

Name: ..... Index No. ....

Candidate's Sign: .....

Date: .....

231/2  
Paper 2  
**BIOLOGY**  
(THEORY)  
July / August – 2008  
**Time: 2 Hours**

**KISUMU DISTRICT JOINT EVALUATION TESTS - 2008**  
*Kenya Certificate of Secondary Education (K.C.S.E)*

231/2  
Paper 2  
**BIOLOGY**  
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July / August – 2008  
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**INSTRUCTIONS TO CANDIDATES**

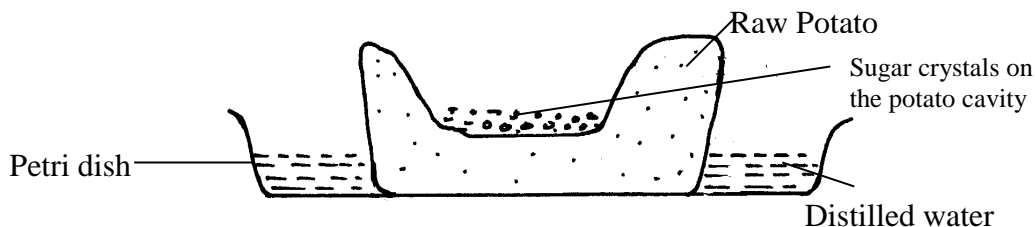
- This paper consists of two sections A and B.
- Answer ALL the questions in section A in the spaces provided.
- From section B answer question 8 (compulsory) and either questions 9 or 10 in the spaces provided after question 10.

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

**SECTION A: (40 Marks)**

**Answer All Questions on this section in the spaces provided**

1. The set – up below was used to demonstrate a certain physiological process.



a) Name the process being investigated. (1 mk)

b) (i) What would be observed in the potato cavity after 6 hours? (1 mk)

(ii) Account for the observation made in b) (i) above. (2 mks)

c) (i) State what would happen if the experiment was carried out using boiled potato. (1 mk)

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

d) Plant cells do not burst when immersed in distilled water. Explain. (2 mks)

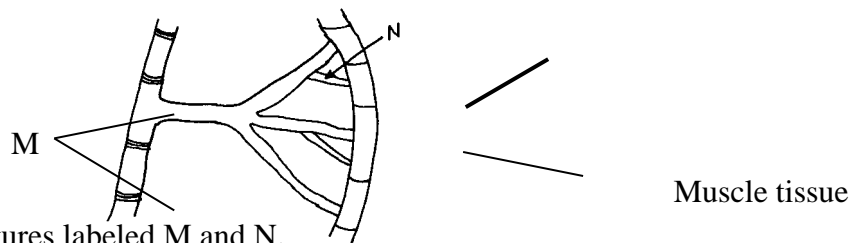
2. Haemophilia is a sex – linked trait caused by a recessive gene carried on the X – chromosome. A carrier woman marries a normal man.

a) Work out the genotypes of the F<sub>1</sub> offspring. Use H to represent the dominant gene and h to represent the recessive gene. (4 mks)

b) What is the probability of the parents getting a haemophiliac child? (1 mk)

c) Name three other sex-linked traits in humans. (3 mks)

3. The diagram below represents part of the gaseous exchange system in a cockroach.



a) Name the structures labeled M and N. (2 mks)

b) State the function of the structure labeled M. (1 mk)

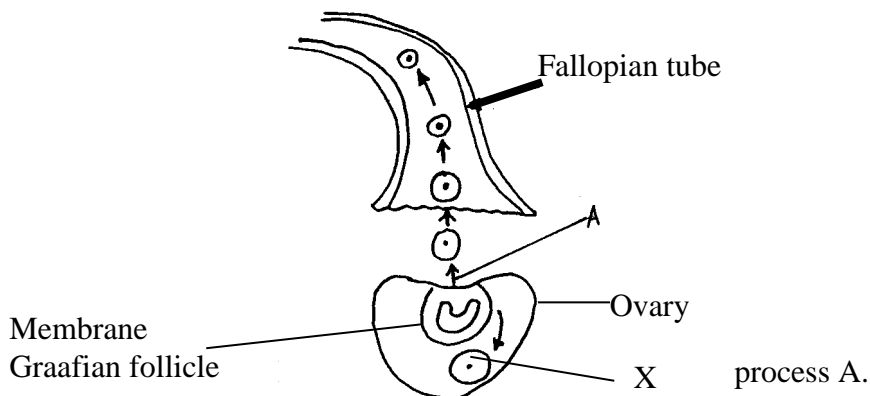
c) Describe the path taken by carbon (iv) oxide as it diffuses out of the body of a cockroach. (3 mks)

d) What structures in a mammalian breathing system are represented by

M: (1 mk)

N: (1 mk)

4. The diagram below shows the events which occur in the ovary and fallopian tubes during fertilization.

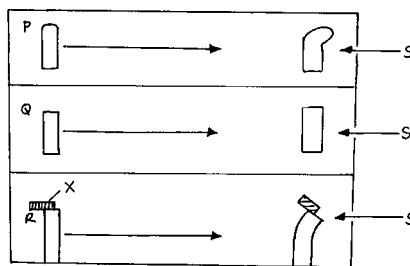


a) (1 mk)

b) (i) Name the hormone produced by structure X. (1 mk)

(ii) State two effects of hormones named in b) (i) above. (2 mks)

c) The diagrams below show a stage during cell division.

