Name: ..... Index no .....

Admission No.....Candidate's sign .....

Date: .....

231/2
BIOLOGY
Paper 2
(THEORY)
JULY / AUGUST 2018
TIME: 2 HOURS

FORM 4 MID-YEAR EVALUATION EXAMINATION 2018

Kenya Certificate of Secondary Education (K.C.S.E.) 2018

Instructions to candidates:

- *Write your name and index number in the spaces provided above.*
- *This paper consists of **TWO** sections; **A** and **B.***
- *Answer **ALL** the questions in Section **A** in the spaces provided.*
- *In section **B** answer questions **6 (compulsory)** and either question **7** or **8** in the spaces provided after question 8.*
- ***This paper consists of 12 printed pages**. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing*

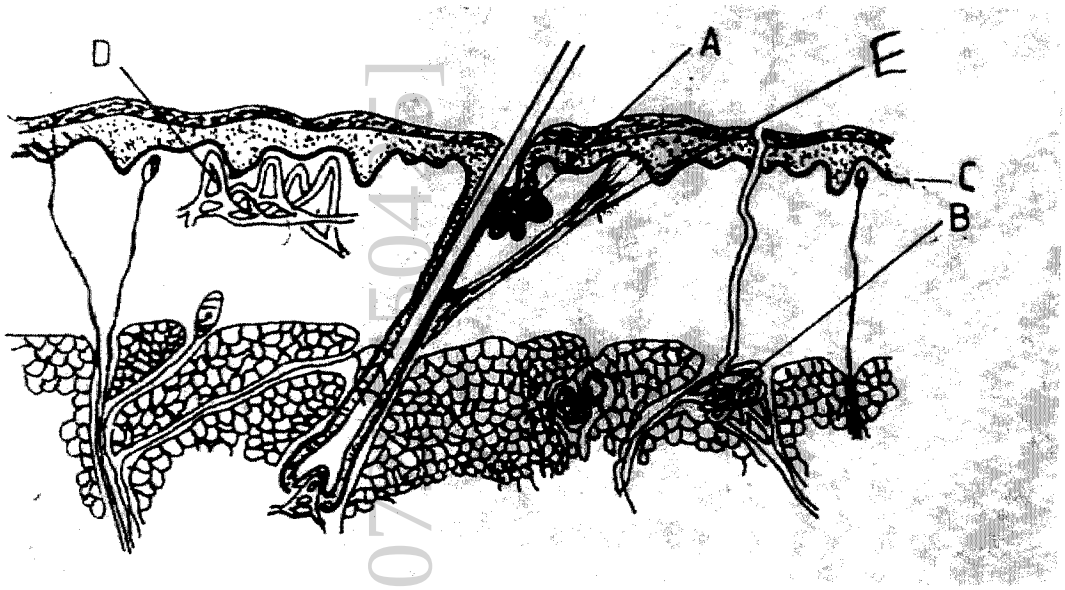
For Examiner's Use Only:

Section	Question	Maximum Score	Candidate's Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	**80**	

SECTION A (40 Marks)

Answer all the questions in this section.

1. Below is a diagram of a mammalian skin, use it to answer the questions that follow.



a) Name the parts labelled C, D and E (3mks)

C.....

D.....

E.....

b) Give the function of the part labelled A (2mks)

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c) Briefly explain how the part labelled B contribute to lowering of body temperature on a hot day. (2mks)

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d) Give **one** function of the mammalian skin other than thermoregulation. (1mk)

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2. Form two students subjected an orange plant growing outside the laboratory to the Following;

i) Selected two sized leaves and gently wiped them clean on both sides.

ii) Placed two strips of dry cobalt chloride paper on both sides of each leaf and covered the cobalt chloride papers with cello tape. They observed the time taken for any colour change to occur and recorded the following.

Side of leaf	Upperside	Lower side
Time taken	5 minutes	2 minutes

Use the above information to answer the following questions.

a.i) What was the aim of the above experiment. (1mk)

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ii) What was the purpose of wiping the leaf (1mk)

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iii) What was the role of cello-tape in this experiment? (1mk)

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b.i) What was the original colour of dry cobalt chloride paper. (1mk)

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ii) What colour change did the students observe? (1mk)

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C. Explain the difference in time taken for the colour changes observed. (3mks)

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3. In an experiment, a variety of garden peas having a smooth seed coat was crossed with a variety having wrinkled seed coat. All the seeds obtained in the F1 generation had a smooth seed coat. The F1 generation was selfed and the total number of F2 generation obtained was 7324. Using letter **R** for the dorminant gene;

a) State the genotypes of the parents (2mks)

