NAME…… INDEX NO……. ……...…

SCHOOL……...……. CANDIDATE'S SIGNATURE…….

DATE……..

231/1
BIOLOGY
PAPER 1
(THEORY)
MARCH/APRIL 2015
TIME: 2 HOURS

KABONDO DIVISION JOINT EVALUATION TEST

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

231/1
BIOLOGY
PAPER 1
(THEORY)
MARCH/APRIL 2015
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name and Index number in the spaces provided above
- Sign and write the date of the examination in the spaces provided.
- Answer ***all*** the questions in the spaces provided.
- **All** working **must** be clearly shown where necessary.

FOR EXAMINERS USE ONLY

Question	Maximum Score	Candidate's Score
1 - 33	**80**	

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

1. State the functions of each of the following cell organelles. (2mks)

   (i) Golgi bodies

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   ……

   (ii) Smooth Endoplasmic reticulum

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   ……

2. Relate the structure of guard cell to its functions. (2mks)

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3. In an experiment to calculate respiratory Quotient, a rabbit was observed to have taken 80cm^3 of oxygen and produced 79.9cm^3 of carbon (IV) oxide in five minutes. Identify the type of food consumed. (2mks)

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4. (a) Identify the parts of brain where thermoreceptors are located. (1mk)

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   (b) Explain the changes that takes place in blood vessels for the skin to regulate heat loss. (2mks)

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5. (a) Define the term Osmosis. (1mk)

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(b) Outline two roles of active transport in Living organisms. (2mks)

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6. Name the tissue in plants responsible for

(a) Transport of water and mineral salts . (1mk)

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(b) Transport of carbohydrates. (1mk)

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(c) Secondary growth. (1mk)

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7. Give a reason why the following is important in the study of evolution.

(a) FOSSIL RECORD S (1mk)

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(b) COMPARATIVE ANATOMY (1mk)

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8. A study was done to estimate the population of fish in a pond. 396 fishes were caught, marked and released. After 24 Hours, 200 fishes were caught out of which 100 had been marked.

(a) Name the most appropriate instrument that was used to catch the fish. (1mk)

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(b) Calculate the total population of fish in the aquarium. (2mks)

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9. State two ways in which floating leaves of aquatic plants are adapted to gaseous exchange. (2mks)

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

(a) Sertoli Cells

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(b) Epidydimis

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(c) Seminiferous tubules

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11. State two functions of bile juice in the digestion of food. (2mks)

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12. How does substrate concentration affect the rate of enzyme action. (1mk)

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13. (a) Name the surface for gaseous exchange in insects. (1mk)

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(b) How is surface named in (a) above suited for it's functions. (2mks)

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14. Give the economic importance of the following plant excretory products.

(i) Tannins (1mk)

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(ii) Colchicine (1mk)

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15. (a) What is sex linkage? (1mk)

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(b) Give two examples of sex-linked characteristics transmitted through Y-chromosomes. (2mks)

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16. Give three examples of continuous variation in human beings. (3mks)

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17. (a) (i) Name the membrane that encloses the Heart. (1mk)

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(ii) State the functions of the structure named in (a) (i) above. (1mk)

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(b) Give a reason why blood does not clot in blood vessels. (1mk)

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(c) Name a defect of the circulatory system. (1mk)

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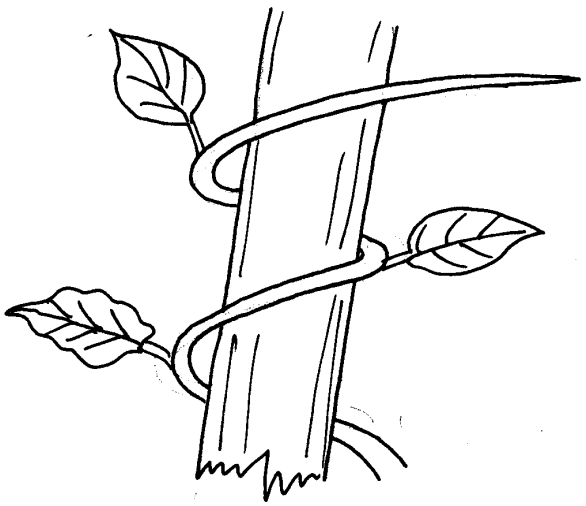
18. The diagram below represents a certain response exhibited by plants.



