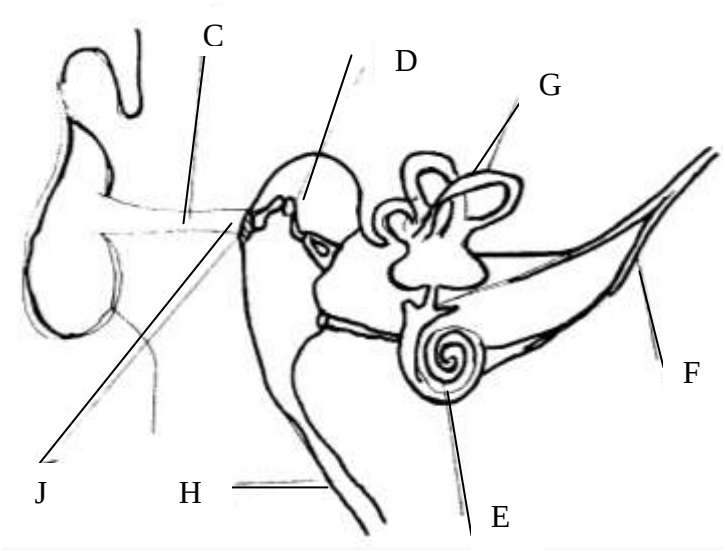
2. The diagram below shows the structure of its human ear.



a) State the functions of the ear. (2mks)

……

……

b) Give the names of the structure labelled C,G and F. (3mks)

(i) C ……..

(ii) G ……

(iii) F ……

c) (i) What is the function of the structure labeled H? (1mk)

……

……

(ii) Name the structure in the ear that detects sound waves. (1mk)

……

……

d) In which structure of the ear is the velocity of the sound waves fastest? (1mk)

……

……

3. (a) Define the term balanced diet. (2mks)

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b) State two factors that determine energy requirement in humans (2mks)

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c) A certain mammal has the following dental formula:

$$I\ \frac{3}{3}\quad C\ \frac{1}{1}\quad PM\ \frac{4}{4}\quad M\ \frac{2}{3} = 42$$

Suggest the mode of nutrition for this mammal. (1mk)

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d) Name **three** components of gastric juice. (3mks)

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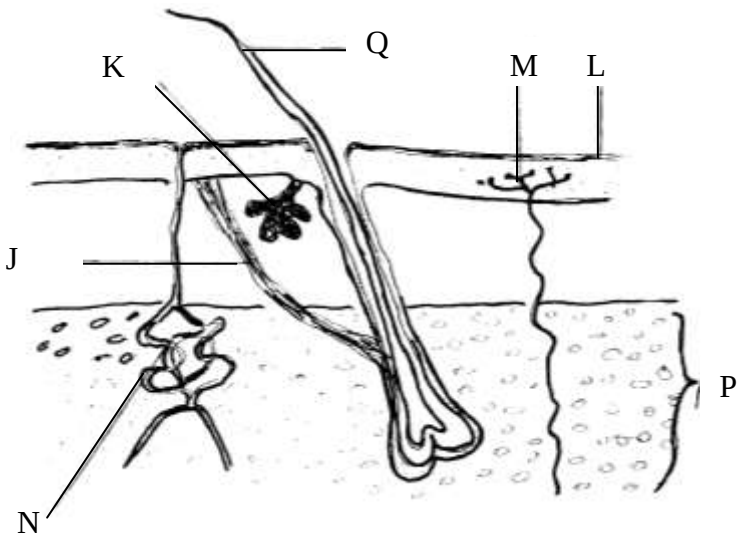
4. The diagram below represents a transverse section through a human skin.



(a) Name the structure labelled M,P and Q. (3mks)

(i) M ……..

(ii) P ……

(iii) Q ……..

(b) Give the function of the structure labelled K. (1mk)

……

……

c) State the role played by the part labelled L. (1mk)

……

……

d) A person is exposed to extremely hot conditions. Suggest what would happen to the following parts of the skin. (2mks)

(i) J

……

……

(ii) N

……

……

e) Name the structure in the brain that controls body temperature. (1mk)

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5. In a breeding experiment, two purple flowered pea plants were crossed. The seeds obtained were sowed and produced 705 purple flowered plants and 224 white flowered plants.

(a) (i) What trait was dominant? (1mk)

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……

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

……

……

b) Using F to represent the gene for purple flower colour and F, the gene for white flower colour, illustrate using a punnet square the cross between the two purple – flowered pea plants. (3mks)

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c) What will be the phenotypic ratio of the offs springs if the parental purple flowered plant and a white flowered plant were crossed? (1mk)

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d) (i) Suggest a reason why sickle cell trait is common in the inhabitants of tropical Africa?

(1mk)

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(ii) What is gene mutation? (1mk)

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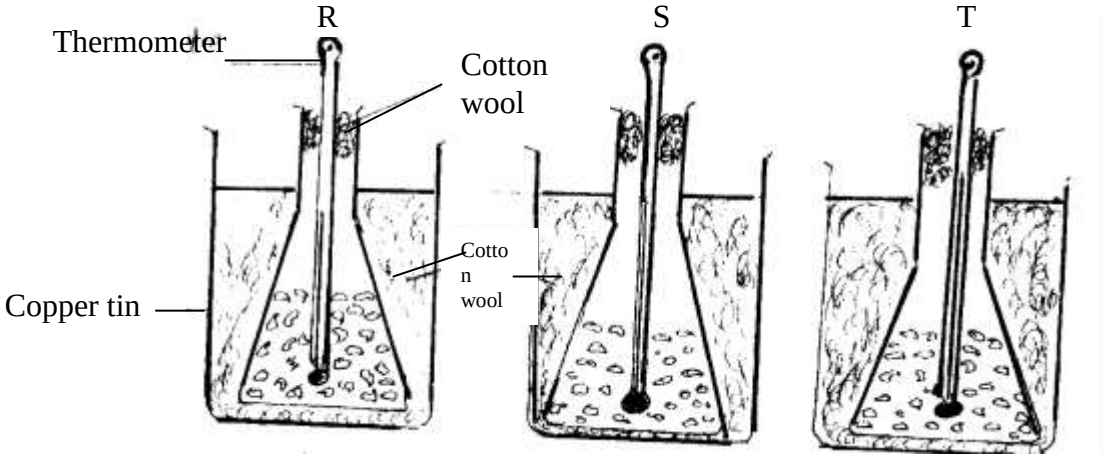
SECTION B (40 MARKS)

Answer Question 6 (compulsory) in the spaces provided. Answer either Question 7 or 8 in the spaces provided at the end of this paper.

