

Name.....

Index No...../.....

School.....

Candidates Signature.....

Date

231/2

BIOLOGY

Paper 2

AUGUST 2022

2 Hours**SUKELLEMO JOINT EVALUATION TEST - 2022***Kenya Certificate of Secondary Education (K.C.S.E)*

231/2

BIOLOGY

Paper 2

AUGUST 2022

2 Hours**INSTRUCTIONS TO CANDIDATES**

- Write your name and Index Number in the spaces provided above.
- This paper consists of **two** sections. Section **A** and section **B**.
- Answer **ALL** 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

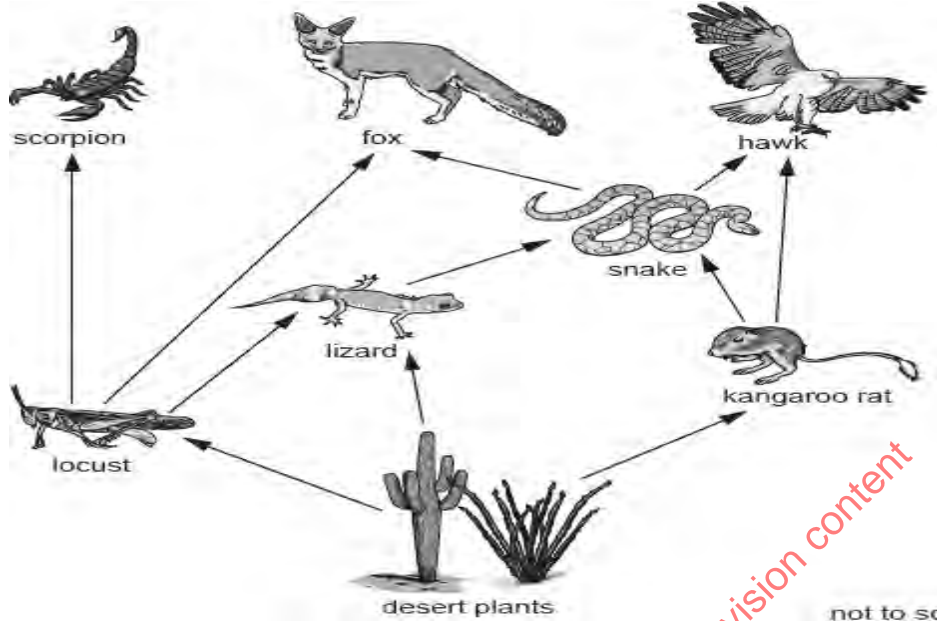
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Section	Question	Maximum Score	Candidates Score
A	1	8	
	2	8	
	3	8	
	4	8	
	5	8	
B	6	20	
	7	20	
	8	20	
TOTAL SCORE		80	

This paper consists of 10 Printed pages. Candidates should check the question paper to ensure that all the papers are printed as indicated and no questions are missing

SECTION 40 MARKS

1. Study the illustration below and use it to answer the questions that follow



(a) Identify the relationship represented above. (1 mark)

.....

(b) From the illustration, identify:

I. An omnivore (1 mark)

.....

II. Homoiothermic secondary consumers (2 marks)

.....

.....

(c) Why are shorter food chains preferred in ecosystems (1 mark)

.....

(d) Physiologists established that most animals in this ecosystem excrete either urea or uric acid. Explain this. (2 marks)

.....

.....

(e) The animals shown in the illustration belong to different classes of phylum Arthropoda and Chordata. How many classes are represented (1 mark)

.....

2.

(a) In a genetics experiment on DrosophilaMelanogaster a black and tan striped body colour is normal. The yellow body colour is caused by a mutant “yellow gene”(y) linked on x chromosome.

I. If a yellow body colour male was crossed with a heterozygous normal female .Work out the genotype of the offsprings. (4mks)

II. If a total of 564 offsprings were produced, calculate the number of off-springs which were pure breed normal body colour. (2 marks)

(b) The table below represents a type of point mutation

Before mutation	A	A	A	C	T	A	C	G
After Mutation	A	A	G	C	T	A	C	G

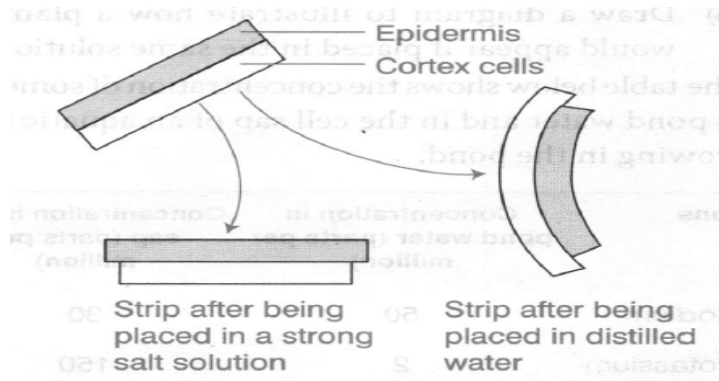
I. Name the type of mutation represented. (1mark)

.....