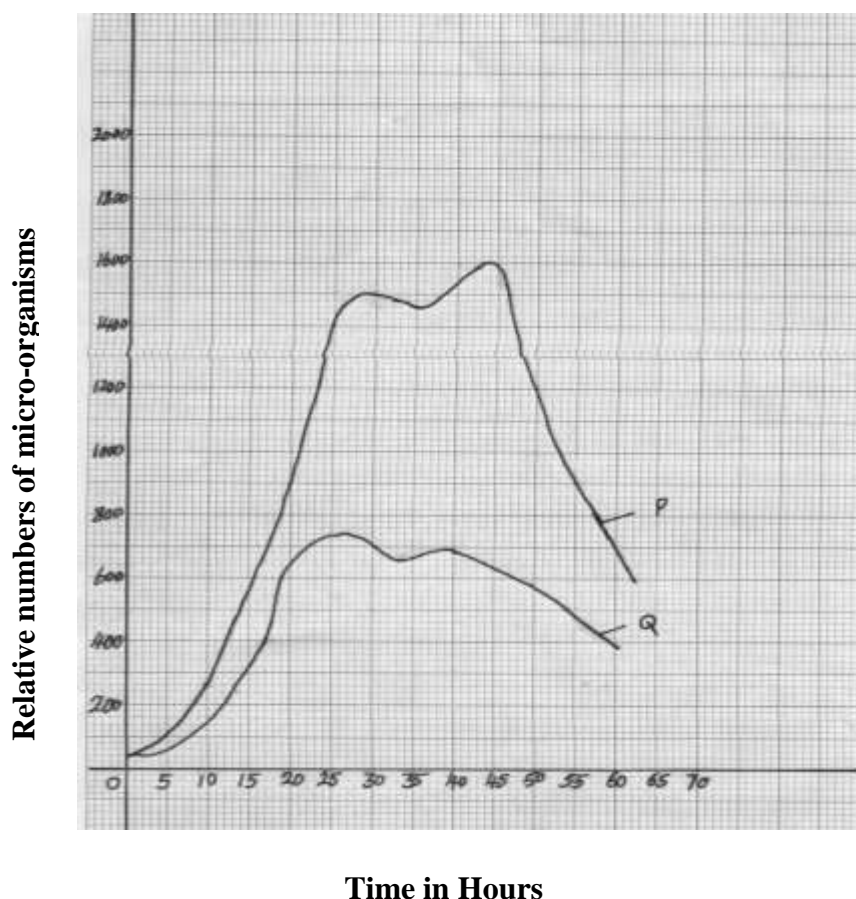


- a) (i) Name stimulus S (1 mk)  
(ii) Which part of the coleoptiles is affected by stimulus S? Give a reason for your answer.  
Part (1 mk)  
Reason (1 mk)
- b) (i) Name the substance in the coleoptile that brings about the observed behaviour of the seedlings. (1 mk)  
(ii) Explain the observation made on seedling P after 12 hours. (3 mks)
- c) State the role of set – up Q in the experiment. (1 mk)

**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 population of a certain type of micro – organism. Two Petri dishes labeled P and Q were used. Into Petri dish labeled P, 60ml of a culture medium was added while 15ml of the same culture medium was placed into Petri dish labeled Q. Equal members of the micro-organisms were introduced in both Petri dishes. The set – up was incubated at 35°C. The number of micro – organism in each Petri dish was determined at regular intervals for a period of 60 hrs. The results were as shown in the graphs below.



- a) At what intervals were the numbers of micro – organisms determined? (1 mk)
- b) (i) After how many hours was the population in each Petri dish highest? (2 mks)
- P:
- Q:
- (ii) State the population in each case for the times indicated in b) (i) about. (2 mks)
- Petri dish P
- Petri dish Q
- c) After how many hours was the difference in the two populations greatest? (1 mk)
- d) Account for the shape of curve Q between;
- (i) 0 – 5 hours (2 mks)
- (ii) 5 - 25 hours (2 mks)
- (iii) 25 – 50 hours (3 mks)
- e) Account for the high number of micro – organisms in Petri dish P after 5 hours. (2 mks)
- f) With reasons, state the effects on the population of micro – organisms if after 10 hours, the Petri dish were kept at;
- (i) 10<sup>0</sup>C (2 mks)
- (ii) 60<sup>0</sup>C (3 mks)
7. a) (i) Lamarck’s theory of evolution has been rejected by scientists today. Explain. (2 mks)
- (ii) Explain the meaning of the term “Survival of the fittest.” (3 mks)
- b) Discuss the various evidences which show that organic evolution has taken place. (15 mks)
8. Describe how the mammalian small intestine are adapted to their function. (20 mks)

Ruled page for student response with horizontal dotted lines.



**END**