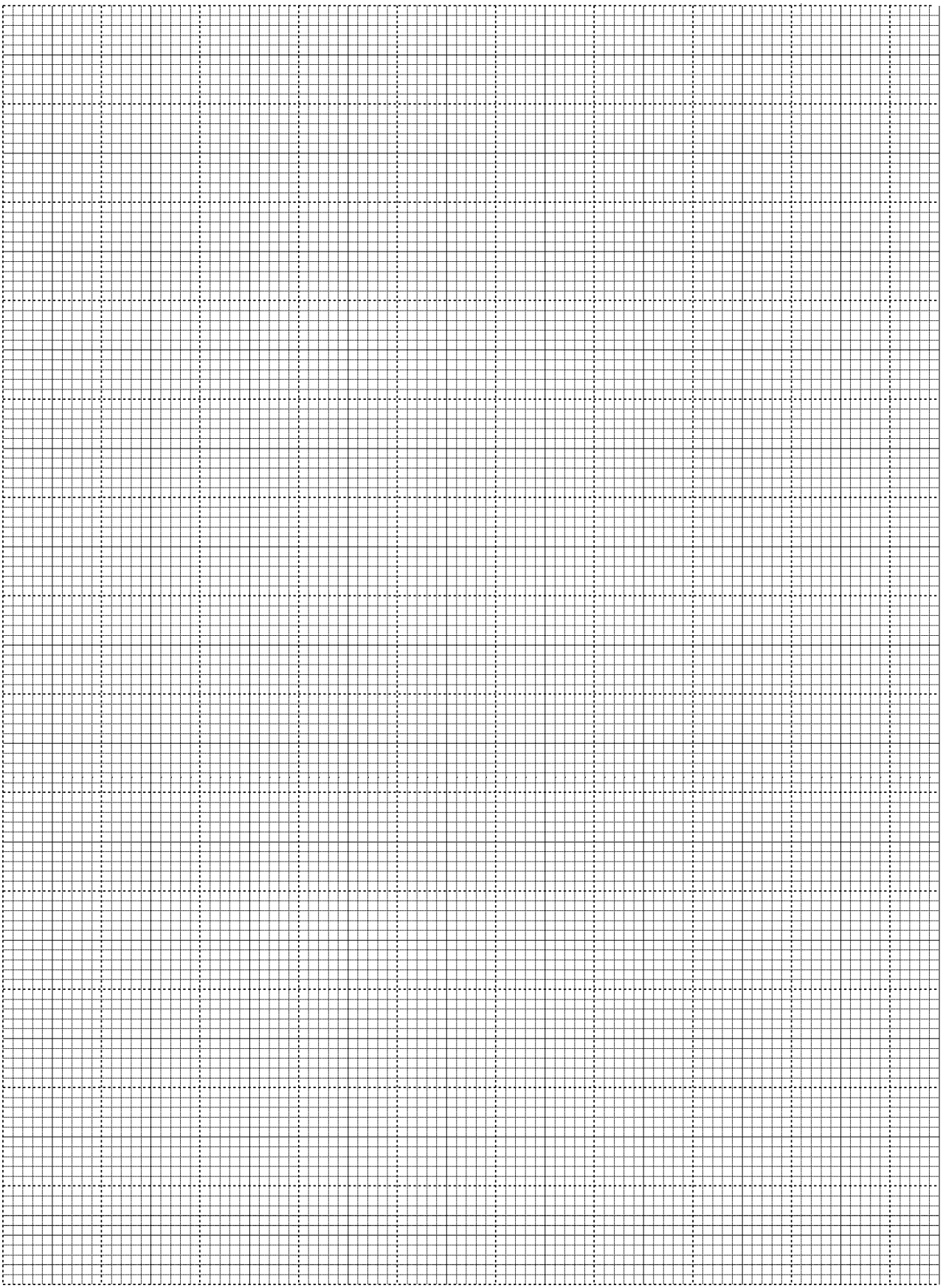
6. The following experiment was set up to investigate a certain physiological process. In R seeds soaked in water were introduced, in S boiled seeds sprinkled with an antiseptic and in T boiled seeds only.



The temperature in each set of R, S and T was recorded daily for one week. The results obtained are shown in the table below.

Set up	Temperature ^{0}							
	Day	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
	R	19.0	25.0	29.0	32.0	36.5	31.0	24.0	24.0
	S	19.0	20.0	20.0	20.5	20.0	20.0	20.0	20.0
	T	19.0	21.0	24.0	25.0	25.5	26.0	32.0	38.0

On the same axis plot graphs of temperature ^{o}C against time in days. (7mks)



(b) Suggest the aim of the experiment. (1mk)

……

c) Account for the differences in the temperature for set ups R and T.

(i) Day 0 to 5. (3mks)

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(ii) After day 5. (4mks)

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d) (i) Explain the shape of graph for set up S for the whole week. (2mks)

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(ii) Why was set up S included in the experiment? (1mk)

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e) State two internal factors that cause seed dormancy. (2mks)

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7. a) Name the parts of the body, where mammalian blood cells are manufactured. (3mks)

b) Describe the functions of mammalian blood. (17mks)

8. a) Compare the nervous and endocrine systems. (8mks)

b) A barefooted man suddenly steps on a sharp thorn and quickly jumps up. Describe the changes that occur in the man's body that brings about this response. (12mks)

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Name…… **Index No. …….**

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231/1
BIOLOGY
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PAPER 1
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TIME: 2 HOURS

TESO DISTRICT MOCK EXAMINATIONS - 2012

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

231/1
BIOLOGY
THEORY
PAPER 1
JULY/AUGUST 2012
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- *This paper has 28 questions.*
- *Answer all the questions in the spaces provided.*

For Examiner's Use only

QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
1 - 28	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. Name the chemical substances that constitute the cell membrane. (1mk)

……

……

2. Name the kingdom to which each of the following organisms belong. (2mks)

(i) Yeast ……

(ii) Spirogyra ……

3. Red blood cells will only maintain the shape and function if their solute content is the same as that of their surroundings. Examine the data shown in the table below regarding the percentage red blood cells haemolysed at different concentrations.