(a) Name the response. (1mk)

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

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19. What are the end products of respiration in animals when there in insufficient oxygen supply. (1mk)

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20. State three reasons why support in necessary in plants. (3mks)

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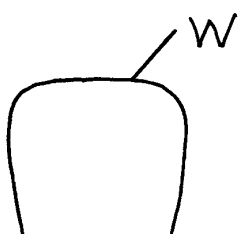
21. The following diagram shows the female parts of a flower



(a) What will the parts marked X and Y develop into after fertilization. (2mks)

X …….

Y …….

(b) Name the part labeled "W" (1mk)

……

……

22. Name the causative agents of the following human diseases

(a) Amoebic dysentry (1mk)

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……

(b) Cholera (1mk)

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23. (a) State the functions of the following hormones during metamorphosis in insects.

(i) Juvenile hormone (1mk)

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(ii) Ecdysone hormone (1mk)

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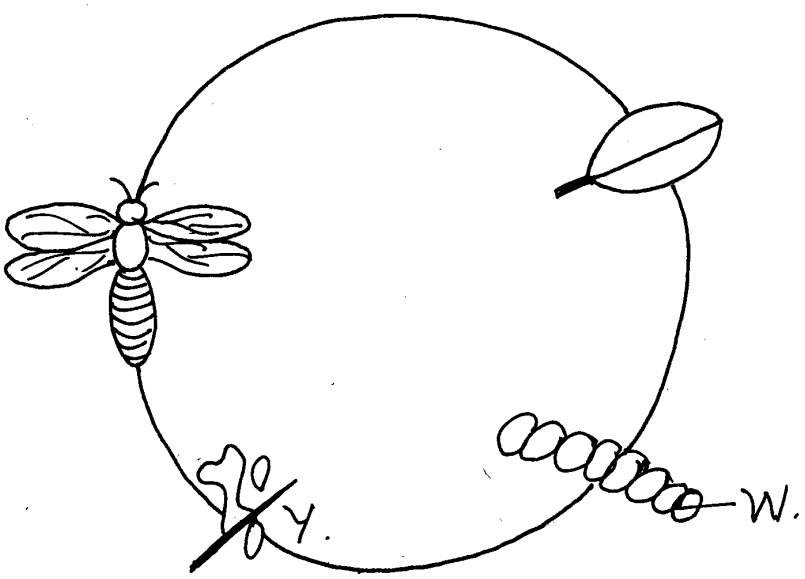
(b) The figure below shows the lifecycle of a butterfly.



(i) Name the stages W and Y (2mks)

W……

Y ……

(ii) How is the lifecycle different from that of a cockroach? (1mk)

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24. State two adaptations of the herbivorous molar tooth to its functions. (2mks)

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25. Explain the role played by each of the following bacteria to the Nitrogen cycle.

(a) Nitrosomonas. (1mk)

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(b) Rhizobium (1mk)

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(c) Pseudomonas denitrificans. (1mk)

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26. (a) Explain why several auxillary buds sprout when a terminal bud in a young tree is removed. (2mks)

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(b) Suggest one application of this practice. (1mk)

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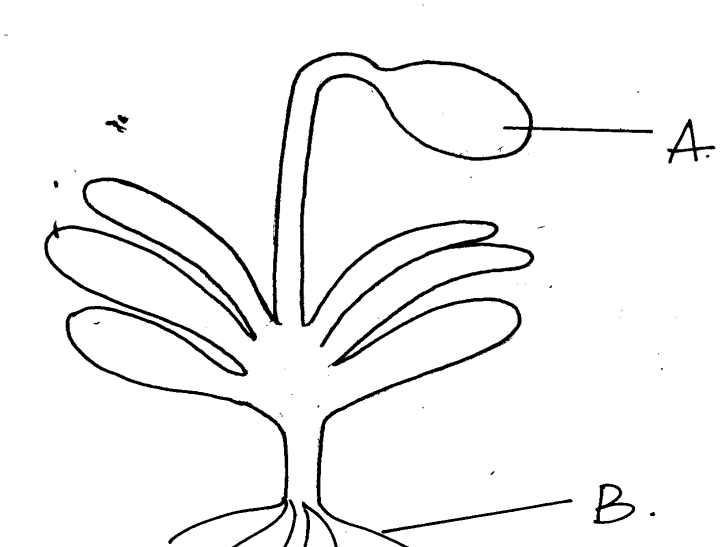
27. The diagram below shows a plant.



