

NAME..... INDEX NO.....

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

DATE.....

231/2
BIOLOGY
PAPER 2
(THEORY)

JULY/AUGUST 2014
TIME: 2 HOURS

TRANS-NZOIA COUNTY JOINT EXAMINATIONS-2014

Kenya Certificate of Secondary Education

BIOLOGY
PAPER 2
(THEORY)

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

- Write your name, school and index number in the spaces provided above.
- This paper consist of **TWO** sections; **A** and **B**.
- Answer **all** the questions in the section **A** in the spaces provided.
- In section **B** answer Question **6 (compulsory)** and either question **7** or **8** in the space provided after question **8**.
- Check to ascertain that all pages are printed and that no questions are missing.

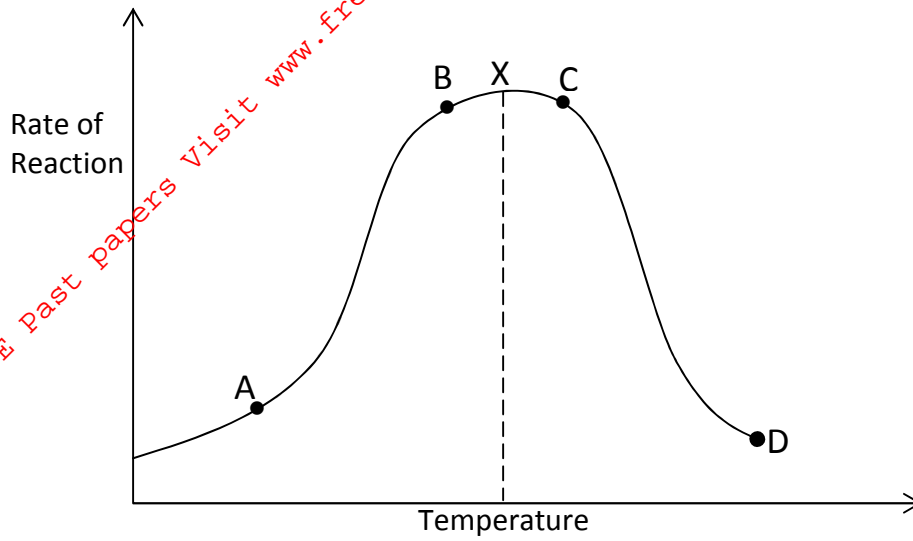
FOR EXAMINER'S USE ONLY

Section	Question	Maximum Score	Candidates Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
Total Score		80	

SECTION A: (40 MARKS)

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

1. The graph **below** show the effect of temperature on an enzyme catalysed reaction.



(a) Account for the shape of the curve between.

(i) A and B.

(3 marks)

(ii) C and D.

(2 marks)

(b) What does the point marked X represent?

(1 mark)

- (c) Apart from temperature, state **two** other factors that affect the rate of enzyme controlled reaction. (2 marks)

2. Colour blindness is a sex linked trait caused by a recessive gene on the X chromosome. Using the symbol X^C to represent the gene for normal colour vision and X^c to represent the gene for colour blindness work out the following.

- (a) The phenotype of children born to a normal man and carrier woman. (5 marks)

- (b) What is the genotypic ratio of their children? (1 mark)

- (c) Define the term:
(i) Allele. (1 mark)

(ii) Genetic engineering. (1 mark)

3. (a) State the functions of the following parts of the ear.

