NAME…….. INDEX NO…….....

231/2
BIOLOGY
PAPER 2
(THEORY)
JULY/AUGUST, 2016
TIME: 2 HOURS

CANDIDATE'S SIGN……

DATE……..…..……

KIRINYAGA CENTRAL SUB-COUNTY EFFECTIVE FORTY JOINT EXAMINATION – 2016

Kenya Certificate of Secondary Education
BIOLOGY
PAPER 2
(THEORY)
TIME: 2 HOURS

INSTRUCTIONS TO 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.
- Answer question **6** in Section **B (Compulsory)** and either question **7** or **8** in the spaces provided after question **8**.
- Check to ascertain that all pages are printed 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 Score		80	

SECTION A: (40 MARKS)

Answer all the questions in this section in the spaces provided:

1. The diagrams below represents germination in plants.

(a) Name the type of germination in A and B above. (1 mark)

A …….. **B**……

(b) In seed germination, the radicle grows before the shoot. Explain. (2 marks)

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(c) Define the term seed dormancy. (1 mark)

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(d) State **two** causes of seed dormancy. (2 marks)

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(e) State **two** roles of water in seed germination. (2 marks)

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2. During a strenuous exercise, the chemical process represented by the equation below takes place in human muscles.

$C_6 H_{12} O_6 \rightarrow 2CH_3 CH(OH) COOH + 150kJ$
(Substance X)

(a) Name the process. (1 mark)

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(b) Name substance **X**. (1 mark)

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(c) State **two** economic importance of the above process. (2 marks)

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(d) Explain what happens to X after the exercise. (2 marks)

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(e) State **two** differences between aerobic respiration and photosynthesis. (2 marks)

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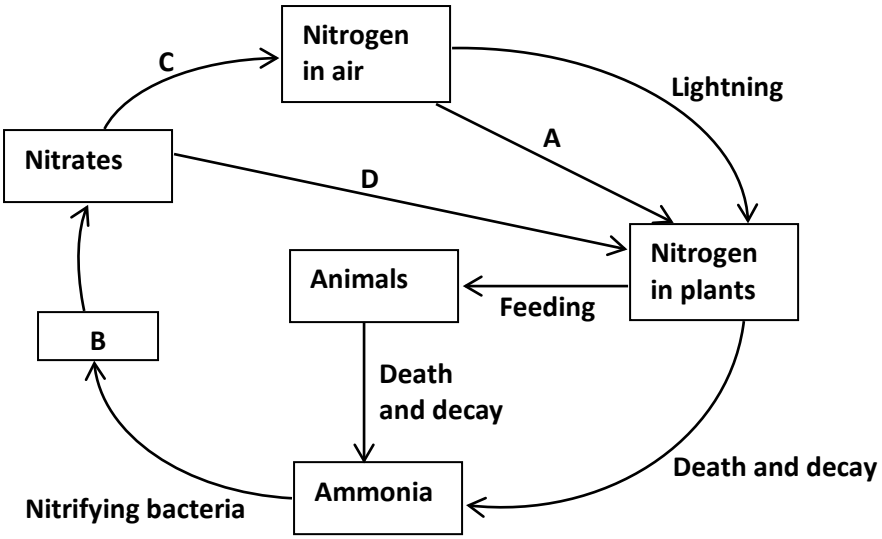
3. The diagram below represents the nitrogen cycle.



(a) Identify the processes labelled **A** and **D**. (2 marks)

A …….. **D** ……..

(b) Name the compound represented by **B**. (1 mark)

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(c) Name the group of organisms labelled **C**. (1 mark)

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(d) (i) Name the group of plants that promote process **A**. (1 mark)

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(ii) In which part of the plant does process **A** take place? (1 mark)

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(e) How would excess pesticides in the soil interfere with process **A**? (2 marks)

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4. (a) Explain what happens when a wilting young plant is well watered. (3 marks)

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(b) Name a support tissue in plants thickened with:

(i) Cellulose. (1 mark)

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(ii) Lignin. (1 mark)

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(c) Describe the role of the liver in deamination. (3 marks)

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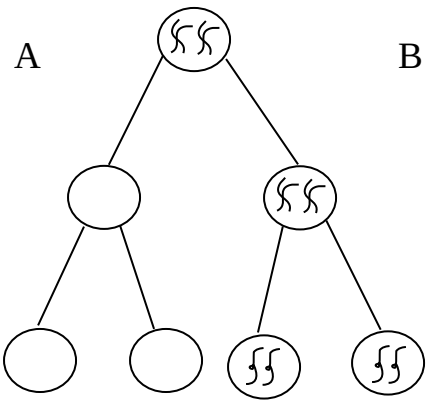
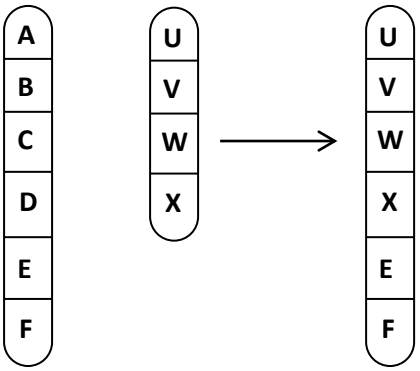
5. The diagrams below illustrate some chromosome mutations.