% NaCl	0.4	0.5	0.6	0.7	0.8	0.9
% Red blood cell haemolysed	100	90	70	50	20	0

a) State the salt concentration at which all the red blood cells are haemolysed. (1mk)

……

b) At which salt concentration are the number of haemolysed blood cells equal to the normal red blood cells. (1mk)

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c) Suggest what would happen if the red blood cells are placed in 1% sodium chloride solution. (2mks)

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4. a) Name the specific part of the chloroplast where the following processes occur. (2mks)

(i) CO_2 fixation ……..

(ii) Photolysis ……

b) In what ways do the dark reactions of photosynthesis depend on the light reactions. (2mks)

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5. State the role of the following parts in the mammalian digestive system.

a) Lacteals in the villi. (1mk)

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b) Goblets cells (1mk)

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6. Name the substances transported along the following parts of the vascular tissue. (4mks)

(i) xylem vessels

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(ii) Phloem tissue;

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……

7. Why do the incoming blood in the vena cava to the heart have. (2mks)

(i) Low O_2 concentration;

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(ii) Low blood pressure;

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8. During an experiment it was found that germinating bean seeds released 9.0cm^3 of CO_2 and used 8.8cm^3 of O_2

(a) Calculate the respiratory quotient (R.Q) (2mks)

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(b) State the type of respiration occurring? (1mk)

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……

9. Explain why the hair on the human skin become erect during cold weather. (2mks)

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10. State three features which enable a locust belong to the phylum arthropoda. (3mks)

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11. a) What is the role of the following organisms is an ecosystem? (2mks)

(i) Green plants

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(ii) Fungi

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b) Distinguish between ecosystem and population. (2mks)

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12. a) State the role of each of the following parts of the human testis. (4mks)

(i) Epididymis

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(ii) Seminiferous tubules

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b) State two roles of the placenta. (2mks)

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13. a) Name the type of germination shown by a maize seedling. (1mk)

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b) Name three conditions within the seed that are necessary for seed germination. (3mks)

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14. State two sex linked traits carried in the X-chromosomes. (2mks)

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15. a) Define speciation. (1mk)

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b) State two mechanisms that lead to speciation. (2mks)

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16. An experiment was carried out on blowfly larvae as shown in the diagram below.

Lighted region	Dark region
O O O O	

After 30 minutes most of the blowfly larvae moved to the dark region.

a) Name the type of response being investigated. (1mk)

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b) What is the significance of the response to the organism. (2mks)

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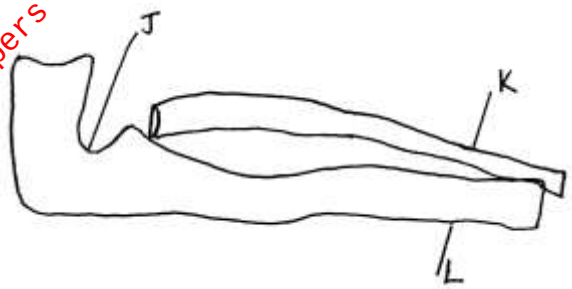
17. The figure below represents a bone obtained from a rabbit.



a) Name part J and bone L. (2mks)

Part J ……..

Bone L ……

b) (i) Which bone articulate with bone L at part J. (1mk)

……

……

(ii) Identify the type of joint formed at part J. (1mk)

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18. What is the effect of adrenaline hormone on (2mks)

(i) the intercostals muscles

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(ii) Blood circulation

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19. (i) Name three features that promote cross pollination in flowering plants. (3mks)

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(ii) What is the biological importance of cross pollination to a plant. (1mk)

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20. State two ways by which nitrogen is made available for plant use. (2mks)

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21. State three methods by which plants get rid of their excretory waste products. (3mks)

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22. Explain why some bacteria develop resistance to drugs after they have been subjected to it for sometime. (2mks)

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23. Name the type of muscles found in

(a) Heart (1mk)

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(b) Artery (1mk)

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(c) Give two distinguishing features of skeletal muscles. (2mks)

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24. a) Suggest what would happen to a grassland ecosystem if all secondary consumers were eliminated. (2mks)

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b) What is the significance of the following features found in xerophyhtic plants. (2mks)

(i) Hairy leaves

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(ii) Needle like leaves

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25. What is the role of mucus found along the alimentary canal. (2mks)

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26. A woman of blood group A gave birth to twins; one of blood group A and another of blood group O. Determine the genotype of (2mks)

a) Woman ……

b) Husband ……..

27. State the role of active transport in plants. (2mks)

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28. Other than energy, name other products of anaerobic respiration in plants. (2mks)

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Name…… **Index No. …….**

School ……...

231/2
BIOLOGY
THEORY
PAPER 2
JULY/AUGUST 2012
TIME: 1 ¾ HOURS

TESO DISTRICT MOCK EXAMINATIONS - 2012

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

231/2
BIOLOGY
THEORY
PAPER 2
JULY/AUGUST 2012
TIME: 1 ¾ HOURS

INSTRUCTIONS TO CANDIDATES

- *This paper has TWO sections A and B*
- *Answer all the questions in section A in the spaces provided on the question paper.*
- *From section B answer question 6 (compulsory) in the spaces provided and either question 7 or 8 in the spaces provided after question 8.*

For Examiner's Use only

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
A	1 – 5	40	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE			

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A

1. One ornithologist wanted to know the population of birds in a forest area. He collected ten birds from the forest and labelled each by tying a tag on its legs and released the ten birds into the forest to mix with the other birds. When he later collected a sample of fifty birds from the same forest he found that four of them had tag labels.

a) From the information, estimate the population of birds in the forest. Show your working. (3mks)

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b) Name the method under use from this information. (1mk)

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c) State two advantages and two disadvantages of using this method to estimate population.

