

NAME INDEX NO.....

SCHOOL CANDIDATE'S SIGNATURE.....

DATE.....

231/2
BIOLOGY
PAPER 2
(THEORY)
JUNE 2014
TIME: 2 HOURS

COMA JOINT EXAM 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.

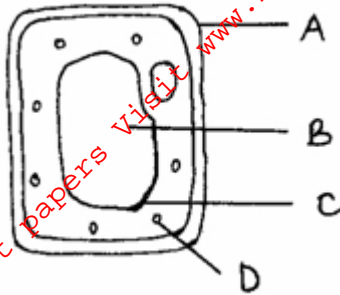
FOR EXAMINER'S USE ONLY

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. Examine the diagram **below** and use it to answer the questions that follow.



- (a) Name the parts labeled. (3mks)

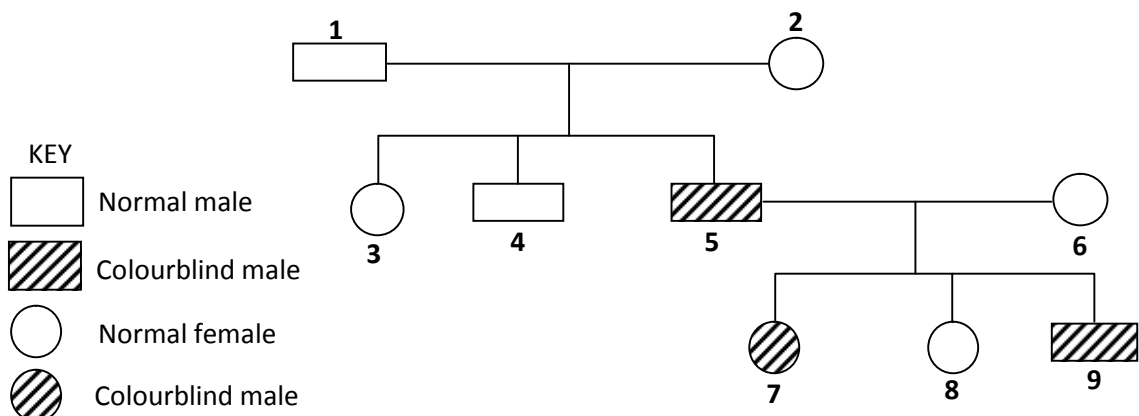
B _____
C _____
D _____

- (b) What is substance which makes up part labeled **A**? (1mk)

- (c) Name the process by which mineral salts move into structure **B**. (1mk)

- (d) Explain what happens when a red blood cell is put in distilled water. (3mks)

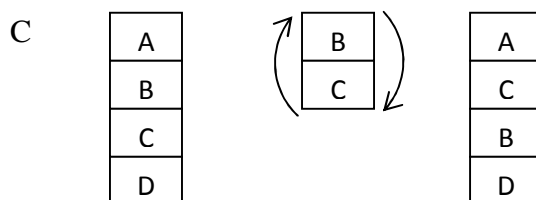
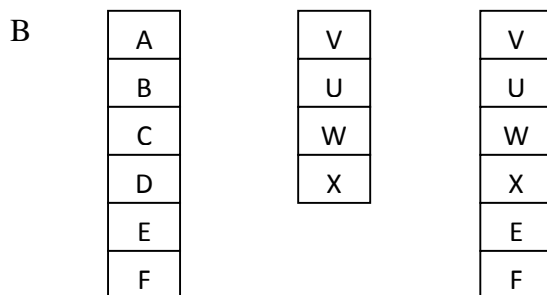
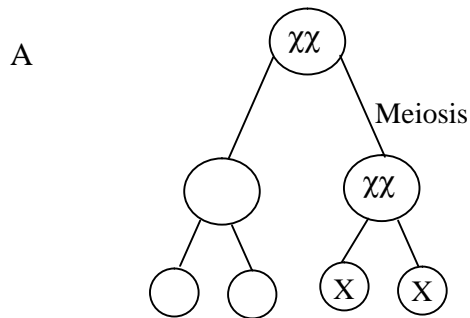
2. The figure **below** is a pedigree showing the inheritance of colourblindness, a disease transmitted through a recessive gene located on the X-chromosome.



- (a) Using the symbol N for normal gene and n for colourblind gene, write down the genotypes of parents **1** and **2**. (2mks)

- (b) Work out the possible genotypes of the children **3**, **4** and **5**. (4mks)

- (c) The diagrams **below** illustrate some chromosome mutations.



Identify the mutations.