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

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

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(c) Name the division to which the plant belongs. (1mk)

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28. State the roles played by the following in homeostasis (2mks)

(a) Glucagon

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(b) Anti – diuretic hormone

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29. State three roles of water in germination of seeds. (3mks)

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30. State two adaptations of gill filaments for gaseous exchange. (2mks)

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31. Give reasons why muscle cells, sperm cells and kidney cells have large numbers of mitochondria. (2mks)

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NAME…… INDEX NO……. ……...…

SCHOOL……...……. CANDIDATE'S SIGNATURE…….

DATE……..

231/2
BIOLOGY
PAPER 2
(THEORY)
MARCH/APRIL 2015
TIME: 2 HOURS

KABONDO DIVISION JOINT EVALUATION TEST

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

INSTRUCTIONS TO CANDIDATES

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

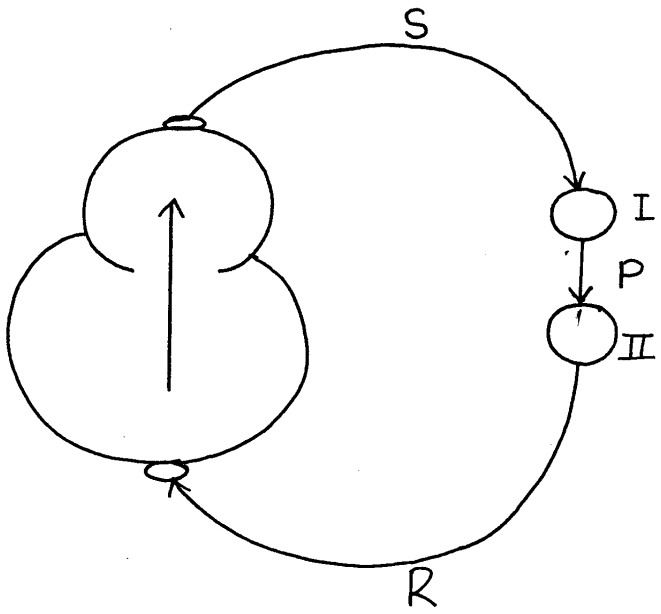
FOR EXAMINERS USE ONLY

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 SCORE		**80**	

This paper consist s of 12 printed pages candidates should check the question paper to ensure all the pages are3 printed as indicated and no questions are missing.

SECTION A

1. The diagram below represents circulatory system in animal.



(a) Name the class whose members show the circulatory system shown above. (1mk)

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(b) (i) Name the parts labeled I and II (2mks)

I……

II……..

(ii) State two difference in blood composition and flow in blood vessel R and P. (2mks)

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(c) (i) Explain why root pressure stops when a root is deprived of oxygen. (1mk)

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(ii) Explain why a plant stomata may close in a hot sunny afternoon only to re open a short while later. (2mks)

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2. A farmer mated his dark red cow to a while bull. The cow gave birth to a light red calf.

