BIOLOGY PP3, SERIES 1, K.C.S.E

EXAMINERS' PREDICTION 10 QUESTION PAPERS

BIOLOGY PP3, SERIES 1, K.C.S.E EXAMINERS' PREDICTION 10 QP

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K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 1

CONFIDENTIAL

Only the principal and biology teacher should have access to the confidential ,to aid in preparation.

Every candidate will require;

I. Benedict's solution labeled D

II. Dilute hydrochloric acid labeled C

III. Sodium hydrogen carbonate solution F

IV. Coppper (ii) sulphate solution E

V. Access to means of heating

VI. **PHOTOGRAPH MUST BE COLOURED**

PREPARAYION OF SOLUTION Q

To make 500mls of Q mix 1gram egg albumen concentrate/two eggs with 50 grams sucrose

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 1

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

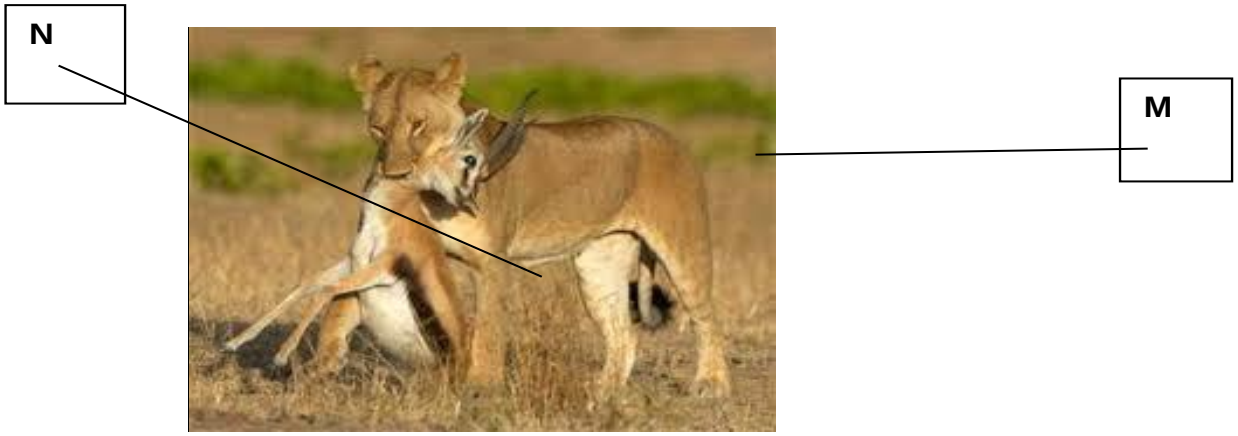
(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

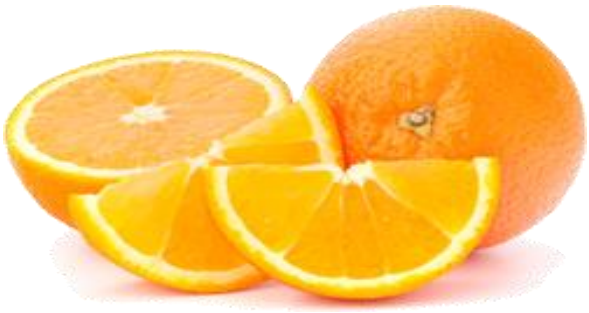
Question	Maximum score	Candidates score
1	14	
2	12	
3	14	
Total score	40	

FOR QUESTION ONE



PHOTOGRAPH Z

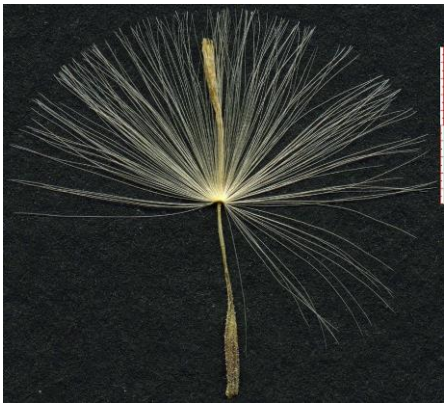
3. Below are photographs of specimens obtained from plants. Examine the photographs.



