NAME.....CLASS..... C/NO.....SIGN.....

231/2

BIOLOGY FORM 3

PAPER 2(THEORY)

END YEAR 2016

TIME: 2 HOURS

DATE DONE .....
INVIGILATOR .....
DATE RETURNED.....
DATE REVISED.....
DATE CHECKED.....

NYABURURU GIRLS NATIONAL SCHOOL

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

231/2 BIOLOGY

PAPER 2

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

(a) *Write your **Name**, **Admission Number, Class Number and sign** in the spaces provided.*

(b) *This paper consists of TWO sections A and B.*

(c) *Answer all questions in section A in the spaces provided.*

(d) *In section B, answer **question 6 (compulsory)** and **either question 7 or 8** in the spaces provided after the questions.*

FOR EXAMINER'S USE ONLY

SECTION	QUESTION	MAX. SCORE	CANDIDATES' SCORE
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
	TOTAL	**80**	

THIS PAPER CONSISTS OF 11 PRINTED PAGES.

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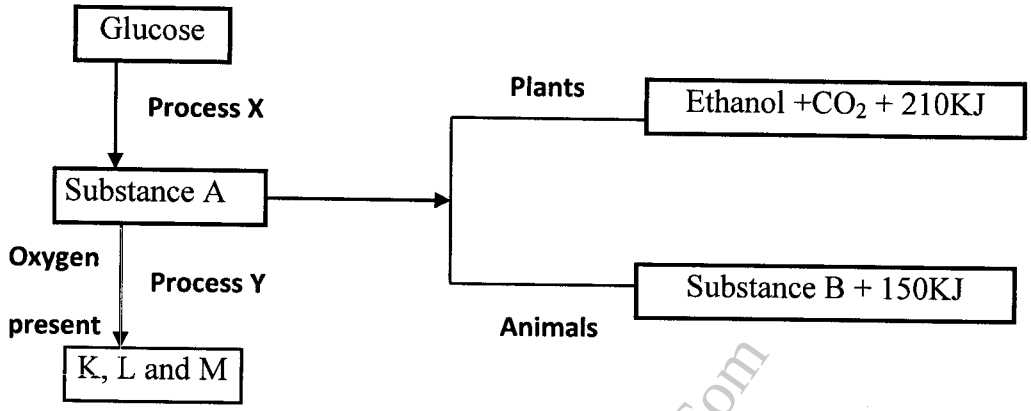
SECTION A: 40 MARKS

Answer ALL the questions in this section in the spaces provided

1. The diagram below represents a simple respiratory path way in cells.



(a) Name the process marked X and Y (2marks)

X.....

Y.....

(b) State two differences between X and Y (2marks)

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(c) State the name of substance B and the condition under which it is formed. (2marks)

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(d) Explain how body size affects the rate of respiration in animals. (2marks)

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2. An experiment was carried out to investigate the effect of different concentrations of Sodium Chloride on human red blood cells. Equal volumes of blood were added to equal volumes of salt solutions of different concentrations. The results were as shown below:-

Set up	Sodium Chloride concentration	Shape of red blood cells at the end of experiment	Number of red blood cells at the end of experiment
A	0.9%	Normal	No change in number
B	0.3%	Swollen	Fewer in number

a) If the experiment was repeated with 1.4% Sodium Chloride solution, state the results you Would expect with reference to:-

(i) Number of red blood cells. (1mk)

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(ii) Appearance of red blood cells when viewed under the microscope. (1mk)

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b) Account for the fewer number of red blood cells in 0.3% Sodium Chloride salt solution.

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..... (3mks)

c) Give the biological term which can be used to describe 0.9% Sodium chloride solution. (1mk)

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d) Explain the observations that will be made if a piece of *a herbaceous* ***(tradescantia)*** plant stem with a cut slit end was placed in the same solution as that of set up B. (2mks)

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3. (a) Explain what is meant by the term growth (1mark)

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(b) State the role of the following in germination. (3marks)

(i) Oxygen

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(ii) Water

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(iii) Enzymes

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(c) State two enzymes involved in germination. (2mks)

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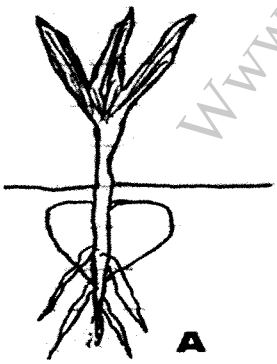
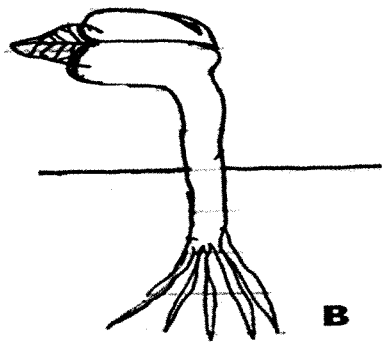
(d)The diagram below shows germination of two different seeds. Identify the types of germination shown. (2mks)





A: .....

