Name:… … … … … … … … …... … … … … … … … … … … **Registration Number:** … … … ….Class …. … .

231/2
BIOLOGY
2 hours
TRIAL 6

2018

FORM THREE
Kenya Certificate of Secondary Education (KCSE)

231/2
BIOLOGY
2 hours

Instructions to Candidates
(a)   Write your name and index number in the spaces provided above.
(b)   This paper has two sections: A and B
*(c)   Answer **all** the questions in section A in this paper.*
*(d)   In section B, answer question 6 (**compulsory**) and either question 7 or 8 in the space provided after question 8.*
*(e)   **This paper consists of 8 Printed pages.***
(f)   Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
(g)   Candidates should answer the questions in English.

For Examiner's Use Only

Section	Questions	Maximum Score	Candidate's Score
	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
	6	20	
	7	20	
	8	20	
Total Score		80	

SECTION A (40MKS)

1.   The two cells shown below are obtained from two different potato cylinders which were immersed in two different solutions P and Q.
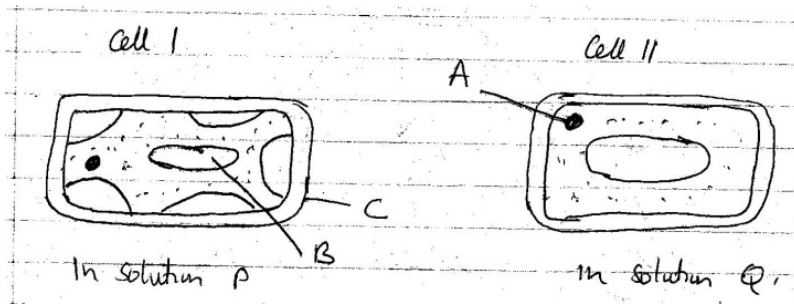
(a) (i)   Name the structures labelled A and C   (2 marks)

A   -
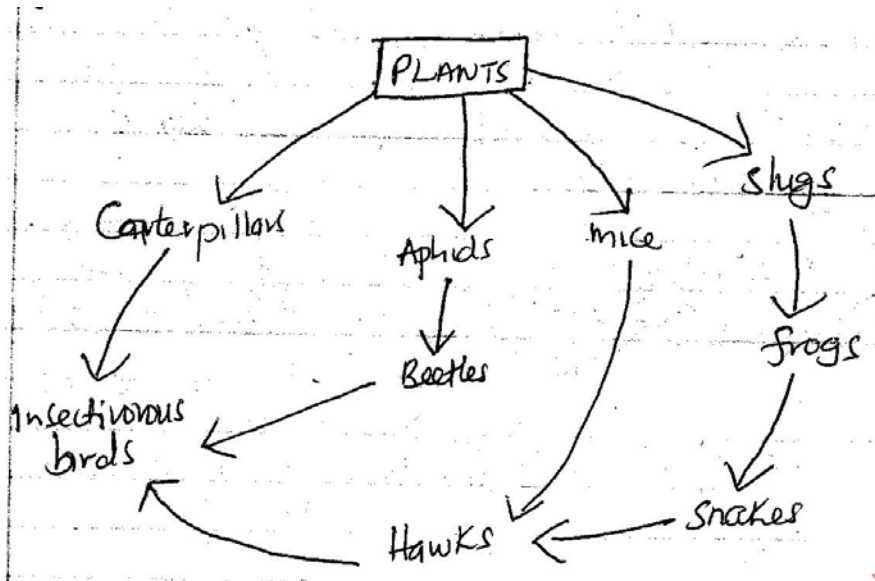
B   -

(ii)   State the function of structure B.   (1 mark)

(b) Suggest the identity of the solution Q   (1 mark)

(c) Account for the change in Cell 1 above   (2 marks)

(d) State two importance of the physiological process being demonstrated above in living organisms.
                                                                                              (2 marks)

2. Study the following food web and answer the questions that follow.

(a) (i)   Name the organisms that occupy the second trophic level   (2 marks)

(ii)   What is the other name for the second trophic level   (1 mark)

(b) Write down two food chains from the web that
(i)   End with hawks as tertiary consumer   (1 mark)

(ii)   End with hawks as Quaternary consumer.   (1 mark)

(c) Giving reasons state;
(i)   The organism with largest biomass   (1 mark)

(ii)   The organism with least biomass   (1 mark)

(d) Name the source of energy in the above ecosystem. (1 mark)