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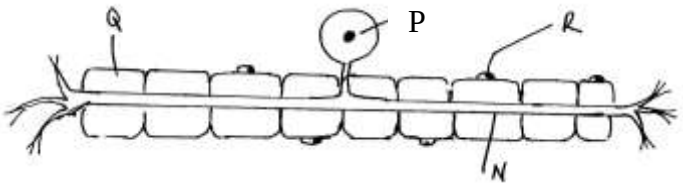
2. The diagram below represents a nerve cell. Study it and answer the questions that follow.



a) (i) Identify the cell (1mk)

……

……

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

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……

b) Name the parts labelled N, P, Q and R. (4mks)

N ……

P ……..

Q ……

R ……..

c) State the functions of the parts labelled N and Q. (2mks)

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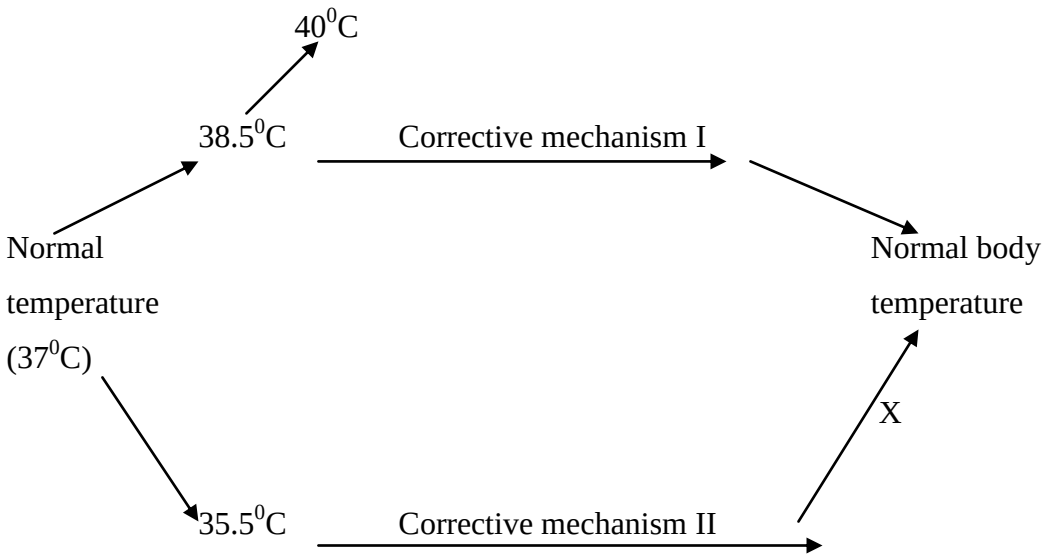
3. Below is a thermoregulatory response within the human body.



a) State the role played by the skin during the corrective mechanism II (3mks)

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b) Name the process indicated by letter X. (1mk)

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c) Explain why a steady body temperature is maintained in mammals. (2mks)

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d) State two protective roles of the human skin (2mks)

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4. In rose plants, a pure breed red flowered plant was crossed with a pure breed white flowered plant. The F_1 generation had all pink flowers. When the F_1 generation was selfed, 1654 plants were obtained in the F_2 generation

a) Explain why all the F_1 generation had pink flowers. (1mk)

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b) Using letter R to represent the gene for red colour and r for white colour, work out the possible genotypes of the F_2 generation. (4mks)

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c) Work out the number of F_2 plants with

(i) pink flowers. (1mk)

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(ii) Red flowers (1mk)

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……

d) What is a test-cross. (1mk)

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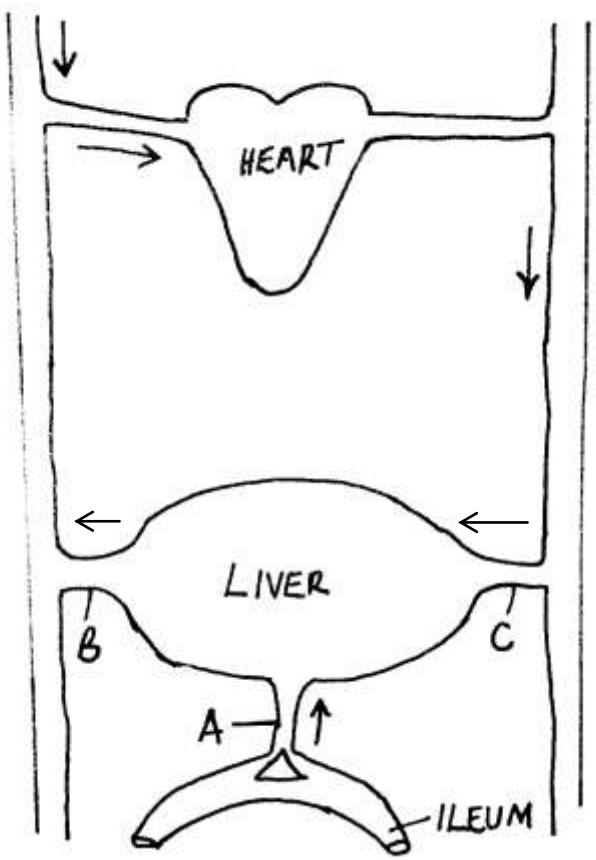
……

5. The diagram below represents part of the mammalian blood circulatory system and some associated glands;



a) Name the blood vessels labelled A and B. (2mks)

A ……

B ……..

b) Which of the blood vessels will have the highest sugar concentration under the following conditions.

(i) after a heavy meal …… (1mk)

(ii) During fasting …… (1mk)

c) Explain how the liver assist in regulating the high sugar level in the blood. (2mks)

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d) How can a sample of urine be tested to confirm that a person has *diabetes mellitus*

(2mks)

