Name.....Adm…….Index No…….

Class……

231/2

Biology

Paper 2

July/Aug 2018

2 hours

LANY ACHIEVERS F4 EXAMINATION 2018

(Kenya Certificate Of Secondary Education)

Instructions to candidates

a) Write your name, admission number and class in the spaces provided.
b) This paper has two sections: A and B
c) Answer all the questions in section A in the spaces provided.
d) In section B answer question 6 (compulsory) and either question 7 or 8 in the space provided after question 8.
e) This paper has 11 printed pages.

For Examiner's Use Only

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

1. a) What is meant by sex - linked genes? (1mk)

……
……
……

b)In human, red-green colourblindness is caused by a recessive gene (n) which is sex-linked. A colour blind man married a woman with normal colour vision. The couple got a colour-blind daughter.

i) What were the parental genotypes? (2mks)

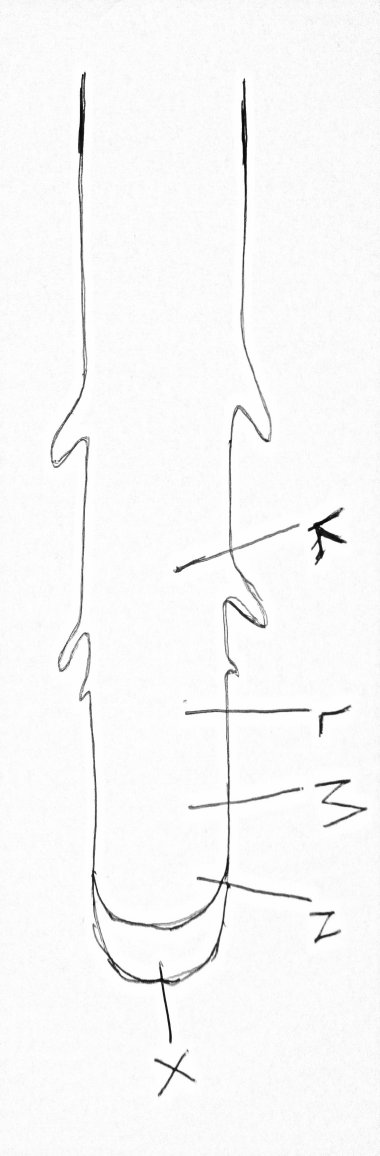
- Man…….
- Woman……..

ii) Work out the genotypes of their offsprings. (3mks)

iii) Name two other traits in human that are sex-linked (2mks)

……
……

2. The diagram below represents a young root tip and four cells which were obtained from different regions of root tip labelled K, L, M and N.



The cells.

a) i) State the regions of the root tip from where each of the four cells A, B, C and D were obtained. (4mks)

Cell	Region of root tip

A B C D	

ii) State two characteristics of the cells that were obtained from the region labelled N. (2mks)

……
……

b) State the functions of the part labelled X. (1mk)

……
……

c) Name the tissue that leads to secondary growth in plants. (1mk)

……

3. The table below shows results of an investigation carried out to determine energy requirements in two individuals.

individual	Body weight (kg)	Total energy requirement(kJ)	Energy requirement per Kg of body weight (kJ)
1. 2.	7.5 21.5	3397.5 7890.5	…… ……

a) Complete the table by calculating the energy requirements per unit body weight. (2mks)

Account for the results obtained in (a) above. (2mks)

……
……
…….

Why do males require more energy than females of the same body weight? (1mk)

……
……
…….

i) Name a fat soluble vitamins manufactured by the human body. (1mk)

……
……

……

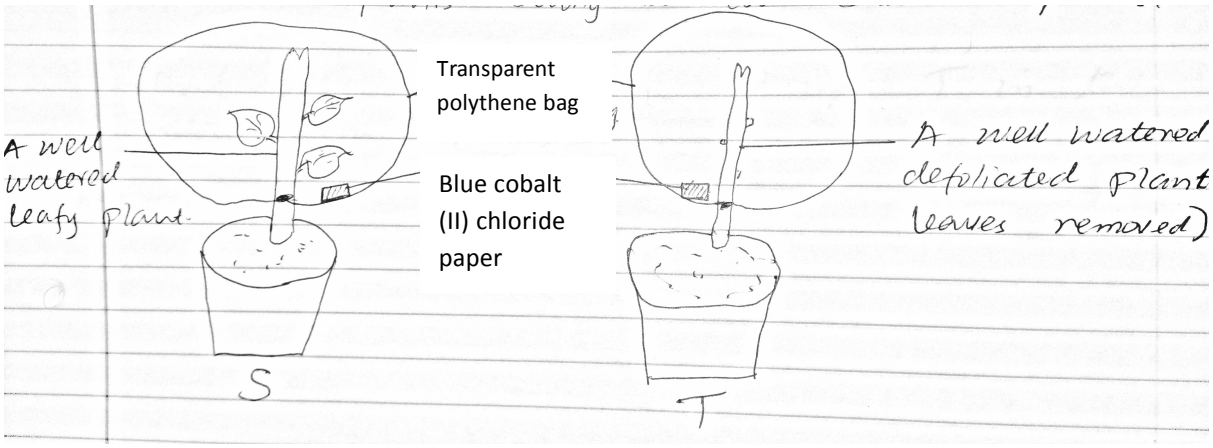
ii) State two functions of potassium ions in the human body. (2mks)

……

……

……

4. Students carried out the experiments illustrated below to investigate a certain physiological process. The two plants belong to the same species.