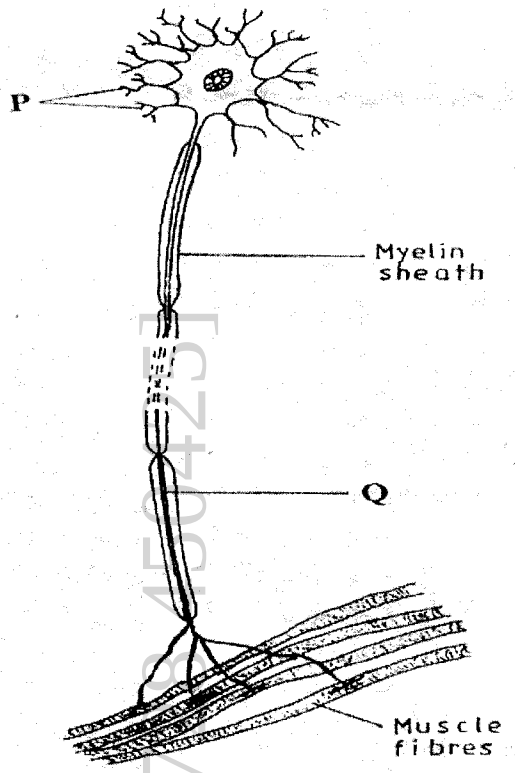
b) From the information above,;

i) Work out the genotypes of the F2 generation (4mks)

ii) State the genotypic ratio of the F2 generation. (1mks)

iii) Determine the total number of wrinkled seeds (1mks)

4.The diagram below represents a neurone



i) Name the neurone (1mk)

ii) Name the parts labelled P and Q (2mks)

P—

Q—

(b) How is the neurone adapted to its function? (2mks)

(c) State three biological importances of tropisms to plants (3mks)

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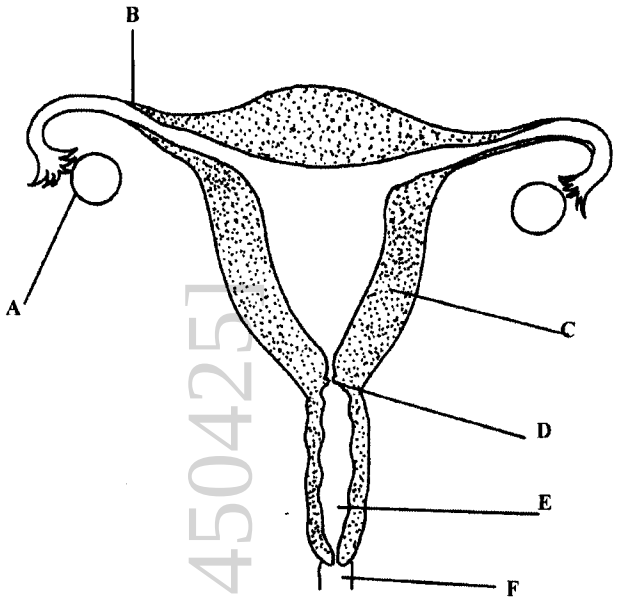
5. The diagram below represents a female reproductive system;



a) Name the part labelled B, C and D (3mks)

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b) State two functions of structure A (2mks)

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c) How is part C adapted to its function? (2mk)

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d) How does protandry prevent self-pollination and fertilization in flowering plants? (1mk)

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SECTION B (40 Marks)