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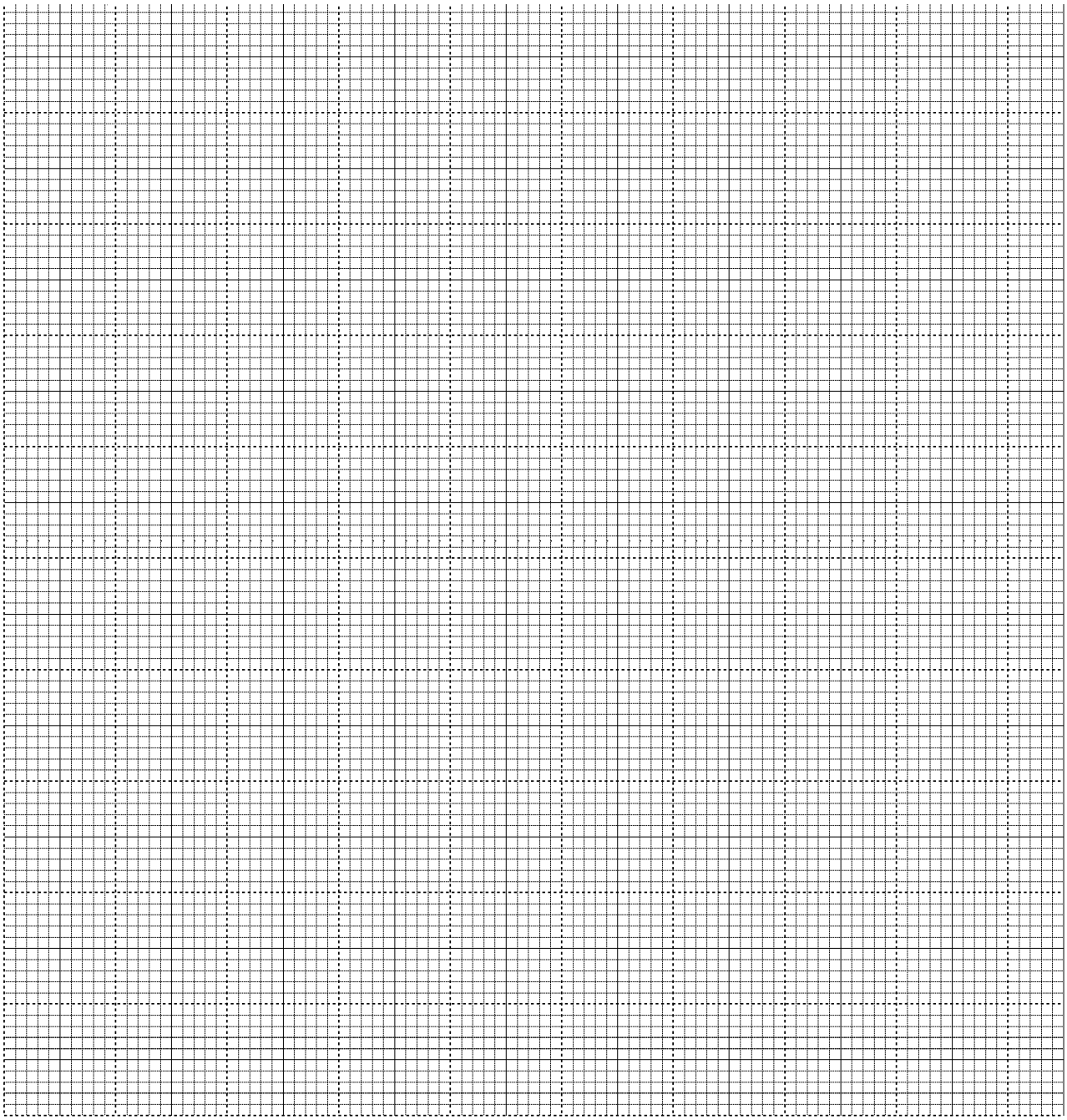
SECTION B

6. In an experiment the energy required by persons of different sizes was determined. Their body weights and amounts of energy their bodies used at rest were measured. The results are as shown below

Weight of individual	Energy used per kg of body weight per day in KJ
5	300
15	200
25	150
35	130
45	115
55	105
65	100
75	95

a)Using suitable scale draw a graph of amount of energy used per kg of body weight per day against weight of individual. (6mks)



b) From the graph determine the difference in energy requirements between persons weighing

(i) 10kg and 20kg. (1mk)

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(ii) 60kg and 70kg. (1mk)

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c) Why did individuals with smaller sizes require more energy per kg of body weight than those with larger sizes? (3mks)

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d) Use your graph to determine the energy requirements of an infant whose body weight is 2.5kg. (1mk)

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e) (i) How would the results differ if experiment is repeated using reptiles instead of human beings. (1mk)

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(ii) Give reasons for your answer in (e) (i) above. (3mks)

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f) Name two classes of food that provide energy in the body under normal conditions. (2mks)

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g) Name the class of food that provide energy in a mammal during starvation. (1mk)

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……

7. a) Describe how seeds and fruits are adapted for dispersal. (13mks)

b) Describe the adaptations of wind pollinated flowers. (7mks)

8. Describe the composition and functions of mammalian blood. (20mks)

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Name…… **Index No. …….**

School ……...

231/1
BIOLOGY
PAPER 1
(THEORY)
JULY / AUGUST
2 HOURS

TRANS-NZOIA DISTRICT MOCK EXAMINATION-2012

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

231/1
BIOLOGY
PAPER 1
(THEORY)
JULY / AUGUST
2 HOURS

Instructions to candidates

- Answer ALL the questions in the spaces provided.

For Examinations use only.

Question	Maximum score	Candidates score
1- 21	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

1. State the functions of the cell sap (2mks)

……

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2. A person had his bile duct blocked. Give two physiological problems the person will get (2mks)

……

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3. What do you use in collecting insects in crevices. (1mk)

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4. Differentiate between fertilization in animals and double fertilization in plants. (3mks)

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5. A scientist came across an animal which lays eggs and has fur and external ears. To what class was this animal placed? (1mk)

Class ……

6. Differentiate between divergent and convergent evolution (2mks)

……

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7. State two structural differences between a sensory neurone and a motor neurone. (2mks)

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8. In Drosophila the gene for wing length is sex-linked. The allele for normal wings is dominant over the short wings. A short winged male fly was crossed with a homozygous normal winged

female. The F_1 off springs were then inbred through several generations under ultra- violet light in a laboratory.

After several generations wingless flies appeared amongst the progeny. In addition many eggs laid by the mated females would not hatch.

a) In the space below work out and then state what proportion of the F_1 flies exhibited the dominant phenotype. (3mks)

(show your working)

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b)From the descriptions given;

i) Name the process that caused the appearance of wingless flies. (1mk)

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ii) State two general effects of the process named in b(i) above. (2mks)

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9. A student set up three thermos flask s, x, y, z containing an equal quantity of beans. Moist germinating beans were placed in flasks x ; boiled beans were placed in Y and boiled beans soaked in antiseptic were placed in flask Z.