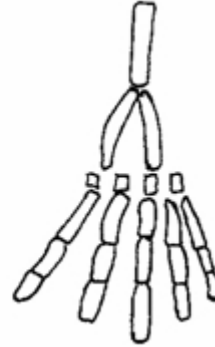
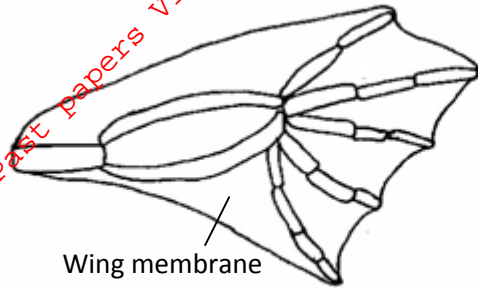
(3mks)

A _____

B _____

C _____

3. The diagram **below** shows structures of the bat wing and human arm.



(a) These structures are thought to have same ancestral origin. State **one** structural similarity and **one** adaptational difference between the two.

(i) Structural similarity.

(1mk)

(ii) Adaptational difference.

(2mks)

(b) Give **two** other examples of structures in nature that show the type of evolution as in (a) above.

(2mks)

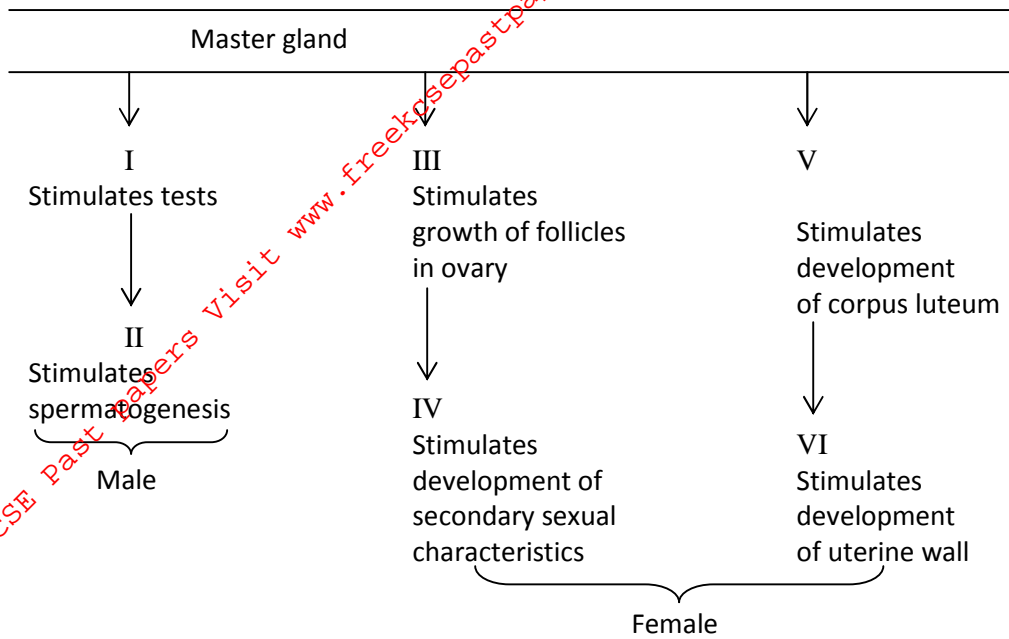
(c) Distinguish between the terms 'chemical evolution' and 'organic evolution'.

(2mks)

(d) What is the study of fossils called?

(1mk)

4. The diagram **below** represents some hormones, their sources and functions in a mammal.



(a) Identify the gland described as master gland. (1mk)

(b) Name the hormones:- (4mks)

II _____

III _____

V _____

VI _____

(c) Describe the consequences of deficiency of hormone **II** in man. (2mks)

(d) Other than stimulate development of uterine wall, suggest two other functions of hormone **VI**. (2mks)

5. Ascaris lumbricoides is an endoparasite.

(a) Name the genus to which it belongs. (1mk)

(b) State the habitat of the organism. (1mk)

(c) State **three** ways in which the organism is adapted to living in its habitat. (3mks)

(d) Mention **three** ways of preventing spread of the parasite. (3mks)

SECTION B: (40 MARKS)

