NAME…….. INDEX NO…….....

231/2 CANDIDATE'S SIGN……..……..……..

BIOLOGY

PAPER 2 DATE……..……

(THEORY)

JULY/AUGUST, 2014

TIME: 2 HOURS



# CENTRAL KENYA NATIONAL SCHOOLS JOINT EXAM – 2014

**Kenya Certificate of Secondary Education**
**BIOLOGY**
**PAPER 2**
**(THEORY)**
**TIME: 2 HOURS**

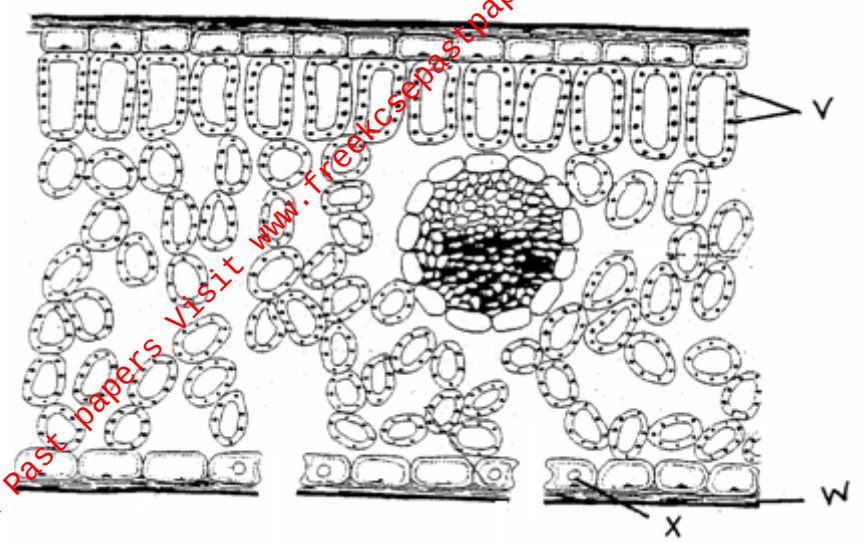
**INSTRUCTIONS TO CANDIDATES:**

1. Write your **Name**, **Index Number** and **School** in the spaces provided above.
2. **Sign** and write the **date** of examination in the spaces provided above.
3. Answer **all** the questions in the spaces provided.
4. Answers must be written in the spaces provided in the question paper.
5. Additional pages **must not** be inserted.

**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 | |

1. The diagram below represents a section of a leaf.




(a) Name the parts labelled **V** and **W**. (2mks)

**V** _____

**W** _____

(b) State **two** adaptations of part labelled **X** to it's function. (2mks)

_____

_____

_____

_____

(c) (i) State **three** end products of photosynthesis. (3mks)

_____

_____

_____

(ii) Name the structure where the light stage of photosynthesis occurs. (1mk)

_____

2. Haemophilia is a sex linked characteristic caused by a recessive gene carried on the X chromosome. A carrier woman marries a normal man. Use letter H to represent the dominant gene.

(a) Work out the phenotypes of $F_1$ generation. (5mks)

(b) What is the probability of the couple getting a haemophilic son? (1mk)

_____

(c) Define the following terms as used in genetics.

(i) Allele. (1mk)

_____

_____

_____

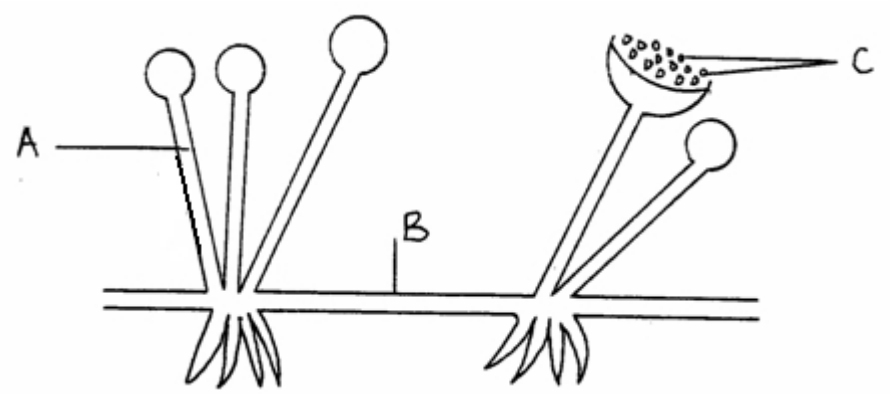
(ii) Genetic engineering. (1mk)