3. The diagram below represents a longitudinal section through the ileum wall.
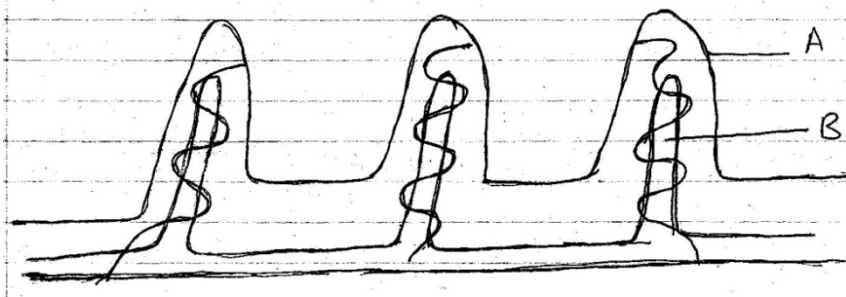
(a) Identify the structure labeled A and B (2 marks)

      A   -

      B   -

(b) State one function of A and B (2 marks)

      A   -

      B   -

(c) State two functions of the ileum. (2 marks)

(d) Explain the role of the liver in digestion. (2 marks)

4. The equation below represents a metabolic process that occurs in a certain organ in the mammalian body.

Ammonia $\xrightarrow[\text{Carbon (IV) Oxide}]{\text{enzymes}}$ Organic compound Q + water
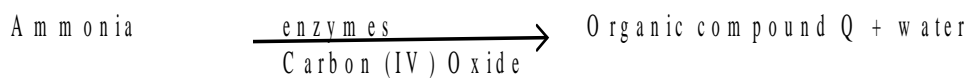
(a) Name the process represented in the equation. (1 mark)

(b) Name the organ in which the process occurs. (1 mark)

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(c) Why is the process important to the mammal?   (1 mark)

(d) Identify the organic compound Q.   (1 mark)

(e) What happens to organic compound Q?   (1 mark)

(f) A person was found to pass large volume of dilute urine frequently. Name the;   (3 marks)

   (i)   Disease the person was suffering from.

   (ii)   Hormone that was deficient.

   (iii)   The gland that secretes the above hormone.

5. Some glucose was boiled and cooled in a boiling tube. Some yeast was added and a layer of oil put on top. The set up below was used.
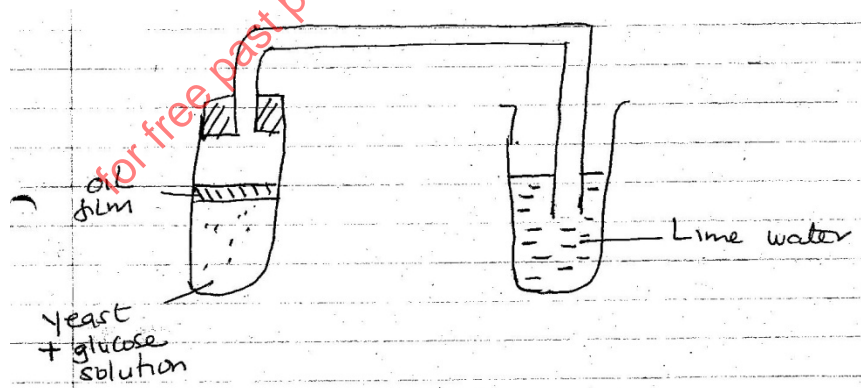
(a) Why was the glucose solution boiled before the experiment.   (1 mark)

(b) What is the use of the oil film in the experiment? (1 mark)

(c) Name the process being investigated by the above experiment. (1 mark)

(d) State what happens to the lime water as the experiment proceeds to the end. (1 mark)

(e) Explain what would happen if the temperature of glucose and yeast was raised beyond $45\,^0C$. (2 marks)

(f) State two industrial applications of the process being investigated above in the experiment. (2 marks)

6. In an ecological study, a locust population and that of crows was estimated in a grassland area over a period of one year. The results were tabulated as shown below :-

Months	J	F	M	A	M	J	J	A	S	O	N	D
Number of locusts	90	20	11	25	200	450	652	15	10	35	192	456
Number of crows(birds)	4	2	0	1	8	16	22	2	1	1	5	15
Amount of rainfall	20	0	55	350	520	400	350	10	25	190	256	350