The set up was allowed to stand in the light for 4 hours.

Name the physiological process that was being investigated. (1mk)

……

a) Suggest the observation that would be made one the Cobalt (II) Chloride paper at the end of the investigation.

S…… (1mk)

T…… (1mk)

b) Account for the observation made in (b) above.

S……
…… (1mk)

T……
…… (1mk)

State **two** environmental factors that would affect the process being investigated. (2mk)

……

……

……

What was the role of the set up T in this investigation? (1mk)

……

……
……

5. The diagram below represents recycling of materials in a terrestrial ecosystem.

a) Name the trophic level represented by M. (1mk)
b) Name the:
i) Feeding relationship labelled
I…… (1mk)
ii) Process labelled
II…… (1mk)
iii) Process labelled
III…….. (1mk)
iv) Group of organisms involved in process II……
(1mk)
c) From the diagram above, name the organisms that would have the highest biomass. (1mk)

……
……

d) What would happen within the ecosystem if all the secondary consumers were eliminated? (2mks)
……
……
…….

SECTION B. (40 MKS)

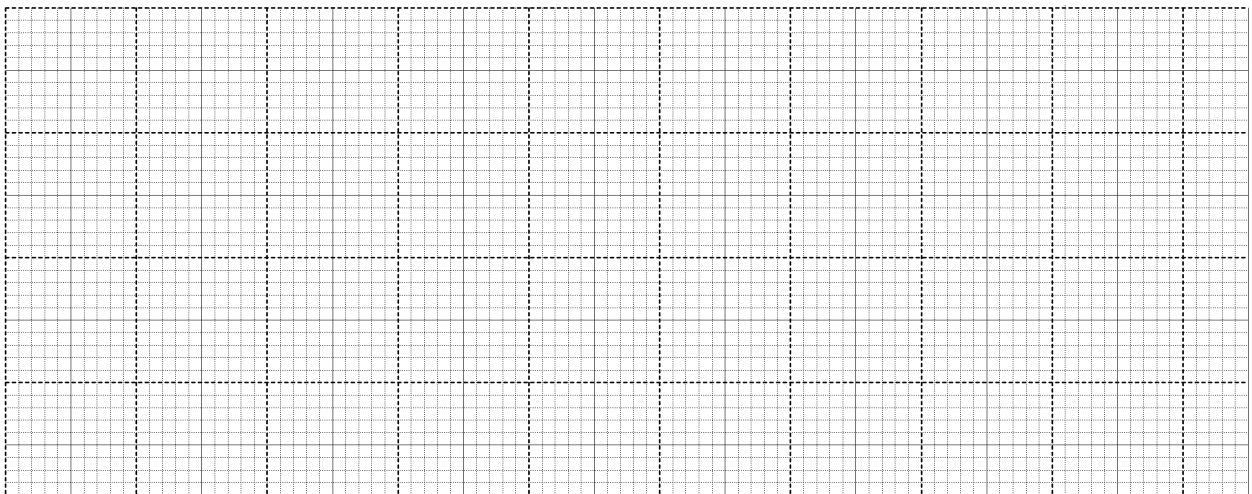
Answer question 6 (compulsory) and either question 7 or 8 in the spaces provided after

question 8.

6. Two sets of ten pea seeds were germinated. Set A was placed in normal day light conditions in the laboratory while set B was placed in a dark cupboard. Starting a few days later, the lengths of the shoots were measured twice daily. The mean lengths of the two sets were recorded as shown in the table below.

Time in hours	0	12	24	36	48	60	72	84
Set A mean length (mm)	12	14	20	24	28	32	48	54
Set B mean length (mm)	18	24	28	36	48	62	80	94

a) Using the same axis, plot graphs of the mean lengths of the two sets of seedlings against time. (7mks



b) What was the mean length of the seedlings on the 66th hour?

Set A…… (1mk)

Set B…… (1mk)

Account for the results obtained in set B of the seedlings (2mks)

……

……

……

Explain what would happen to the set B of the seedling if they were allowed to continue growing under the condition of darkness. (3mks)

……
……
……
……

c) When plants are grown in the condition of darkness, they exhibit a certain phenomenon. Name the phenomenon…… (1mk)

d) State three differences between the seedlings in set up A and B (3mks)

Set up A	Set up B

e) Name the plant growth hormone that:

i) Influence tropic responses. ……(1mk)

ii) Inhibit seed germination. ……(1mk)

7. Describe the homeostatic functions of the following organs.
   a) Kidney. (13mks)
   b) Skin. (7mks)
8. a) How are the flowers adapted to the following agents of pollination
   i) Wind. (5mks
   ii) Insects (5mks)

   b) Discuss the mechanisms developed by plants that encourage

   i) Self-pollination (4mks)
   ii) Cross pollination (6mks)

……
……
……
……
……
……