(a) State why the calf is light red and not dark red or white. (1mk)

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(b) If a light red bull is mated to a dark red cow, work out using a genetic cross:

(i) The genotypes of the offspring. (4mks)

(ii) The genotypic ratio of the offspring. (1mk)

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(iii) The phenotypic ratio of the offspring. (1mk)

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(iv) The probability of getting a light red offspring from the cross. (1mk)

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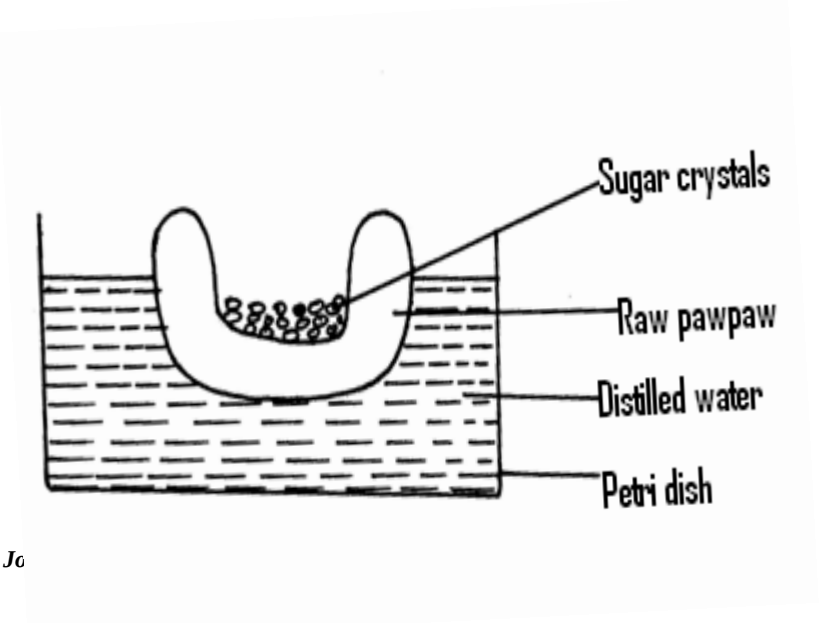
3. A group of students set up an experiment to investigate a certain physiological process. The set up was as shown below:



After sometimes, the students observed that a sugar solution was formed and its level rose in the cavity where sugar crystals were placed.

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

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(b) Account for the formation of sugar solution and its rise in level. (3mks)

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(c) Suggest the result that the students would obtain if they repeated the experiment using a boiled pawpaw. Give reasons. (2mks)

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(d) State two importance of the physiological process named in 3(a) above to plants. (2mks)

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4. (a) Explain the term Eutrophication. (3mks)

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(b) How does eutrophication lead to death of fish in a water body? (3mks)

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(c) Persistent use of agricultural inorganic fertilizers lead to loss of soil fertility. Account for this observation. (2mks)

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5. An ecological study of woodland was carried out and the following observations recorded.

- Rabbits feed on plants
- Hawks feed on rabbits and small birds
- Snails feed on plants
- Fox feed on rabbits and small birds.

(a) Using the above observations, construct a food web. (3mks)

(b) From your food web;

(i) Draw a food chain that ends with hawks as tertiary consumers. (1mk)

(ii) Name two carnivores that compete in the woodland and state the food they compete for. (1mk)

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(c) Suggest the most likely method of sampling used to estimate the rabbit population in the woodland . (1mk)

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(d) State two precautions to be taken when using the sampling method named in (c) above. (2mks)

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SECTION B: Answer question 6 (compulsory) and either question 7 or 8.