Thermometers were dipped into the beans and the flasks were then placed upside down by means of stands. The table below shows the thermometer readings in °c.

	1st day	**2nd day**	**3rd day**	**4th day**	**5th day**	**6th day**	**7th day**
Flask X	20	21	22	24	25	25	25
Flask Y	20	20	21	22.5	26	28	30
Flask Z	20	20	20.5	20	20.5	20	20

a) What biological process is being tested? (1mk)

……

……

b) Explain why there is no significant heat production in Z after day 5? (1mk)

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c) What is the significance of flask Z? (1mk)

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……

d) Account for the readings in flask Y. (2mks)

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e) Why were vacuum flasks used instead of glass flasks (1mk)

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f) What was the reason for boiling the seeds? (1mk)

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g) Name two by- products that are likely to be produced in flask X (2mks)

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h) How would you test for the two by-products formed in X (2mks)

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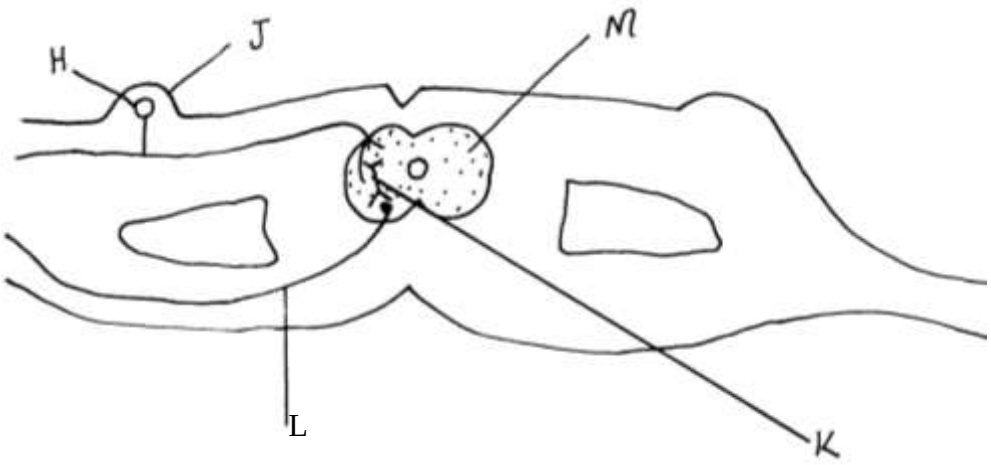
10. The diagram below shows the structure of the spinal cord.



a) Label the parts H,J K and L. (2mks)

……

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b) Identify the role of structure M (1mk)

……

……

c) State the function of the structure L (1mk)

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d) State three differences between simple reflex action and conditioned reflex action. (3mks)

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11. What would be wrong with a person whose urine.

i) Contained glucose (1mk)

……

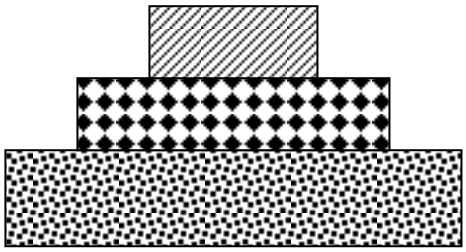
ii) Contained large amounts of proteins (1mk)

……

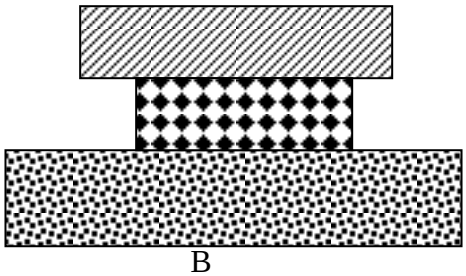
iii) Had high PH (1mk)

……

12. The total masses of some organisms in a food chain are shown in diagrams A and B below.

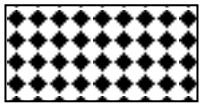


A

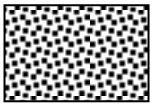


B

Total mass of owls



Total mass of mice



Total mass of nuts/seeds

i) State the reasons why the masses shown in diagram B are not likely to be found naturally.

(2mks)

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ii) Using the examples Nuts / seeds – mice- owls, explain how energy losses occur along the food chain. (3mks)

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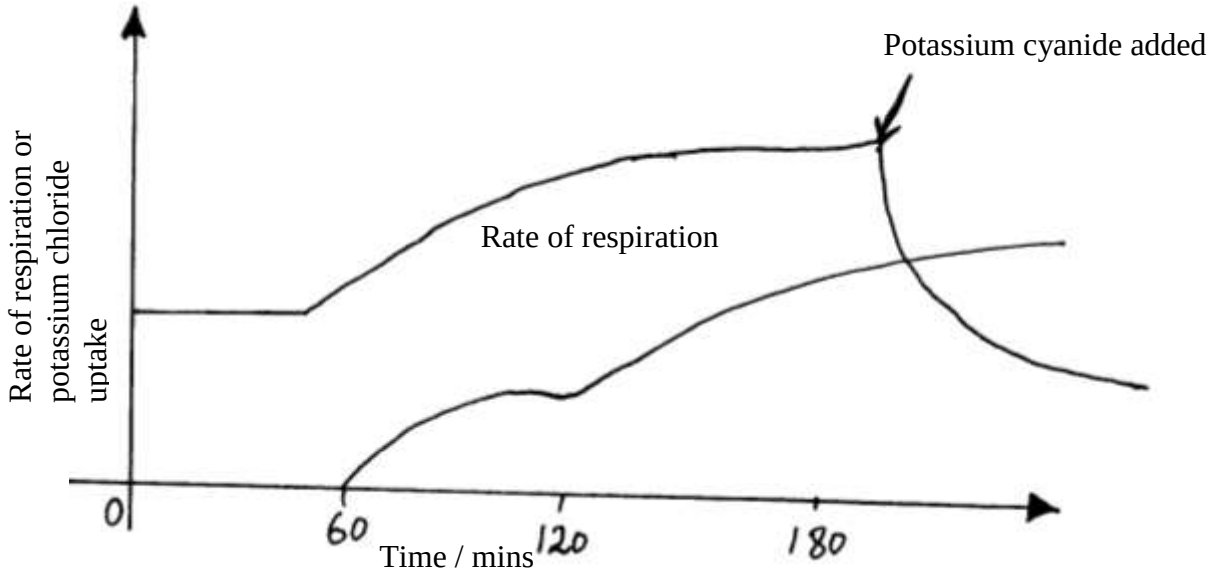
13. The figure below shows the rate of respiration of carrot disks increase when they are transferred from pure water to potassium chloride.



a) From the results, account for this increase (2mks)

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b) Why does the rise of KCl content stop when potassium cyanide is added. (1mk)

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14. Name two systems that co-ordinate physiological processes in multi-cellular animals.

