

NAME: INDEX NO:.....

SCHOOL:

BIOLOGY
PAPER 2
THEORY
JULY / AUGUST 2007
TIME: 2 HOURS

LAIKIPIA DISTRICT JOINT MOCK EXAMINATION Kenya Certificate of Secondary Education 2007

231/2
BIOLOGY
PAPER 2
JULY /AUGUST 2007

INSTRUCTIONS TO CANDIDATES.

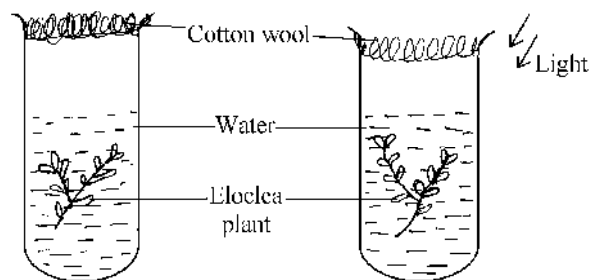
- ❖ *This paper contains two sections A and B.*
- ❖ *Answer **all** the questions in section A in the spaces provided.*
- ❖ *In section B answer question 8 (Compulsory) and either Question 9 or 10 in the spaces provided.*

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	

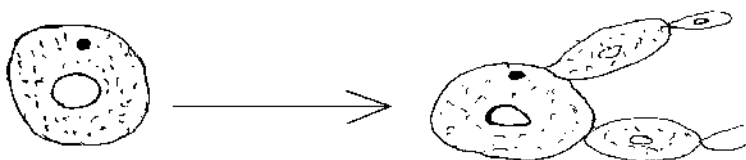
SECTION A. (40 MARKS)

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.

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(a) (i) **Name** the physiological process illustrated. (1 mark)

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(ii) **Describe** how the process is achieved. (2 marks)

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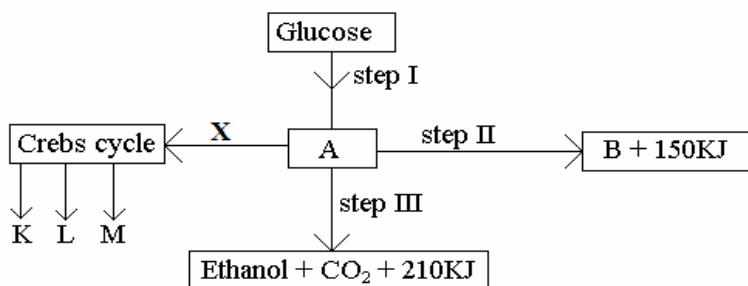
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(b) For the process to occur the temperature of the nutrient media should be maintained at 37°C. **Explain**. (2 marks)

.....

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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)

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5. (a) **Name** the **three main** types of skeletons. (3 marks)

.....

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4

- (b) **State any two** significance of the skeleton found in the members of phylum arthropoda.

(2 marks)

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- (c) (i) **Differentiate** between complete and incomplete Metamorphosis. (2 marks)

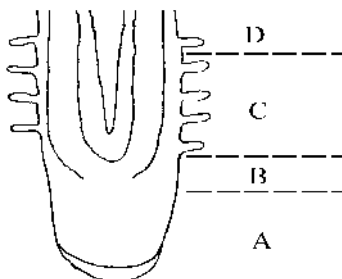
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- (ii) What advantage does complete metamorphosis have over incomplete metamorphosis.

(2 marks)

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6. The diagram below represents a root tip.



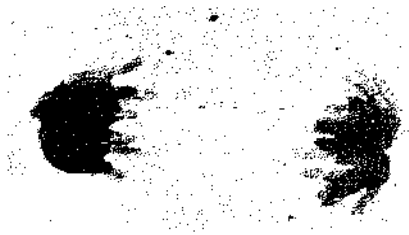
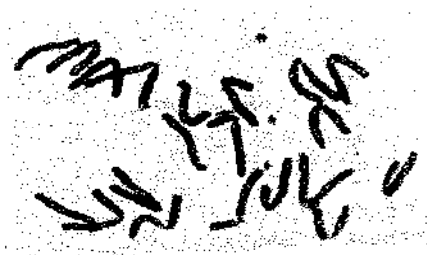
- (a) Label the regions marked A, B, C and D of the root tip and give the functions of each part. (4 marks)

	Region	Function
A		
B		
C		
D		

- (b) **State** why secondary growth does not take place in tomato plant. (1 mark)

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7. The photo micrographs provided below shows various stages in the process of mitosis.



5

- (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 day 18 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)
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.....
- (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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