NAME   _____

INDEX NO.   _____

SCHOOL   _____

SIGNATURE   _____

DATE   _____

231/2

BIOLOGY
(THEORY)
PAPER 2
JULY / AUGUST, 2017
TIME: 2 HOURS

KITUI COUNTY MOCK

END OF TERM II FORM FOUR EXAMINATION, 2017

Kenya Certificate of Secondary Education (K.C.S.E)

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

INSTRUCTIONS TO CANDIDATES

- Write your name and index number in the spaces provided above.
- Write the date of examination and sign in the spaces provided above.
- Answer **ALL** the questions in section A by filling in the spaces provided.
- In section B, answer question 6 (compulsory question) and any other one question from the remaining two questions. (i.e. 7 or 8)
- Candidates may be penalized for false information and even wrong spellings of technical terms.
- This paper consists of **12** printed pages.
- Candidates should check to ensure that all pages are printed as indicated and no questions are missing.
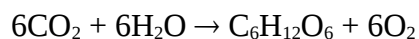
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	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
SECTION A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
SECTION B	6	20	
	7	20	
	8	20	
	TOTAL SCORE	80	

Order answers online at: www.schoolsnetkenya.com

SECTION A (40 MARKS)

*Answer **ALL** the questions in the spaces provided*

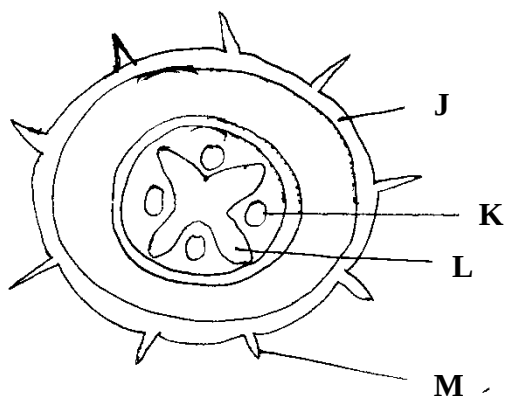1. The equation below represents a process that takes place in plants.

    $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

    a) Name the process.   (1 mark)

    _____

    b) State **two** conditions necessary for the process to take place.   (2 marks)

    _____

    _____

    c) State what happens to the end-products of the process.   (5 marks)

    _____

    _____

    _____

    _____

    _____

    _____

2. The diagram below represents a transverse section through a plant organ.

    a) From which plant organ was the section obtained?   (1 mark)

    _____

    b) Give **two** reasons for your answer in (a) above.   (2 marks)

    _____

    _____

    _____

    c) Name the parts labelled J, K and L.   (3 marks)

        J   _____

        K   _____

        L   _____

d) State **two** functions of the part labelled M.   (2 marks)

_____

_____

_____

3. In a certain plant species which is normally green, a recessive gene for colour (n) causes the plant to be white in colour. Such plants die at an early age. In the heterozygous state, the plants are pale green in colour but grow to maturity.

a) Give a reason for the early death of the plants with homozygous recessive gene.   (2 marks)

_____

_____

_____

_____

b) If a normal green plant was crossed with the pale green plant, what would be the genotype of the first filial generation (F_1 generation)? Show your working.   (4 marks)

c) If heterozygous plants were self-pollinated and the resulting seeds planted, work out the population of their offspring that would grow to maturity.   (2 marks)

4. a) What is meant by the term biological control? (1 mark)

_____

_____

_____

b) i) What is eutrophication? (3 marks)

_____

_____

_____

_____

ii) What are the effects of eutrophication? (3 marks)

_____

_____

_____

_____

c) Name a substance that is responsible for acid rain. (1 mark)

_____

5. a) What is meant by the following terms
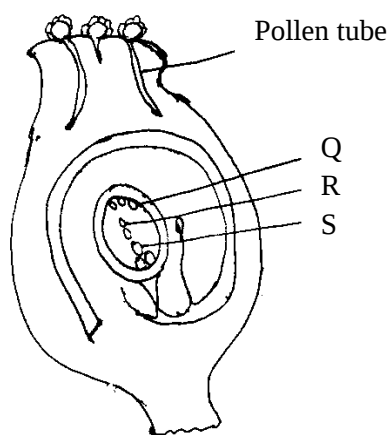
i) Protandry? (1 mark)

_____

_____

ii) Self-sterility? (1 mark)

_____

_____

b) The diagram below shows a stage during fertilization in a plant.

i) Name the parts labeled Q, R and S. (3 marks)

Q _____

R _____

S _____

ii)   State **two** functions of the pollen tube.   (2 marks)

_____

_____

_____

c)   Label the Micropyle on the diagram.   (1 mark)

SECTION B (40 MARKS)