_____

_____

_____

3. The diagram below represents bread mould (Rhizopus).




(a) Identify the parts labelled **A** and **B**. (2mks)

**A** _____

**B** _____

(b) State the function of parts labelled **C**. (1mk)

_____

(c) List **two** differences between class chlopoda and diplopoda. (2mks)

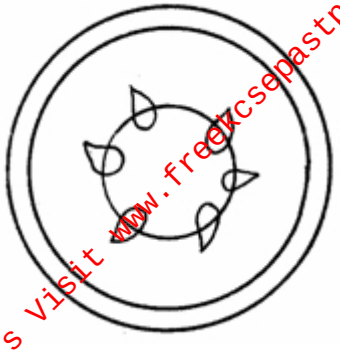
_____

_____

_____

_____

(d) The diagram below represents a section obtained from a plant.



Classify the plant from which the section was obtained under the following: (2mks)

(i) Division _____

(ii) Class _____

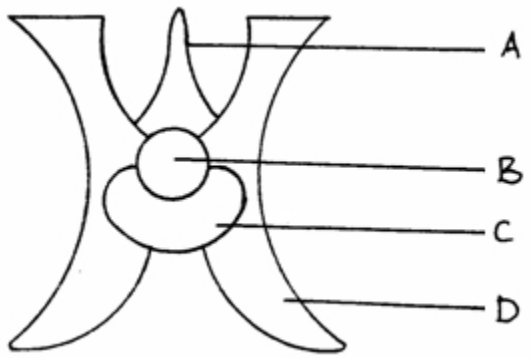
(e) Give **two** reasons for your answer in d(ii) above. (2mks)

_____

_____

_____

4. The figure below shows the anterior view of a lumbar vertebra.




(a) Name part labelled **A - C**. (3mks)

**A** _____

**B** _____

**C** _____

(b) What is the function of part **D**? (1mk)

_____

_____

(c) Name the structure that is found between two vertebrae. (1mk)

_____

(d) State **two** important functions of the structure named in (c) above. (2mks)

_____

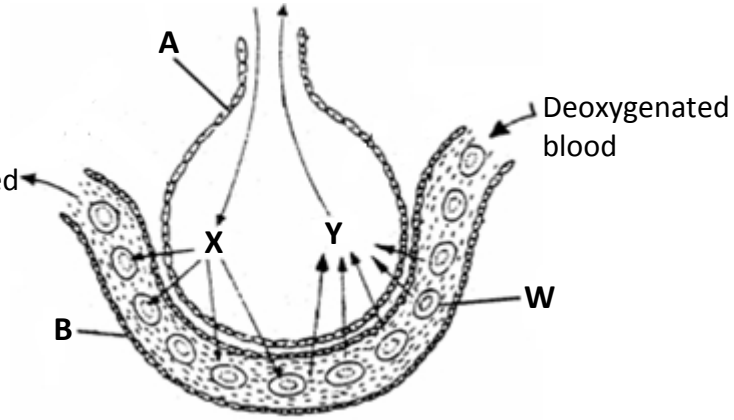
_____

_____

(e) Name the support tissue in herbaceous plant. (1mk)

_____

5. The diagram below illustrates the structure of the alveolus.




(a) Name the membranes labelled **A** and **B**. (2mks)

**A** _____

**B** _____

(b) Name the gases labelled **X** and **Y**. (2mks)

**X** _____

**Y** _____

(c) Name the cell labelled **W**. (1mk)

**W** _____

(d) State **three** adaptations of the above structure to it's function. (3mks)

