
KIRINYAGA WEST SUB-COUNTY EFFECTIVE '40' EXAMINATION 2015
kenya certificate of secondary education

231/3
BIOLOGY
PAPER 3 (CONFIDENTIAL)
JULY / AUGUST 2015

CONFIDENTIAL

1. A ripe orange (NB. Each candidate should be provided with at least $\frac{1}{2}$ a piece)
 Reagents.
2. Iodine solution.
3. Benedict's solution.
4. DCPIP
5. Two small beakers.
6. 4 test tubes
7. A test tube rack
8. Means of heating.
6. 0.1% ascorbic acid

KIRINYAGA WEST SUB-COUNTY EFFECTIVE '40' EXAMINATION 2015
kenya certificate of secondary education

231/3
BIOLOGY
PAPER 3 (PRACTICAL)
JULY / AUGUST 2015
1 $\frac{3}{4}$ HOURS.

1. (a) Squeeze the juice from the piece of specimen B in a beaker. Using the reagents provided test for food substance in the juice. Record your observation in the table below. (9 marks)

Food	Procedure	Observation	Conclusion

- (b) Using 0.1% ascorbic acid provided count the number of drops used to decolourise 2 ml of DCPIP in a test tube. Record your observation. (1 mark)
- (c) (i) Count the number of drops used to decolourise 2 ml of DCPIP using the juice from specimen B. Record your observation. (1 mark)
- (ii) Using the data collected, calculate the percentage ascorbic acid present in specimen B. (2 marks)
2. The photographs below represent specimen obtained from plants. Examine the photographs.

(a) In the table below name the mode of dispersal and the features that adapt the specimen(s) to the mode of dispersal.

(8 marks)

Specimen	Mode of dispersal	Adaptive features
K		
M		
Q		
L		

(b) Classify specimen P into its correct taxonomic unit below.

(3 marks)

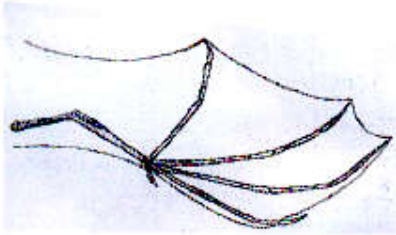
- (i) Division.
- (ii) Sub-division.
- (iii) Class.

(c) Describe the type of placentation exhibited by specimen L, and give a reason for your answer.

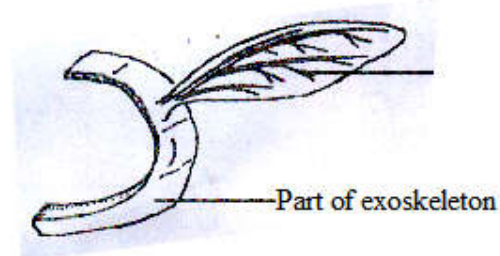
(2 marks)

- (i) Placentation.
- (ii) Reason

2. Examine photographs shown below.



Wing of a bat



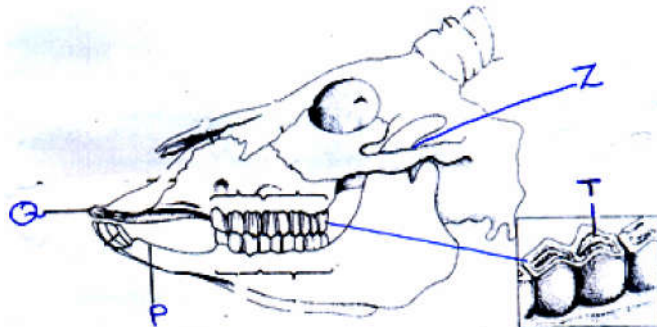
Wing of insect

Wing of a bat

Wing of insect

- (i) What does the origin of the wings suggest about the ancestry of the organisms? (1 mark)
- (ii) This type of evolution is referred to as; (1 mark)
- (iii) Give another example that illustrates this type of evolution. (1 mark)
- (iv) Outline **two** differences between the two types of wings. (2 marks)

(b) The diagram below shows the lower and upper jaw of a certain mammal.