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

6.   In an experiment to investigate a certain physiological process, a boiling tube labelled A and a test-tube labelled B were covered with cotton wool. The two tubes were simultaneously filled with hot water and fitted with thermometer. The experiment set-up was as in the diagrams below.
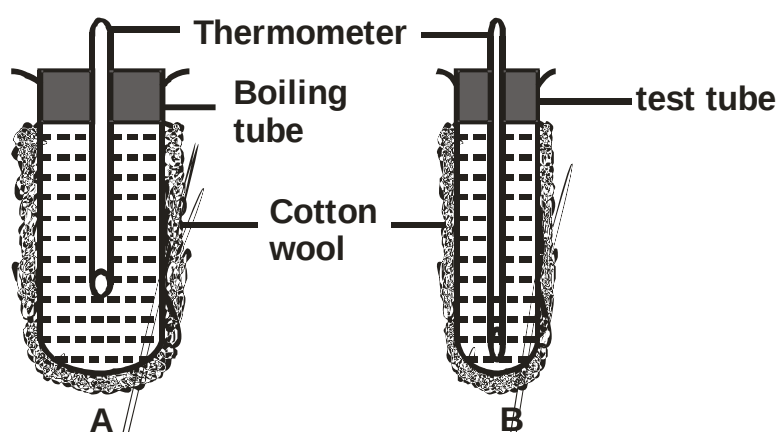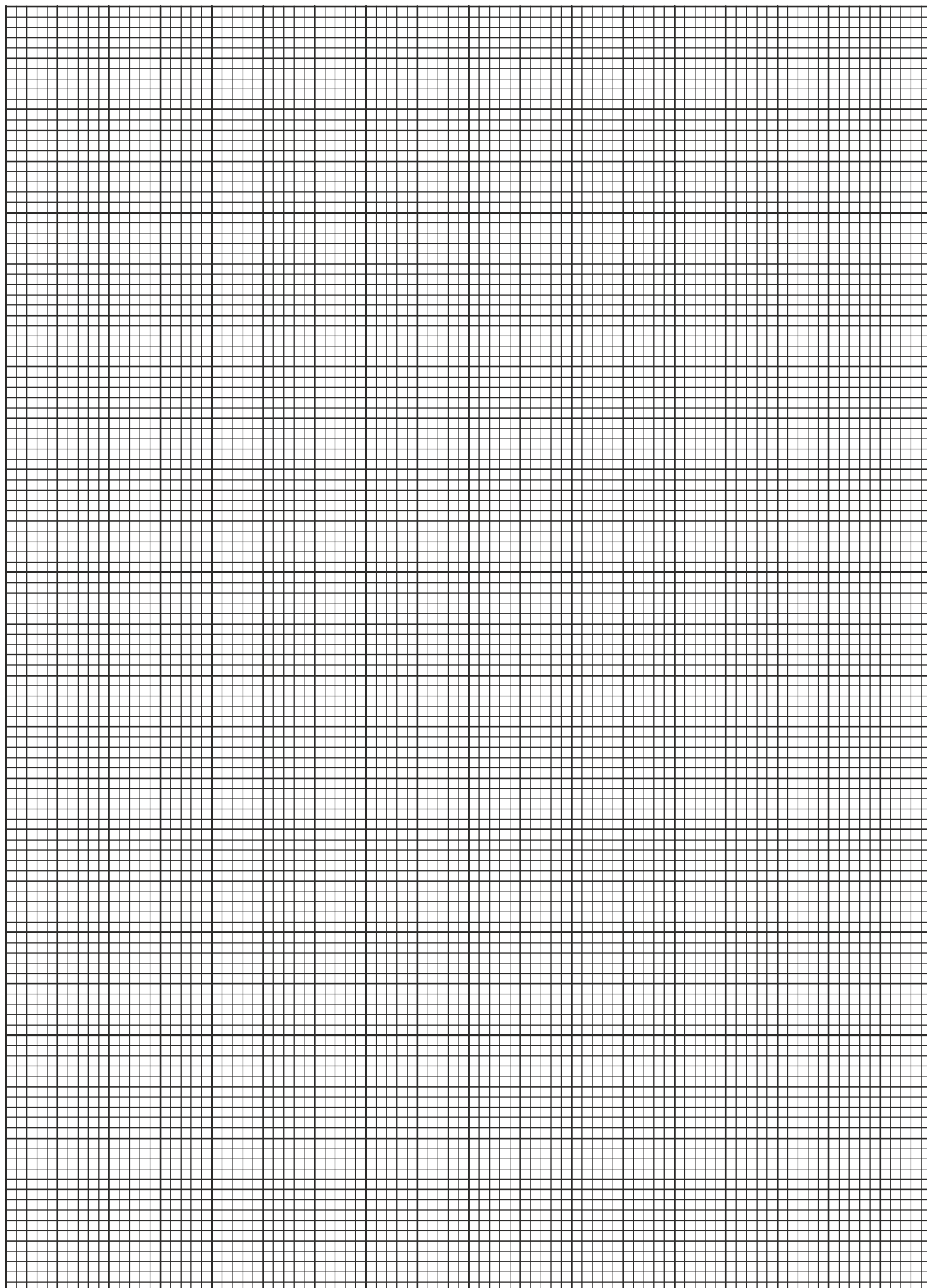

Temperature readings were taken at the start and after every two minutes for twenty minutes.

The results were as shown below.

Time	Temperature (°C)	
(minutes)	Boiling tube A	Test-tube B
0	60	60
2	59	54
4	57	50
6	55	46
8	53	43
10	52	40
12	51	37
14	49	35
16	48	33
18	47	32
20	46	30

a)   Using the same axis, draw graphs of temperature against time.   (6 marks)

b)   i)   Work out the rate of heat loss in the boiling tube labelled A and test tube labelled B between the 5th and 15th minutes. (4 marks)

_____

_____

_____

_____

_____

_____

ii)   Account for the answers in (b) (i) above. (2 marks)

_____

_____

_____

_____

iii) How does the explanation in (b) (ii) above apply to an elephant and a rat? (2 marks)

_____

_____

_____

_____

c)   i)   State the role of the cotton wool in this experiment. (1 mark)

_____

_____

ii)   Name **two** structures in mammals that play the role stated in (c) (i) above. (2 marks)

_____

_____

d)   State **three** advantages of having constant body temperature in mammals. (3 marks)

_____

_____

_____

_____

7.   a)   Explain how comparative embryology is an evidence for organic evolution. (2 marks)

b)   Describe the structure and functions of the various parts of the human ear. (18 marks)

8.   a)   Describe the mechanism of gaseous exchange in a mammal. (16 marks)

b)   Explain the mechanism of stomata opening in plants. (4 marks)