B: .....

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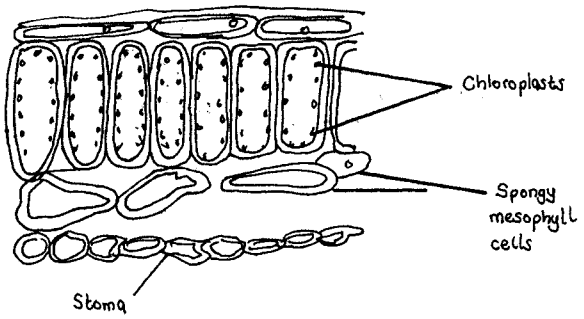
4. The figure below shows a section through a leaf. A leaf is designed for photosynthesis and this process provides a supply of simple sugars for a plant.



a) i) State the adaptation of the chloroplasts to photosynthesis. (2mks)

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ii) Explain the advantage of the distribution of the chloroplasts as shown in figure above. (2mks)

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iii) Suggest the function of the stomata and the spaces between the spongy mesophyll cells in the process of photosynthesis. (2mks)

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b) i) Name the tissue that translocates sugars from the leaves to others parts of the plant. (1mk)

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ii) Name the mineral ion that is used to form chlorophyll. (1mk)

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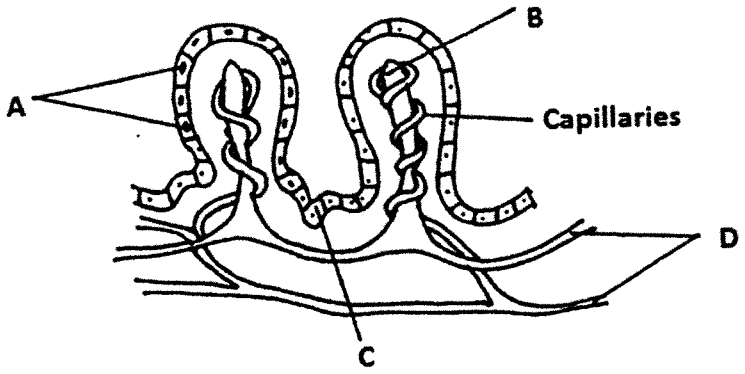
5. The figure below represents a structure obtained from the ileum of a mammal



(a) Give the identity of the structure. (1mark)

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(b) Name the parts labeled **A** and **B** (2marks)

A.....

B.....

(c) Name **two** enzymes secreted by walls of the structure that bring about digestion (2marks)

(i).....

(ii).....

(d) Briefly explain how fats are transported in structure labeled **B**. (2marks)

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(f) Explain **one** role of salts secreted by gall bladder in digestion process. (1mark)

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SECTION B (40 MARKS)

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

6. The menstrual cycle is a sequence of events repeated monthly in the female reproductive system. The table below shows the concentration of oestrogen and progesterone hormones and body temperatures of the female against time.

Time in days	Oestrogen mg/100cm3 of blood	Progesterone mg/100cm3 of blood	Temperature
2	20	0	36.6
4	27.5	0	36.8
6	32.5	0	36.6
8	40	0	36.7
10	56	0	36.8
12	72	0	36.6
14	170	20	36.3
16	80	80	37.0
18	70	170	37.0
20	65	150	37.2
22	140	110	37.1
24	100	70	37.1
26	60	20	37.0
28	20	0	36.4

(a) Using the same axis plot graphs of Oestrogen and progesterone concentration against time. (8mks)