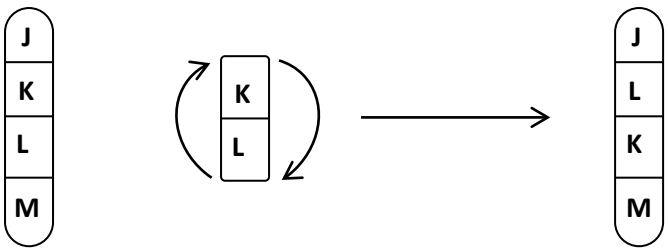
A



B



C



(a) Identify the mutations illustrated above. (3 marks)

A ……

B ……

C ……

(b) Give an example of a disorder in humans caused by mutation **A** above. (1 mark)

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(c) Name a disorder of blood caused by gene mutation. (1 mark)

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(d) Name **two** mutagens. (2 marks)

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(e) Give an example of a beneficial mutation in plants. (1 mark)

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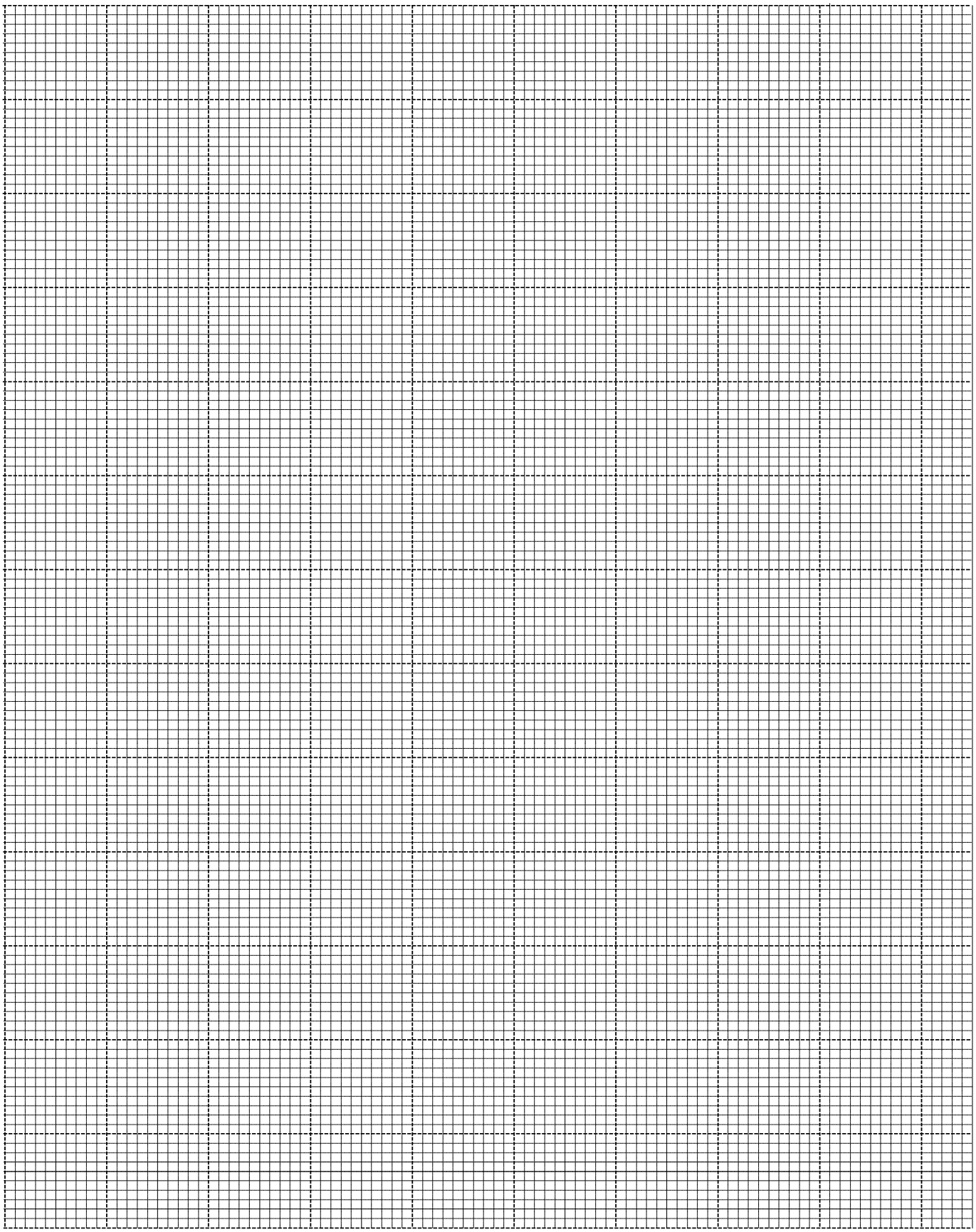
SECTION B: (40 MARKS)

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

6. The hormone Human Chorionic Gonadotrophin (HCG) is released from embryonic tissues. The effects of HCG is to prevent the degeneration of corpus luteum. Study the table below, which shows changes in concentration in the blood of HCG and progesterone during the first 36 weeks of pregnancy.

Time in weeks	Concentration of HCG (arbitrary units)	Concentration of progesterone (arbitrary units)
0	0	7
2	3	7
4	15	8
8	60	9
12	45	10
16	24	11
20	12	13
24	10	15
28	10	20
32	14	30
36	12	55

(a) Using the grid provided, plot graphs of concentration of HCG and progesterone produced against time. (8 marks)



(b) (i) What is the concentration of HCG progesterone in week 11? (2 marks)

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(ii) When are the two hormones equal in concentration? (2 marks)

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(iii) Account for the changes in HCG concentration during the first 20 weeks of pregnancy. (4 marks)

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(c) State **three** functions of progesterone. (3 marks)

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(d) What is the role of testosterone in a human male? (1 mark)

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7. (a) State **three** processes by which flowering plants excrete waste products and for each process name **two** waste products that are eliminated. (6 marks)

(b) Describe the functions of the various components of the mammalian blood. (14 marks)

8. Describe the movement of water from the soil to the leaves of a tall plant. (20 marks)