(i) Tympanic membrane. (1 mark)

(ii) Eustachian tube. (1 mark)

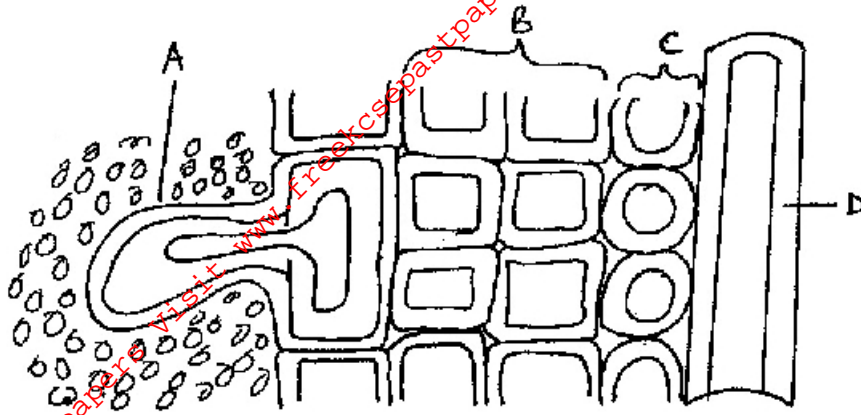
(iii) Vestibular apparatus. (1 mark)

(b) (i) Define tropic response. (1 mark)

(ii) What is the importance of tropic response? (1 mark)

(c) State **one** role of meninges. (1 mark)

4. The diagram **below** shows part of a longitudinal section of a young root.



(a) Name the parts labelled **A**, **B**, **C** and **D**. (4 marks)

A _____

B _____

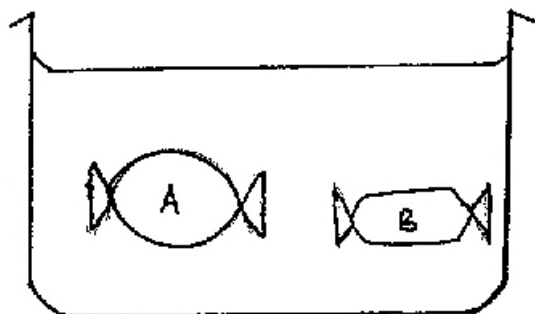
C _____

D _____

(b) State the function of the part labeled **A**. (1 mark)

(c) How is the tissue labelled **D** adapted to its function. (3 marks)

5. The experiment **below** was set up to demonstrate a physiological process. Two tubes **A** and **B** made of sheep's bladder were filled with different liquids and placed in a basin containing a liquid.



After 20 minutes it was found that tube A felt hard and the liquid in it had increased.
Tube B was soft and contained less liquid.

- (a) Explain what took place in tube A. (2 marks)

- Tube B. (2 marks)

- (b) Identify the liquid hypertonic to the liquid in the basin. (1 mark)

- (c) What does the sheep's bladder correspond to in a living organism. (1 mark)

- (d) What physiological process was being investigated in the above experiment? (1 mark)

- (e) What is the meaning of the term haemolysis. (1 mark)