- (i) Using observable features on the diagram identify the mode of nutrition for the above mammal. (2 marks)
- (ii) Write the dental formulae of the above mammal. (1 mark)
- (iii) Label parts marked P and Q and state the function of each. (2 marks)
- (iv) Name the type of joint at part labelled Z. (1 mark)
- (v) State the function of part labelled T. (1 mark)

KIRINYAGA WEST SUB-COUNTY EFFECTIVE '40' EXAMINATION 2015
kenya certificate of secondary education

231/3
BIOLOGY
PAPER 3
JULY / AUGUST 2015

NB: The teacher incharge must do the practical after the students have completed and compare the results with the marking scheme to avoid penalizing the students unfairly. But the score points must remain the same.

QUESTION 1.

Table 1.

Length from A to B (cm)	80	76	72	68	64	60
Time for 10 oscillations (s)	9.94	11.06	11.70	12.24	12.84	13.06
Periodic time T(s)	0.994	1.106	1.170	1.224	1.284	1.306
T ² (s ₂)	0.988	1.223	1.3689	1.498	1.6486	1.7056
2θ (all correct 2 mks 3 and above correct 1 mk)	160	140	125	115	104	96
θ (all correct 1 mk)	80	70	62.5	57.5	52	48
Cos θ (all correct 1 mk)	0.1736	0.3420	0.4617	0.5373	0.6157	0.6691

9 mks

$\frac{1}{2}$ for each correct max 8 mks 1 d.p must

+ 25 all correct 1 mk

+ 10 all correct + 1 mk

(f) Graph of T² against Cos θ

(g) The slope 's' of the graph. (3 mks)

$$S = \frac{DY}{DX} = \frac{1.7056 - 1.223}{0.6691 - 0.3420} = \frac{0.4826}{0.3271}$$

$$= 1.475S^2$$

- Correct intervals 1 mk

- Correct evaluation with units must 1 mark

- Without units $\frac{1}{2}$ mk

- Wrong units zero

Accuracy (1.200 - 1.700) (1 mk)

(h) $K = \frac{4\pi^2}{S}$ - Correct substitution for π and students value of S 1 mk

- Correct evaluation to 2 decimal places with correct units 1 mk

- No units $\frac{1}{2}$ mk

- Wrong units no marks

- Accuracy (23.22 - 32.00) 1 mk

- Units must - without units no mark

Question 2: Part A

(a) M₁.....- Accept any value of M₁ and M₂ such that M₂ - M₁ is between 1.5 - 1.7 to one decimal place. Must (2 mks)

(b) M₂.....

(c) $D = \frac{\text{Mass}}{\text{Volume}}$ - Correct substitution of candidates own values 1 mk

- Correct evaluation with correct units. 1 mk

- Correct evaluation without units $\frac{1}{2}$ mk

- With wrong units zero

Time in minutes	0	1.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
Temperature of w(c)	78	77	75.5	740	73	72	70.5	69.0	68	67
(To the nearest 0.5)	82	81	79.5	78	77	76	74.5	74.5	72	71
Temperature of L (c)	78	74	78	70	68	66	64	62.5	60.5	89.0
(To the nearest 0.5)	82	78	77	74	72	70	68	66.5	64.5	63.0

For any correct value of Temp. W $\frac{1}{2}$ max - 2mks

Time in minutes	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
Temperature of w(c)	66.0	65.0	64.0	63.0	62.5	61.5	50.5	89.5	54.0	58.0
(To the nearest 0.5)	to 70.0	to 71.0	to 68.0	to 67.0	to 66.5	to 65.5	to 64.5	to 63.5	to 63.0	to 62.0
Temperature of L (c)	57.0									
(To the nearest 0.5)	to 61.0									

For any correct value of Temp. L $1/2$ max - 2 mks

Total marks for the table 4 marks

- (h) On graph
- (i) Correct reading from the graph. *1 mk*
 - (ii) Correct reading from the graph *1 mk*
- (j) Correct substitution of t_L , t_w and d *1 mk*
 Correct evaluation *1 mk*