II. Name **one** disorder caused as a result of the mutation named in (b) (I) above.

..... (1mark)

3. Strips were cut lengthwise from the main stem of a herbaceous plant. The following diagram shows the strips after placing them in different liquids.



(a) Account for the results obtained when the strips were put in:

I. Distilled water. (3 marks)

.....

.....

.....

.....

II. A strong salt solution. (3 marks)

.....

.....

.....

.....

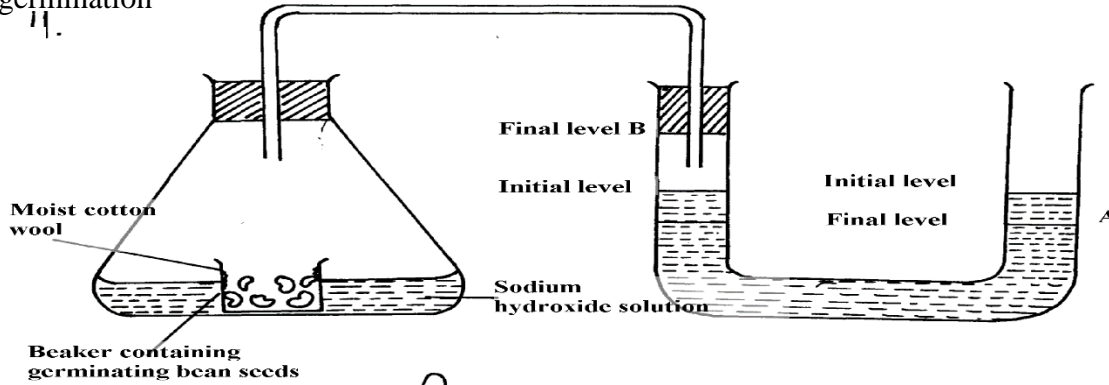
(b) Why did the strips curl slightly outwards after being placed in distilled water(2 marks)

.....

.....

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4. The apparatus below was set up by a student to find out the changes in gases during germination



(a) After 48 hours the level of water in the U-tube at **A** and **B** was as shown. Explain the observation (3 marks)

.....

.....

.....

.....

.....

(b) Calculate the respiration quotient (**RQ**) from the equation below (2 marks)



(c) Identify the substrate being respired in the above equation (1 mark)

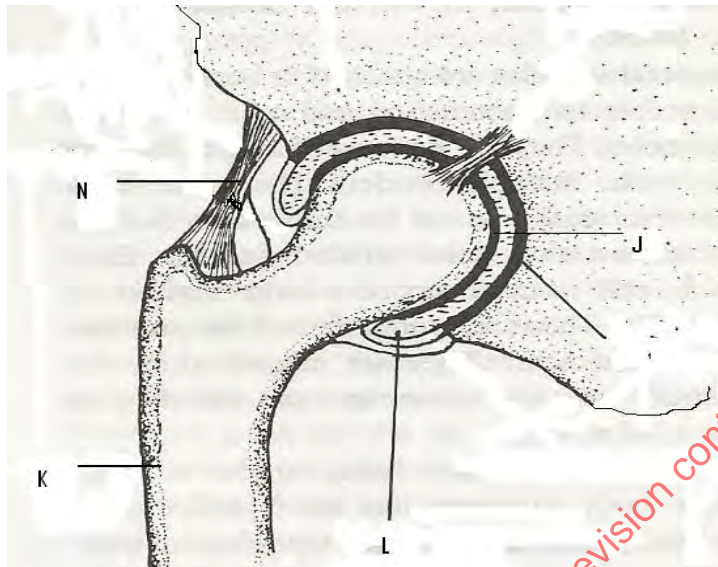
.....

(d) Explain why it is difficult to calculate the respiratory quotient (RQ) in plants. (2 mark)

.....

.....

5. The diagram below shows some of the features of a synovial joint. Study the diagram carefully and answer the questions that follow.



- (a) Name the type of synovial joint. (1 mark)
.....
- (b) Name the parts labeled J, K and L (3 marks)
J
K
L.....
- (c) State **two** roles of the part labeled L. (2 marks)
.....
.....
- (d) Suggest **one** advantage of this type of joint. (1 mark)
.....
- (e) Give the name of the bone adjacent to the proximal end of K. (1 mark)
.....