SPECIMEN A

SPECIMEN B

SPECIMEN C



SPECIMEN D

1. Study the photograph labeled **Z** of some animals in a certain ecosystem and answer the questions that follow.

(a) State the type of biotic relationship shown in the photograph. **(1mark)**

……

……

(b) Identify which of the two animals **M** and **N** will have the least biomass . **(1 mark)**

……

……

(c)Give **two** reasons for your answer in (b) above. **(2 marks)**

……

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(d)Explain the concept of "survival for the fittest" in relation to the organisms in photograph **Z** **(3 marks)**

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(e)Explain three visible survival adaptive features for the organisms**.** **(6 marks)**

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2. You are provided with a food sample labeled solution Q. Using the reagents provided; carry out tests to identify the food substance present in the sample [12mks]

TEST FOR	PROCEDURE	OBSERVATION	CONCLUSION

3.(a) In the table below name the mode of dispersal and the features that adapt the specimen(s) to that mode of dispersal**. (12 marks)**

SPECIMEN	MODE OF DISPERSAL	ADAPTIVE FEATURES
A		
B		
C		
D		
E		
F		

(a) (I) State the type of placentation in specimen A **(1 mark)**

……

……

(ii) Name the structure labeled **K** in specimen **E** **(1 mark)**

……

……

……

K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 2

231/3

BIOLOGY

PAPER 3 (PRACTICALS)

$1\frac{3}{4}$ HRS

BIOLOGY CONFIDENTIAL

REQUIREMENTS

Each Candidate Requires

- Ripe Orange fruit – Labeled E
- Scalpel
- 4 test tubes in a rack
- Test tube holder
- DCPIP solution
- Source of heat/Hot water bath
- Benedict's solution
- Distilled water

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 2

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	16	
2	12	
3	12	
Total score	40	

1. Examine Specimen E provided.

a) Identify the type of the fruit. **(1 mark)**

……

……

b) Give a reason for your answer in 1(a) above. **(1 mark)**

……

……

……

c) Cut a transverse section through specimen E and make a well labeled diagram. **(4 marks)**

d) State the type of placentation of E. **(1 mark)**

……

……

e) i) Name the agent of dispersal for E. **(1 mark)**

……

……

ii) State how E is adapted to its mode of dispersal identified in e (i) above. **(2 mark)**

……

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……

……

f) Squeeze out the juice from specimen E into test tubes and fill in the table below. **(4 marks)**

Food substance	Procedure	Observation	Conclusion

g) i) Suggest the expected result if the juice of E was boiled for 10 minutes, cooled and then retested again. **(1 mark)**