_____

_____

_____

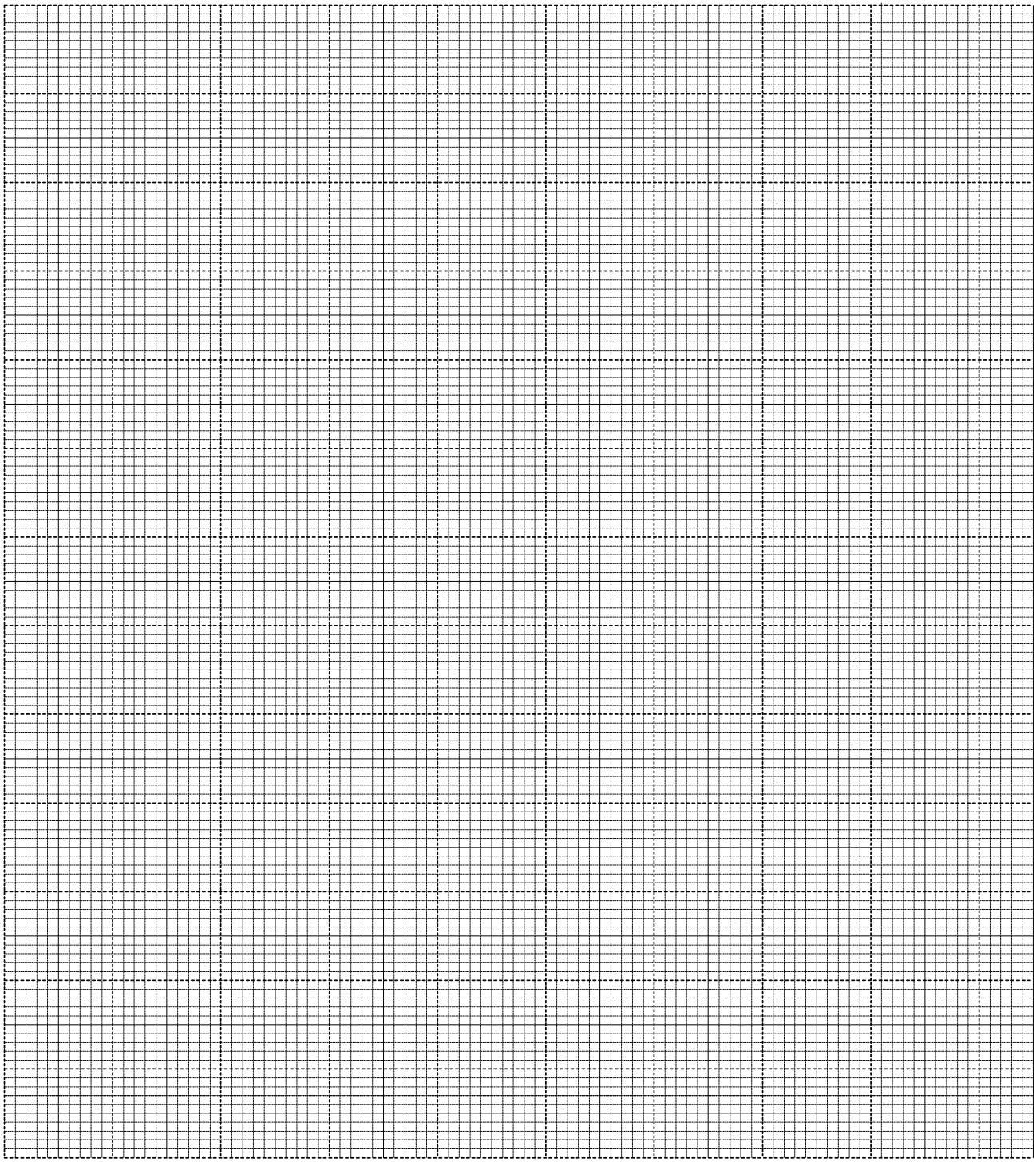
_____

**SECTION B**:

6. Some students used a model to demonstrate the effect of sweating on human body temperature. Two boiling tubes A and B were filled with hot water. The temperature of water in tubes was taken at the start of the experiment and then at 5 minutes interval. The surface of tube A was continuously wiped with a piece of cotton wool soaked in methylated spirit. The results obtained are shown in the table below.

| Time (minutes) | Tempearture °C in table | |
|---|---|---|
| | A | B |
| 0 | 80 | 80 |
| 5 | 54 | 67 |
| 10 | 40 | 59 |
| 15 | 29 | 52 |
| 20 | 21 | 47 |
| 25 | 18 | 46 |

(a) On the same axes plot graphs of temperature of water in the tubes against time. (6mks)



(b) At what rate was water cooling in tube A. (1mk)

_____

_____

_____

(c) Why was tube B included in the set up. (1mk)

_____

_____

(d) Account for the rate of cooling in tube A. (3mks)

_____

_____

_____

_____

(e) State **two** processes of heat loss in tube B. (2mks)

_____

_____

(f) What would be the expected results in tube A if it was insulated? (1mk)

_____

_____

(g) What would the insulation be compared to in: (2mks)

(i) Bird _____

(ii) Mammals

_____

(h) Name the structure in human body that detect: (2mks)

(i) External temperature changes.

_____

(ii) Internal temperature changes.

_____

7. (a) Described how the structure of the heart is adapted to it's function. (10mks)

(b) Describe how the schistosoma is adapted to it's parasitic mode of life. (10mks)

8. Describe how the structure of mammalian eye is adapted to it's function. (20mks)