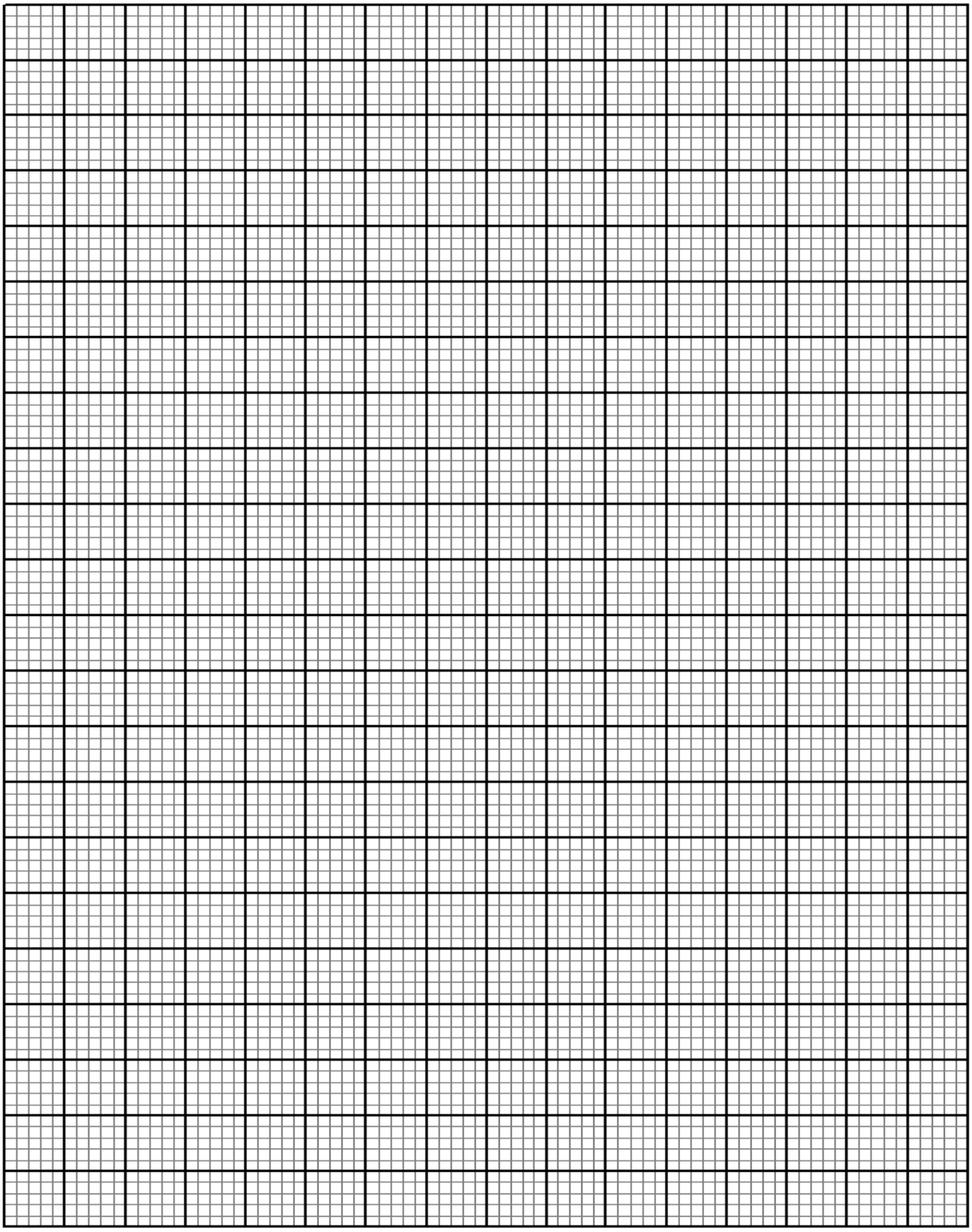
6. An experiment was carried out to investigate the effects of hormones on growth of lateral buds of three pea plants.

The shoots were treated as follows;
Shoot A – Apical bud was removed
Shoot B – Apical bud was removed and gibberellic acid placed on the cut shoot.
Shoot C - Apical bud was left intact.

The length of branches developed from lateral buds was determined at reular intervals.
The results obtained are as shown in the table below:

	Length of Shoot in millimeters		
Time in days	Shoot A	Shoot B	Shoot C
0	3	3	3
2	10	12	3
4	28	48	8
6	50	90	14
8	80	120	20
10	118	152	26

(a) Using the same axes, draw graphs to show length of branches against time. (8mks)



(b) (i) What was the length of the branch in Shoot B on the 7th day? (1mk)

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(ii) What would be the expected length of the branch developing from Shoot A on the 11th day? (1mk)

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(c) Account for the result obtained in the experiment. (6mks)

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(d) Why was Shoot C included in the experiment? (1mk)

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(e) What is the importance of gibberellic acid in Agriculture? (1mk)

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(f) State two physiological processes that are brought about by the application of gibberellic acid on plants. (2mks)

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7. Describe the adaptations of a dicotyledonous stem to its functions. (20mks)
8. Describe the economic importance of members in the kingdom fungi giving appropriate examples where possible. (20mks)

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NAME…… INDEX NO……. ……...…

SCHOOL……...……. CANDIDATE'S SIGNATURE…….