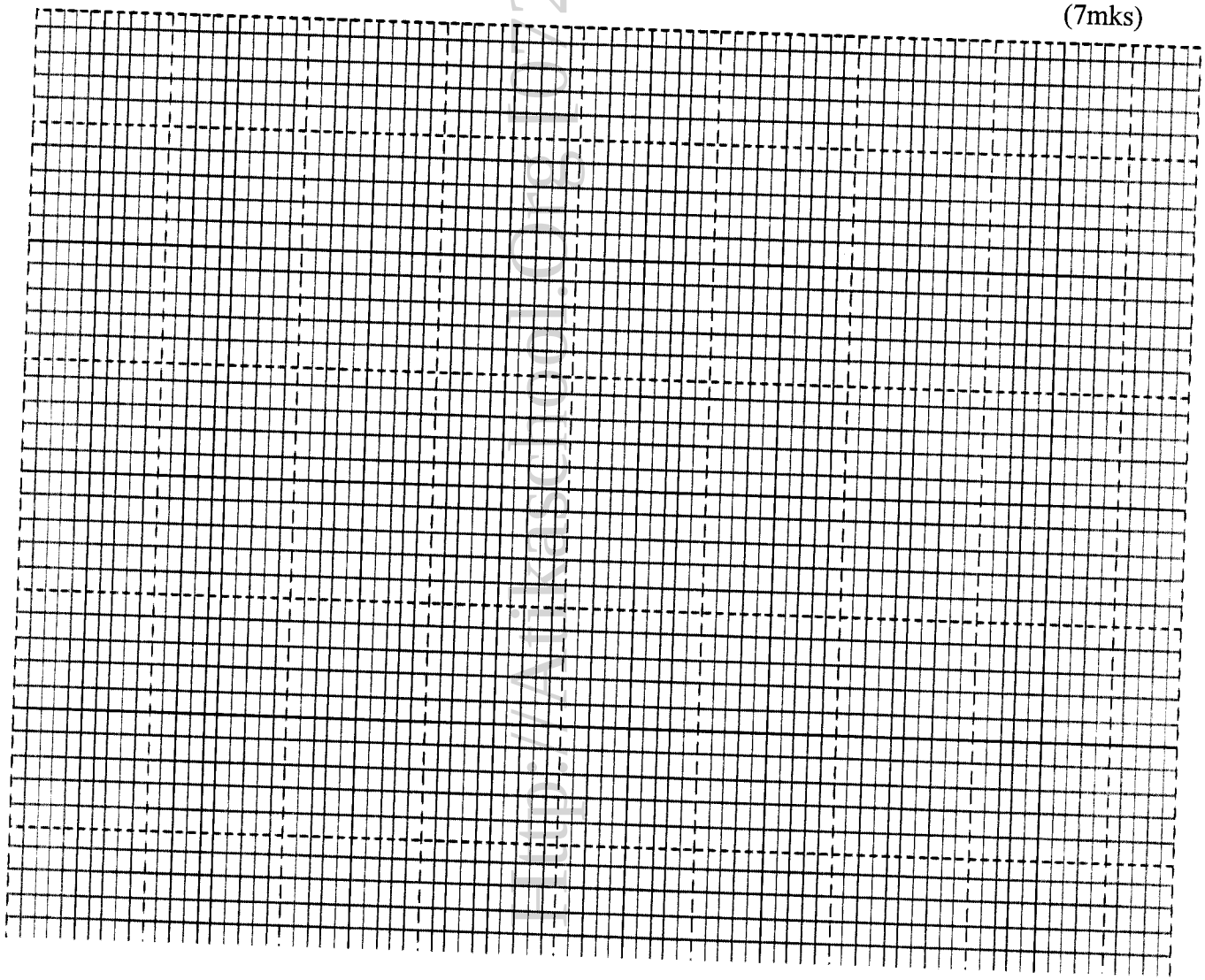
Answer question 6 (Compulsory) and either question 7 or 8 in the spaces provided.

6. A research was carried out to determine the trend of growth for some boys and girls. Their average mass in kilograms was taken separately for a period of 20 years and tabulated as shown in the table below.

Age	Average Mass of boys (kg)	Average mass of girls (kg)
0	2.5	2.5
2	11.1	11.5
4	15.0	16.0
6	18.5	19.3
8	22.1	27.1
10	25.1	27.1
12	27.5	30.5
14	37.0	35.5
16	44.0	44.0
18	46.9	52.5
20	48.5	55.0

a) On the same axis draw a graph of average mass of girls and of boys against the age.

(7mks)



b) From the graph , determine the;

i) Mass for boys at age of 11 years. (1mk)

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ii) Growth rate in girls between ages 13 and 15 (3mks)

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c) Account for the change in the mass of girls during the age stated in (ii) above. (2mks)

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d) Explain the trend observed in the curves for both boys and girls. (2mks)

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e) Why do girls above 10 years require intake of food that is richer in iron than boys of the same age. (1mk)

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f) Mention two other factors apart from the diet that affect the rate of growth in boys and girls. (2mks)

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g) Apart from using average mass to estimate growth in human beings, name two other parameters that can be used. (2mks)

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7.(a) Describe how urea is formed and eliminated by the human body. (8 mks)

(b) How is a mesophyte leaf adapted to its functions (12mks)

8.(a) Explain the causes and effects of air pollution (14mks)

(b) Explain the following as evidences of evolution (6 mks)

-fossil records

-comparative embryology

-geographical distribution