(2mks)

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15. The following table shows the quantities in grams of food substances in four different kinds of foods.

	Protein	**Fat**	**Carbohydrate.**
Food A	100	50	600
Food B	150	50	500
Food C	50	100	600
Food D	150	50	500

a) Given that 1g of fat supplies twice as many kilojoules of energy than the same amount of carbohydrate or protein which food would produce most energy. (1mk)

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b) i) State how any two factors determine energy requirements in man

Factors (2mks)

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……

How they determine (2mks)

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ii) How they determine (2mks)

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16. 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 results (2mks)

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17.

Fig. A

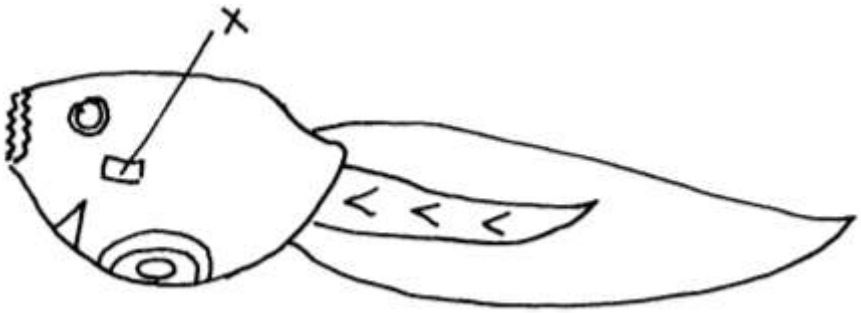

Figure A represents a stage in the development of a toad. Study it carefully and answer the following questions.

a) What two visible features adapt it for life in water (2mks)

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b) Suggest giving a reason the food for the animal (2mks)

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c) Name three changes in Fig B of the same animal at the next stage of development.

(3mks)

Fig. B 

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d) What is the significance of each change in (c) above to the life of the animal. (3mks)

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18. a) What are vestigial structures? (2mks)

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b) State one example of a vestigial structure in man (1mk)

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19. List three characteristics that would place man in the class mammalia. (3mks)

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20. Chloroquin has been used for many years since its discovery, for the treatment of malaria, but it is no longer effective. Suggest why it is no longer effective. (2mks)

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21. What is a neurone, as used in sensitivity? (1mk)

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231/2
BIOLOGY
PAPER 2
(THEORY)
JULY / AUGUST
2 HOURS

TRANS-NZOIA DISTRICT MOCK EXAMINATION-2012

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

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY / AUGUST
2 HOURS

INSTRUCTIONS TO CANDIDATES

- This paper has 2 sections: A and B.
- Answer all questions in section A in the spaces provided.
- In section B answer question 6 (Compulsory) and either question 7 or 8 in the space provided after the questions.

FOR EXAMINER'S USE ONLY

SECTION	QUESTION	MAX. SCORE	CAND. SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	80	

This paper consists of 12 printed pages.
Candidates should check the question paper to ensure that all pages are printed as indicated and no questions are missing

SECTION A

1 a) Distinguish between open and closed circulatory systems. (2mks)

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……

b) What is the importance of pulmonary circulation? (1 mk)

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c) State three reason why plants are able to live without a circulatory system of the type found in higher animals. (3mks)

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d) State two ways by which leucocytes protect the body against infections. (2mks)

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2. a) Fill in the missing taxas in the table below. (6mks)

ORGANISM	PHYLUM / DIVISION	CLASS
i) Centipede		
ii) lizard		
iii) Hibiscus plant		

b) Name two permanent structures used for locomotion in kingdom protoctista. For each structure give an example of the organisms that possesses it. (2mks)

Structure	Organism
i) F	
ii)	

3. In a national park, it was observed that antelopes and zebras fed on grass, lions and leopards fed on grazers while hyenas and vultures fed on carcasses of lions and leopards respectively.

a) Draw a food web for the ecosystem (4mks)

b) State the trophic level of: (2mks)

i) Leopards ……

ii) Vultures……

c) State two adaptations, the leopards have to apprehend their prey. (2mks)

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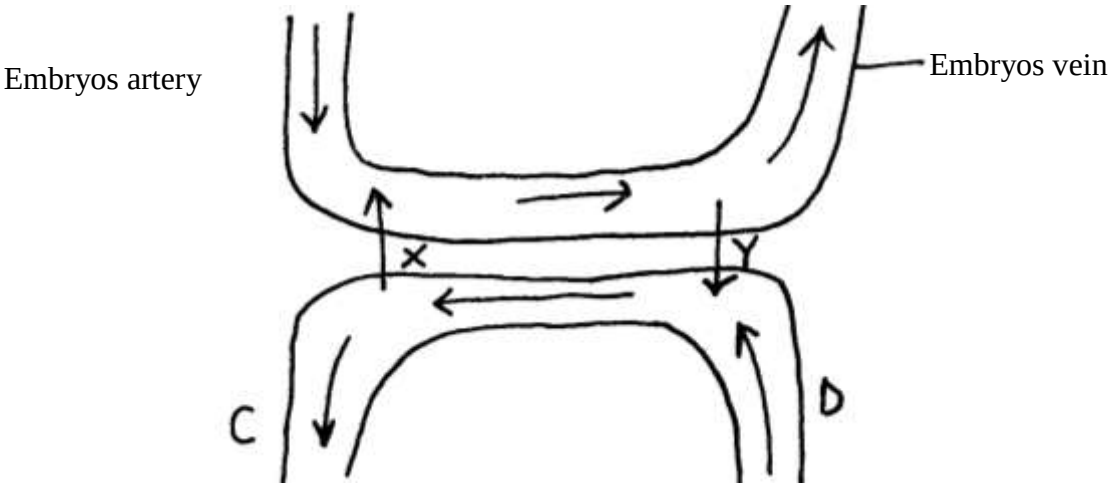
4. The figure below shows the relationship between the embryo and the mothers blood circulatory systems. Study it and answer the questions that follow.



a) Name the blood vessel: (2mks)

i) C……

ii) D……

b) Name two substances that move in the direction represented by arrows X and Y.