DATE……..

231/3
BIOLOGY
PAPER 3
(PRACTICAL)
MARCH/APRIL 2015
TIME: 1¼ HOURS

KABONDO DIVISION JOINT EVALUATION TEST

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

(PRACTICAL)
MARCH/APRIL 2015
TIME: 1¼ HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the spaces provided.
- Sign and write the date of examination in the spaces provided.
- Answer ***all*** the questions in the spaces provided in the question paper.
- You are not allowed to start working with the apparatus for the first 15 minutes of the 1 3/4 hours allowed for this paper. This time is to enable you to read the question paper and make sure you have all the and apparatus you need.
- **All** working **must** be clearly shown where necessary.

FOR EXAMINERS USE ONLY

Question	Maximum Score	Candidate's Score
1	**14**	
2	**15**	
3	**11**	

TOTAL	40	

This paper consists of 6 printed pages .Candidates should check the questions to ensure that All the pages are printed as indicated and no questions are missing.

1. You are provided with solution labeled K

   (a) Using the reagents provided test for the food substances found in solution K. Record the food you have tested for, procedure, observation and conclusion in the table below (12 marks).

Food substance	Procedure	Observation	Conclusion

(b) (i). Name an enzyme that may be required to digest the food substance found in solution K in a human being. (lmk)

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(ii) State the name of the part of alimentary canal in which the enzyme named in (b)(i) above is found (lmk)

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2. The photographs below show a variety of animals collected by a group of students during a field study.

Earth worm

Sea Anemone

Millipede

Honey bee

Centipede

Spider

House fly

Round worm

(a) Using the observable characteristics only draw up a dichotomous key for the above animals (l3mks)

The key should begin with:

1 (a) Body bilaterally symmetrical go to 2 ……go to 2

(b) Body ……..

(b) (i) Name the phylum to which the housefly and the spider belong (lmk)

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(c) Give a reason for your answer in b(i) above (lmk)

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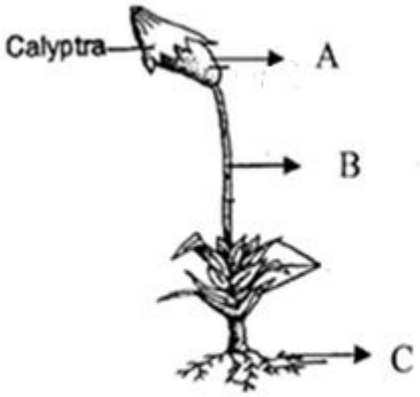
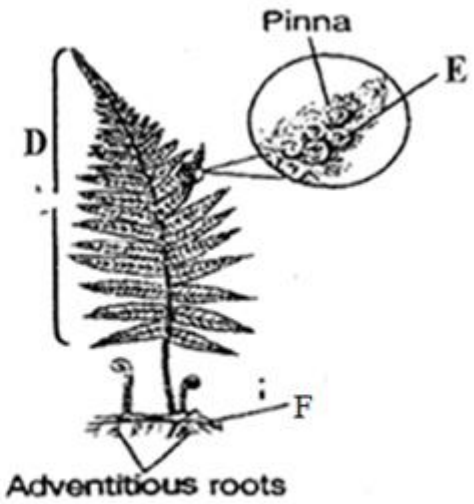
3. (a) (i) On diagram P and **Q** label the parts **A,B,C and E** **(4mks)**



Specimen P



Specimen Q

ii) Name the divisions of P and **Q** (2mks)

P ……

Q ……

b) From the diagram name the organ of reproduction in (2mks)

P……..

Q ……

(c) On the diagram P show the part representing gametophyte and sporophyte. (2mks)

(d) Name the gametophyte of specimen Q (1mk)

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