Name: ……**Index No:** ……

Candidate's Signature:…… Date: ……

231/2
BIOLOGY
Paper 2
KCSE MOCKS 2017

Time: 2 Hours

Kenya Certificate of Secondary Education

BIOLOGY
Paper 2
July/August 2017
Time: 2 Hours

INSTRUCTIONS TO THE CANDIDATES

- *Write your **name** and **index number** in the spaces provided above.*
- *Sign and write the **date** of examination 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 question **6(compulsory)** and either question **7** or **8** in the spaces provided after question 8.*

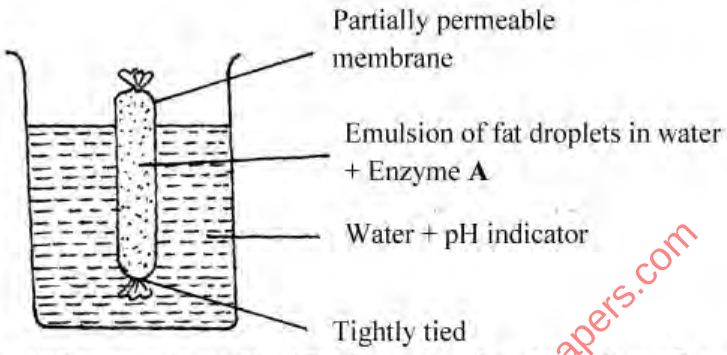
For Examiner's Use Only:-

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 2 3 4 5	8 8 8 8 8	
B	6 7 8	20 20 20	
TOTAL SCORE		**80**	

SECTION A (40 MARKS)

Answer ALL the questions in this section in the spaces provided.

1. The figure below shows apparatus at the start of an experiment to investigate the digestion of an emulsion of fat droplets in water by enzyme **A**.



The pH indicator is green in a pH of 7, blue when the pH is above 7 and red when it is below 7. The apparatus is kept at 40°C for 20 minutes during which time the indicator changes from green to red.

(a) Describe how the products of fat digestion enter a person's blood. (1mk)

.....

.....

.....

(b) (i) State the identity of enzyme **A**. (1mk)

.....

(ii) Explain why the apparatus was kept at 40°C. (1mk)

.....

.....

(c) Name the products of digestion of the emulsion by enzyme **A**. (2mks)

.....

.....

.....

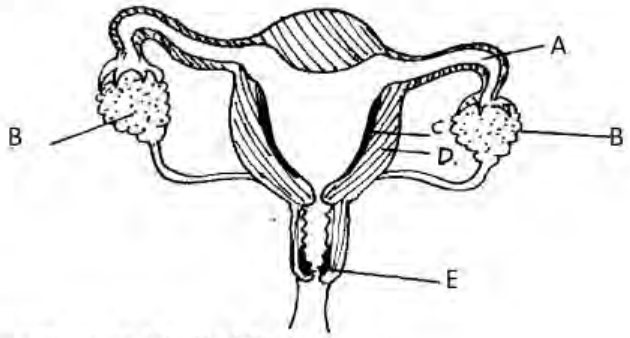
(d) Describe the process which led to the change in pH (3mks)

.....

.....

.....

2. Study the diagram below and answer the questions that follow.



(a) Name the part labelled **E**. (1mk)

.....

(b) What are the functions of the part labelled **A**. (2mks)

.....

.....

(c) Which part of the structure responds to:

(i) Progesterone ..... (1mk)

(ii) Oxytocin ..... (1mk)

(d) Which type of cell division occurs in structure **B** and not structure labeled **E**.

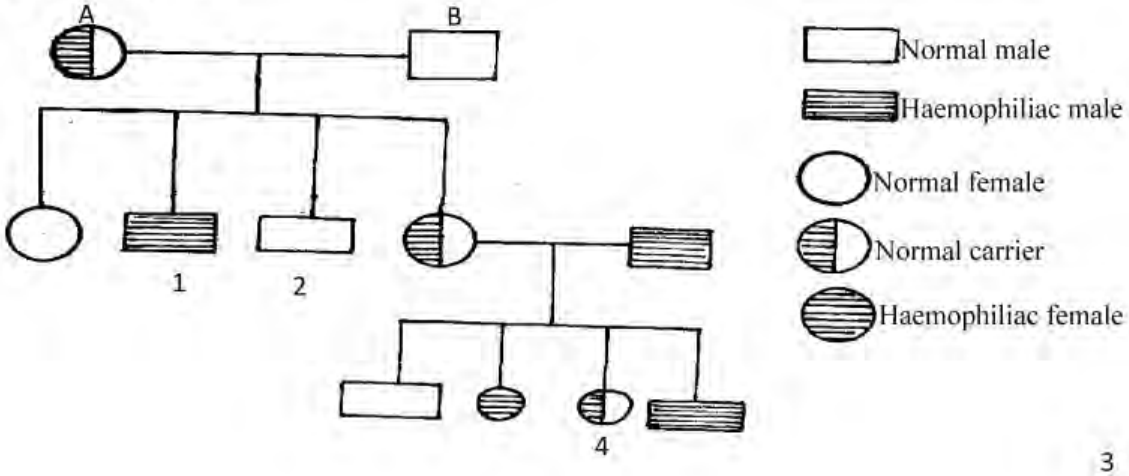
.....(1mk)

(e)State **two** functions of testosterone (2mks)

.....