(a) Draw a graph of population of locusts and crows (birds) against time.   (8marks)
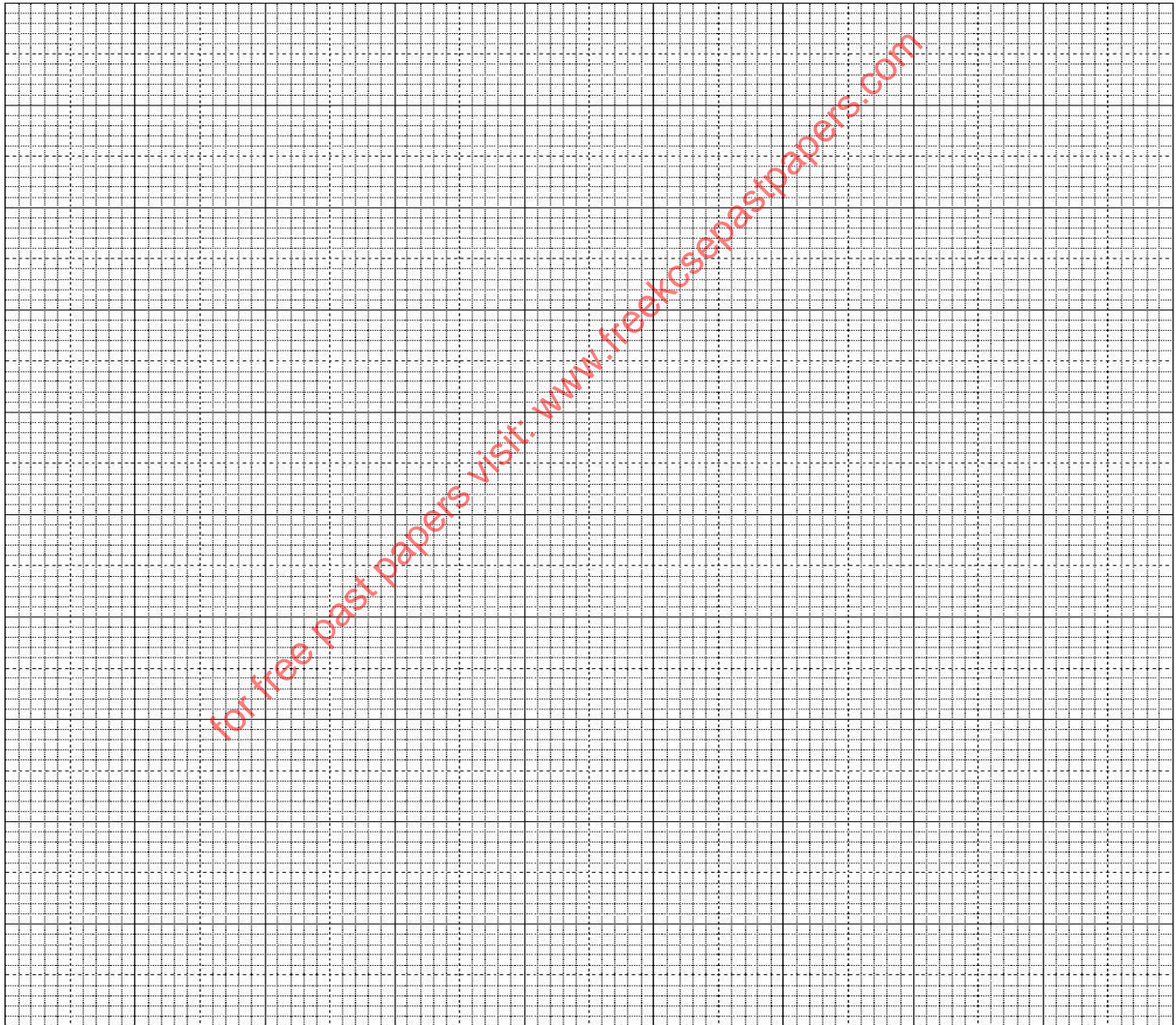
(b) (i) State the relationship between rainfall and locust population.   (1mark)

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(ii) Account for the relationship you have stated in (b) (i) above   (1 mark)

(c) What happens on the populations of locusts and crows in the months of January to March? Give a reason.   (2 marks)

(d) State one method used to estimate the population of locust.   (1 mark)

(e) (i) State the trophic level of the;   (2 marks)

Locusts   -

Crows   -

(ii) Construct a simple complete food chain involving these organisms   (2 marks).

(f) If the locusts were removed from the food chain, what would be its effect?   (1 mark)

(g) Define the following terms   (2 marks)

(i) Biomass

(ii) Ecosystem

7. Describe how hydrophytes and xerophytes are adapted to deal with environmental problems in the regions where they grow. (20 marks)

8. Describe how the mammalian skin regulates body temperature. (20 marks)

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