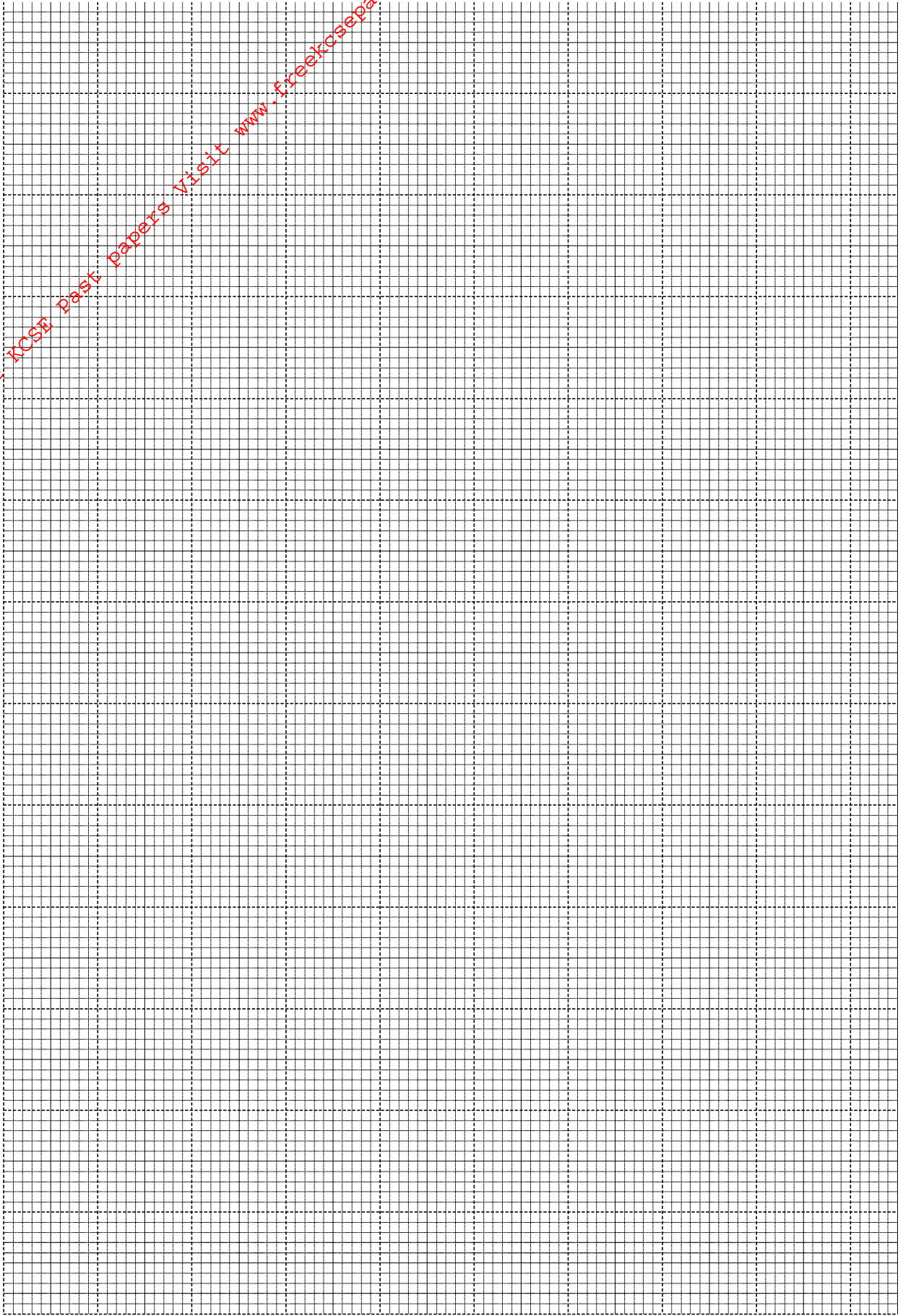
Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after question 8.

6. You have been provided with the data below on the growth of mice population. The population starts with two sexually mature mice, a male and a female. Every time they reproduce they reproduce in litter of six (3 males and 3 females) at 7 weeks intervals. Assume that they take 14 weeks to sexually mature and produce. They only die of old age when they are 3 years old. The following table shows population growth and litter production.

Time interval in weeks	0	7	14	21	28	35	42	49
Mice population	2	8	14	28	62	104	146	260
Litter population	0	6	6	24	24	42	42	114

- (a) Using the same axis draw graphs of population of mice and litter against time. (8 marks)

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(b) (i) How many times has the first litter of mice reproduced. (1 mark)

(ii) How many times has the third litter of mice reproduced? (1 mark)

(c) State **four** factors that may have affected the population growth of mice. (4 marks)

(d) Explain the shape of the litter curve. (4 marks)

(e) How many pairs of mice reproduced between 14 - 21st weeks and 42 - 49 weeks? (2 marks)

(i) Between 14 – 21st weeks.

(ii) Between 42 – 49 weeks.

7. Describe how the structure of mammalian skin is adapted to its function. (20 marks)

8. Describe the role of hormones in human female menstrual cycle. (20 marks)

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