.....

3. The hemophilia is an **X-** linked recessive condition. The following pedigree shows a portion of a family in which members have hemophilia. Use **H** for non-hemophilia **h** for hemophilia.



(a) Identify the genotypes of parents **A** and **B**.

A..... (1mk)

B..... (1mk)

(b) What is the genotype of offspring number 1 (1mk)

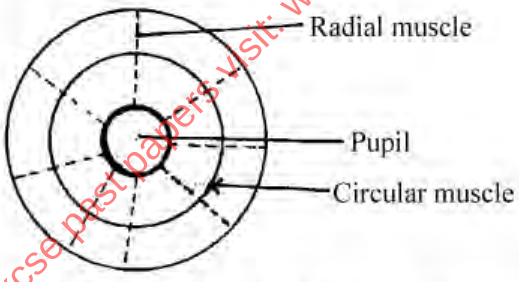
.....

(c) A carrier woman marries a hemophiliac man. What is the probability that the couple will have a son who is hemophiliac show your working. (4mks)

(d) Name **one** defect of non-disjunction chromosomal mutation (1mk)

.....

4. The diagram below shows a front view of the iris and pupil of the eye.



(a) Complete the table below to show what happens to the structure shown when the eye is in. (6mks)

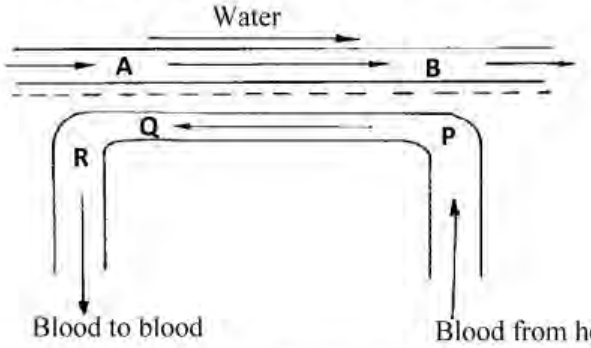
Structure	Darkness	Bright light
Radial muscles		
Circular muscles		
Size of pupil.		

(b) Explain how myopia can be corrected. (2mks)

.....

.....

5. The diagram below represents the direction of flow of water over the gills of a fish and the flow of blood in a capillary in the gills the percentage oxygen in solution at points **A**, **B**, **P**, **Q** and **R** is given in the table below the diagram. The percentage hemoglobin saturation is also given at positions **P**, **Q** and **R**.



Position	% oxygen in solution	% Hb saturation with O_2
A	10	
B	7	
P	4	55
Q	7	85
R	6	95

(a) Why is the percentage of oxygen lowest at **P**? (1mk)

.....

.....

(b) State with reasons, what this data suggest what will happen to oxygen in the water at position **B ?** (2mks)

.....

.....

(c) Why is the percentage of oxygen, in solution lower at **R** than at **Q** ? (1mk)

.....

(d) Suppose the direction of blood was opposite the above, suggest the disadvantage of this arrangement as compared to the one above. (1mk)

.....

(e) The principle whereby the blood flows in the opposite direction to that of another fluid is known as counter-current effect (flow). Give **two** examples where this effect occurs in the human body (2mks)

.....

(f) Name any structure of gaseous exchange in the leaves of plants? (1mk)

.....

.....

SECTION B (40 MARKS)

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

6. The relationship between oxygen concentration, sugar consumption and potassium ion uptake in isolated wheat roots was determined. The results obtained were tabulated as shown below. The loss of sugar and potassium uptake or gain are in arbitrary units.

	Percentage oxygen in aerotun stream						
	0	5	10	15	20	30	100
Sugar loss	15	20	43	45	45	44	43
Potassium ion gain	5	55	70	75	75	72	70

(a) Plot graphs of sugar loss and potassium ions gain against oxygen concentration on the same axes. (6mks)

(b) Name the process by which potassium ions is taken by the roots. Give reason for your answer (4mks)

……

……

……

(c) Account for sugar loss and potassium ions gain.

(i) 0% oxygen concentration (2mks)

……

……

(ii) Between 5% and 20% oxygen concentration (2mks)

……

……

(d) Suggest **two** factors necessary for the above process apart from oxygen (2mks)

……

……

(e) State **two** ways by which the process above can be stopped (2mks)

……

……

(f) Name two main areas in a mammalian body where the above process occurs. (2mks)

……

……

7. Determine how the differentiated structures in the mammalian skin are adapted to the functions. (20mks)

8. State and explain how various hormones regulate growth and development of plants. (20mks)

……

……

……

……

……

……