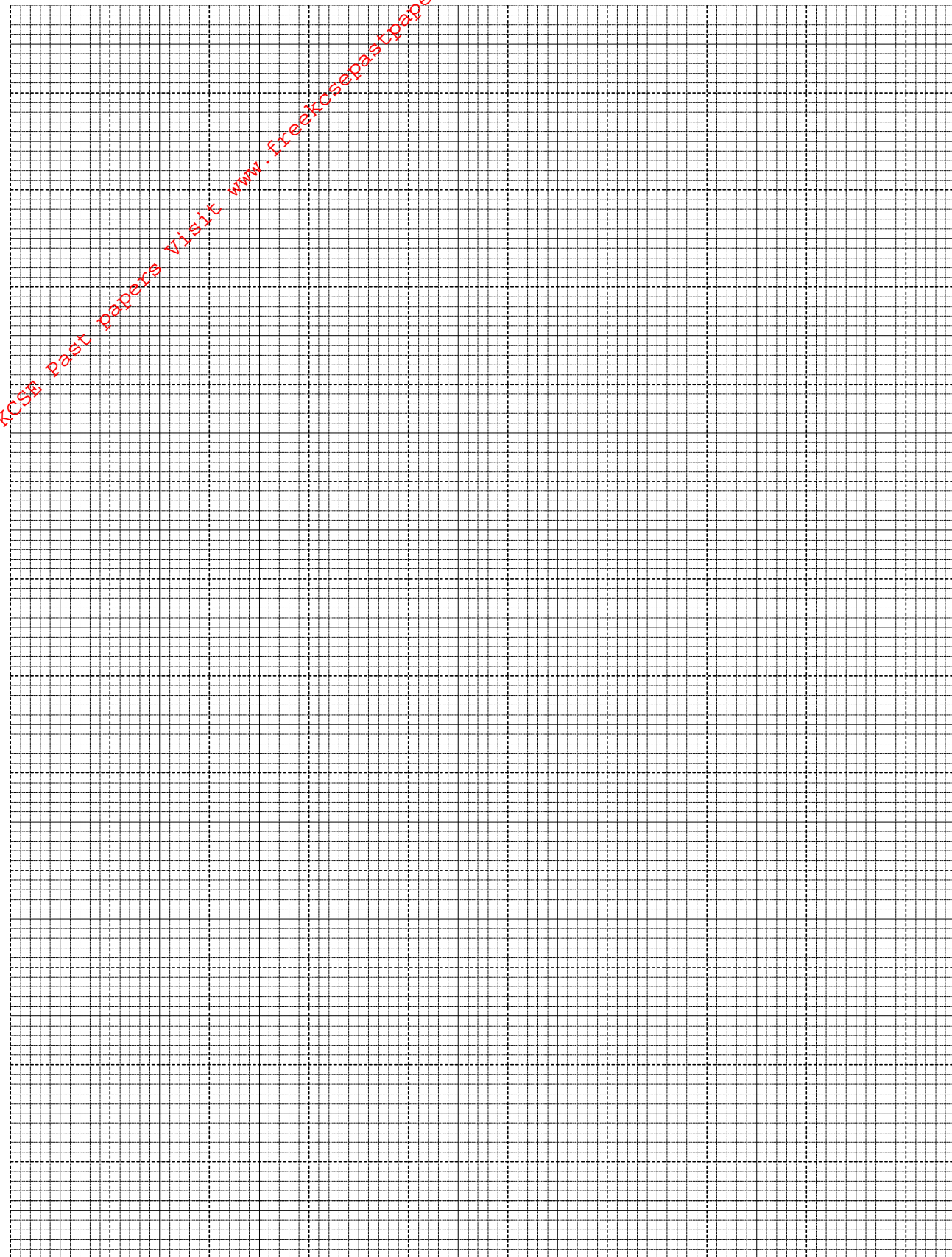
Answer question **6 (compulsory)** and EITHER question **7** or **8** in the spaces provided after question **8**.

6. The table **below** shows how the quantities of sweat and urine vary with external temperature.

External temperature °C	Urine cm ³ /hr	Sweat cm ³ /hr
0	100	5
5	90	6
10	80	10
15	70	20
20	60	30
25	50	60
30	40	120
35	30	200

(a) On the same graph, plot the quantities of urine and sweat produced against the external temperature. (7mks)

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(b) At what temperature are the amounts of sweat and urine produced equal? (1mk)

(c) What happens to the amount of sweat produced as the temperature rises? Explain the observation. (3mks)

(d) Explain the observation made on the amount of urine produced as the temperature increases. (3mks)

(e) How is the skin adapted for temperature regulation? (6mks)

7. Describe the structural adaptations of the mammalian heart to its function. (20mks)

8. Describe how water moves from the soil to the leaves in a tree. (20mks)

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