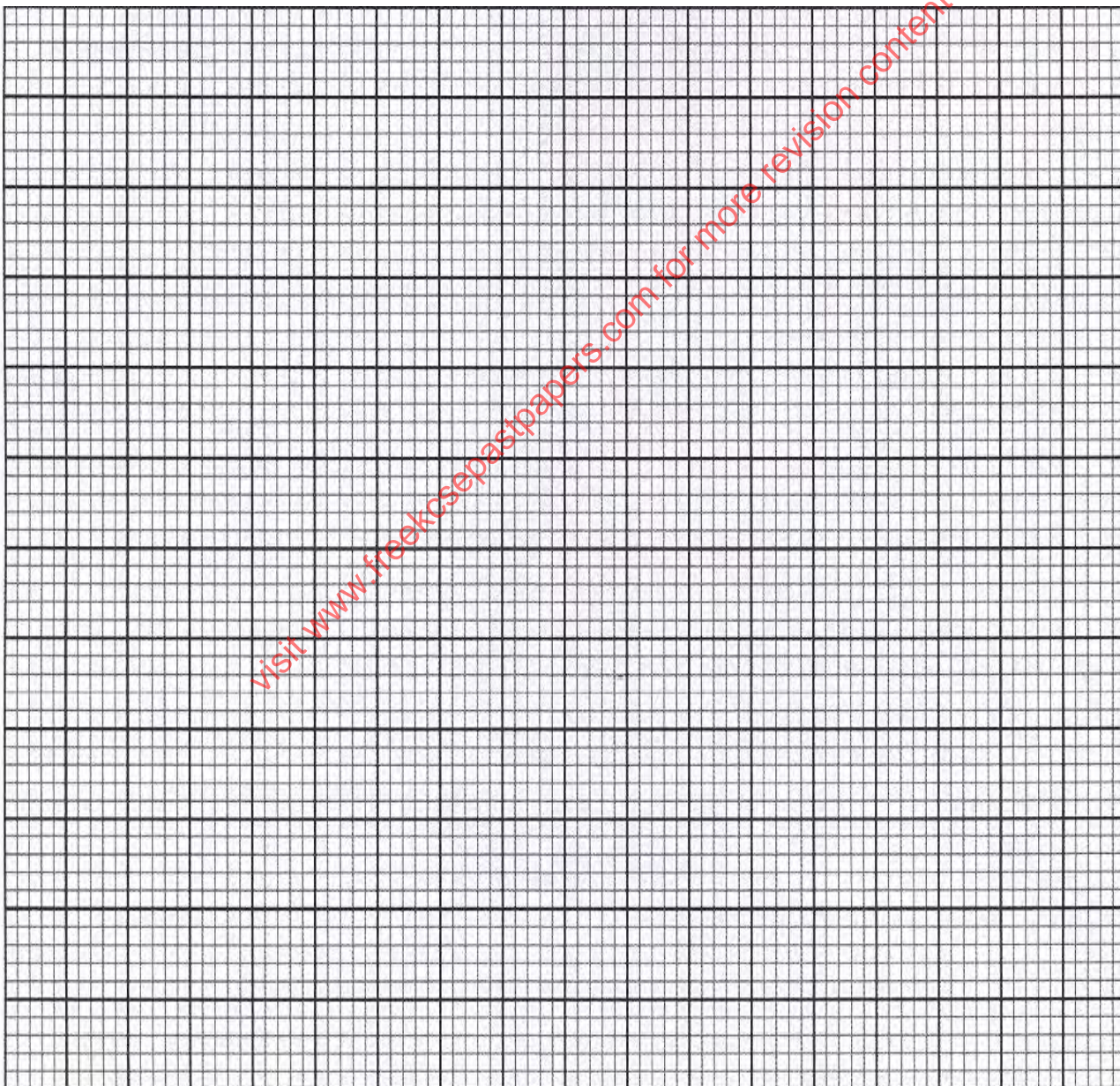
SECTION B: Answer Question 6(compulsory) and either question 7 or 8

6. The table below shows results of an experiment that was carried out to measure how fast a Plant such as Elodea photosynthesizes
The shoot was exposed to different light intensities and the rate of photosynthesis estimated by counting the number of bubbles of gas leaving the shoot in a given time. The results are given below;

Number of bubbles per minute	7	14	20	24	26	27	27	27
Light intensity (Arbitrary units)	1	2	3	4	5	6	7	8

- (a) Plot graph of number of bubbles against light intensity

(6 marks)



(b) At what light intensity did the shoot produce,

I. 18 bubbles per minute (1 mark)

.....

II. 25 bubbles per minute (1 mark)

.....

(c) Give **two** better ways of measuring the rate of photosynthesis than counting bubbles (2 marks)

.....
.....

(d) What is the role of light intensity in photosynthesis (1 mark)

.....

(e) Account for the expected results of doing this experience at the following temperature;

I. 4°C (2 marks)

.....
.....
.....

II. 34°C (2 marks)

.....
.....
.....

III. 60°C (2 marks)

.....
.....
.....

(f) Other than light intensity and temperature, name other factors that affect the rate of photosynthesis (2 marks)

.....
.....
.....

(g) Name mineral element that is responsible for synthesis of chlorophyll (1 marks)

.....