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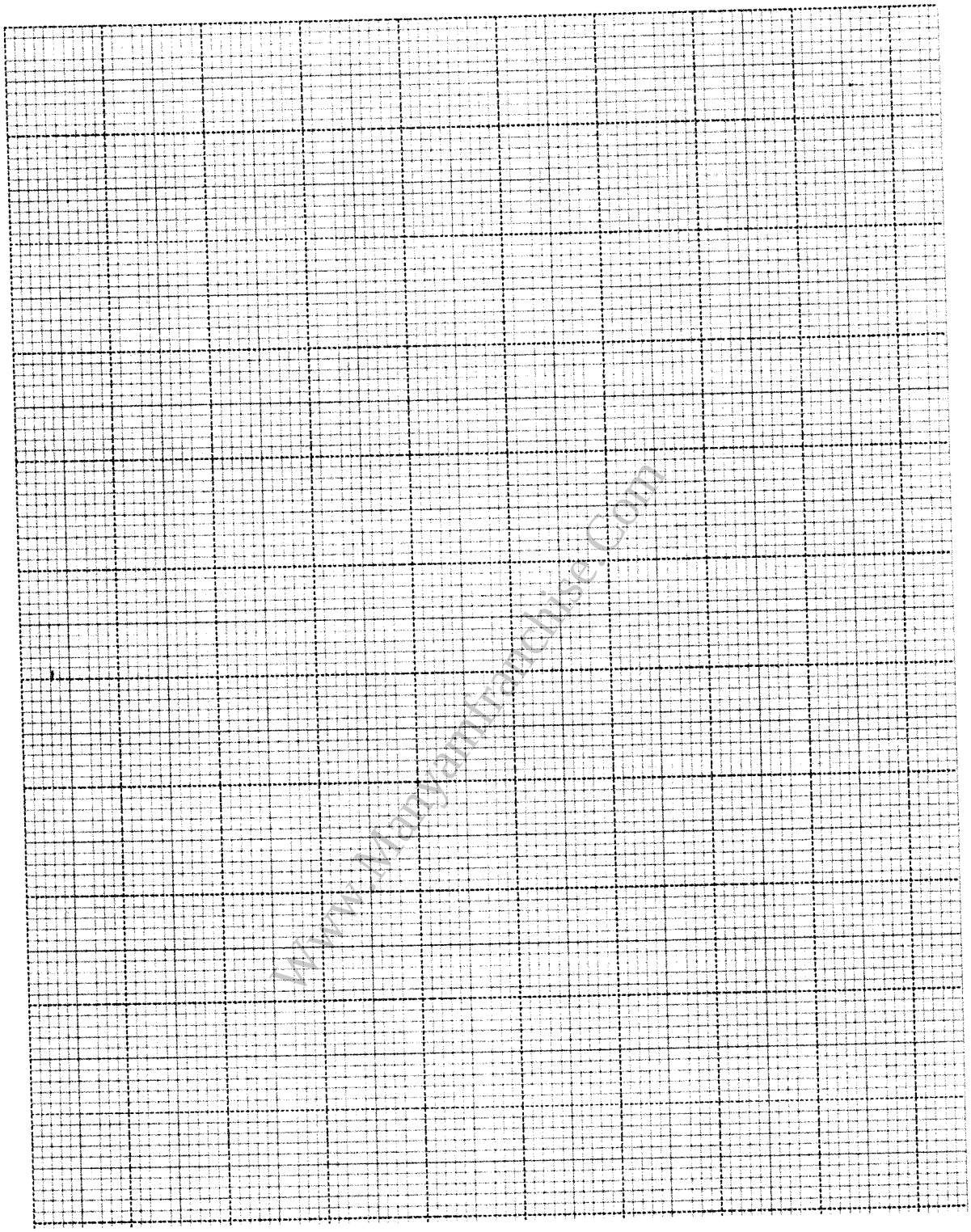

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(b) State the possible event taking place in the uterus during the first week. (1mk)

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(c) State the events taking place in the ovary between day 1 and day 13. (2mks)

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(d) Account for the sudden increase in the progesterone concentration between day 14 and 18. (2mks)

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(e) Account for the change in temperature between day 14 and 17. (1mk)

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(f) Give reasons for the change of concentration of progesterone between day 19 and 27. (2mks)

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(g) State the functions of the ovary. (1mk)

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(h) Which two substances are transported by umbilical vein? (2mks)

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7. a) Describe the process of blood clotting. (14mk)

b) Describe the adaptations of hydrophytes to their habitat. (10mks)

8. Describe how various abiotic factors influence distribution of organisms in an ecosystem.(20mks)