(4mks)

i) X 1……

2……

ii) Y 1……

2……

c) i) What name is given to the type of blood flow illustrated in the diagram? (1mk)

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……

ii) Suggest a reason why this method of blood flow is advantageous. (1mk)

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5. A maize plant that was tall was crossed with another maize plant that was dwarf. The offspring's were of medium height.

a) Work out the genotype of the F1 offspring's (5mks)

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b) i) Work out the phenotypic ratio of the F2 generation. (4mks)

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ii) Name the type of inheritance verified by the F2 phenotypic ratio above (1mk)

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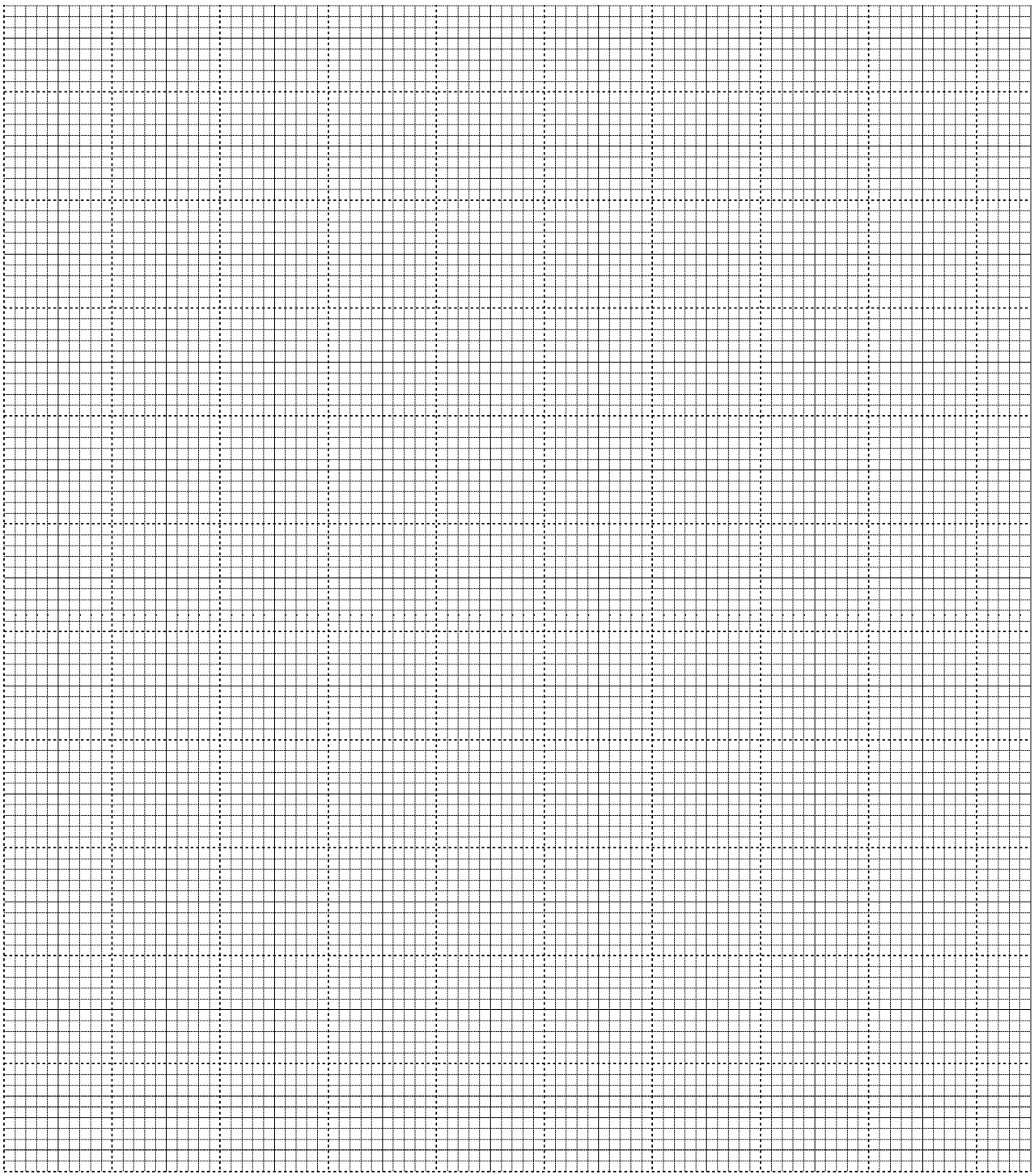
SECTION B (40mks)

6. Nine batches each containing 50 bean seeds were placed separately in beakers containing moist cotton wool. Each beaker was placed in a water bath at different temperatures from each other. All other conditions were kept constant and same. After eight days the percentage germination of the beans in each batch was calculated and the results tabulated as shown below.

Temp °c	0	5	10	15	20	25	30	35	50
% germination	0	0	2	4	12	46	80	24	2

a) Using a suitable scale, plot % germination against temperature on the graph paper provided.

(6mks)



b) How was percentage germination determinant (1mk)

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c) Account for the percentage germination at:

i) 5°c (3mks)

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ii) 30° c (2mks)

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iii) 50°c (2mks)

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d) State two factors that would have been responsible for 20% germination failure at 30°c. (2mks)

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e) Some species of seeds fail to germinate after exposure to short periods of high temperature which another species of seeds will show a high germination percentage.

Explain. (4mks)

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7. a) With the aid of a diagram, explain double fertilization in flowering plants (15 mks)

b) State the changes that occur in the flowering plant after fertilization (5mks)

8. Describe how the mammalian skin is adapted to its functions. (20mks)

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END