……

……

……

ii) Explain your answer in g(i) above. **(1 mark)**

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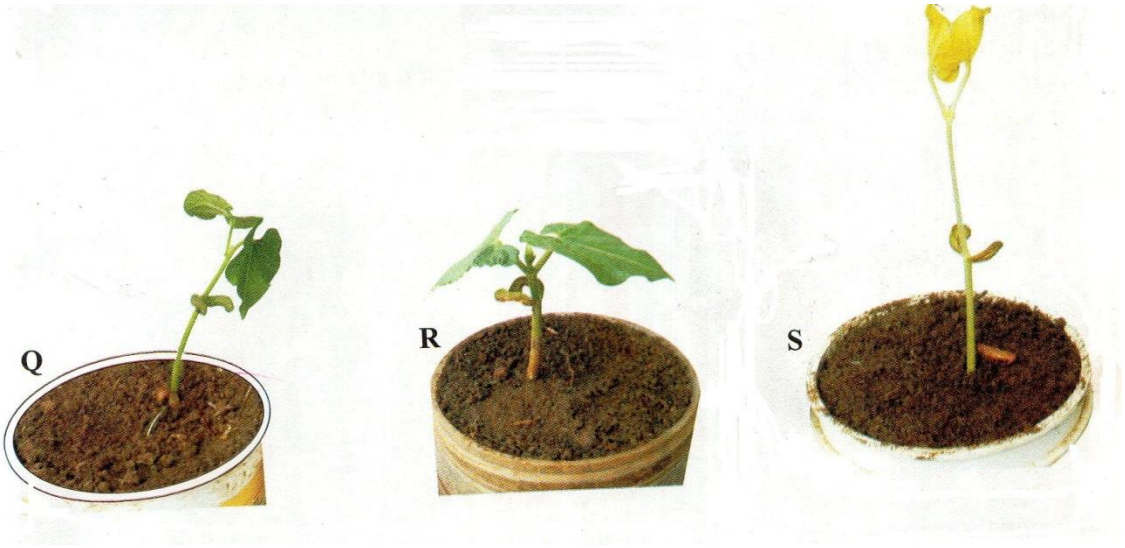
2. The photographs below show three bean seedlings that are of the same age but grown under different environmental conditions. Examine them.



a) Based on external appearance of the seedling, suggest the conditions under which seedling R and S were grown.

i) R **(1 mark)**

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……

……

ii) S **(1 mark)**

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……

b) State 3 observable differences between seedling R and S. **(3 marks)**

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c) i) Name the term used to describe the phenomenon exhibited by specimen S. **(1 mark)**

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……..

ii)State the significance of the above named phenomenon in c(i) above. **(1 marks)**

……

……

……..

d) Account for the difference in the length of the stems of specimen R and S. **(2 marks)**

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……..

e) Name the response exhibited by seedling Q. **(1 mark)**

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……..

f) State the type of germination that occurs in the three seedlings. **(1 mark)**

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……..

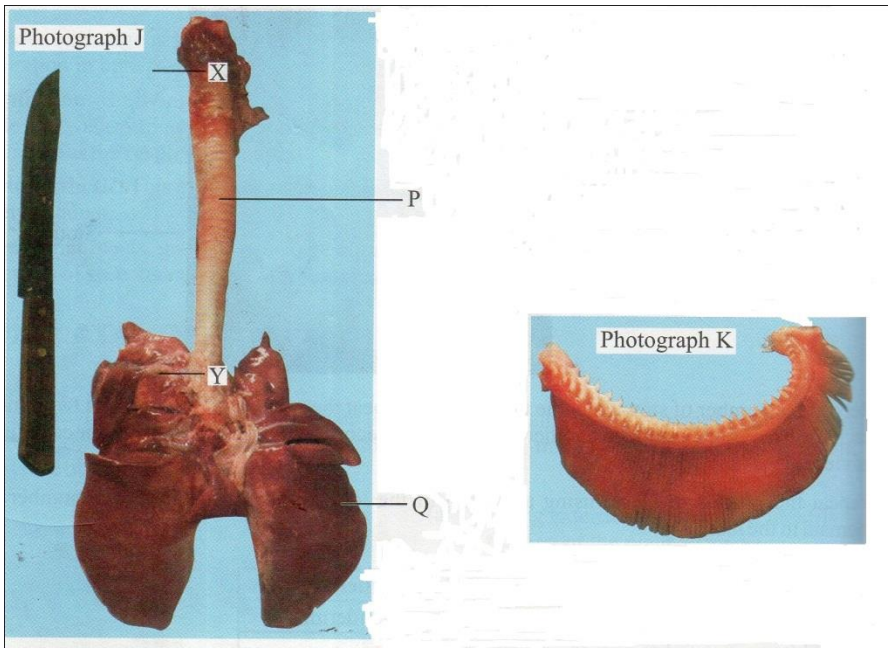
ii) Give a reason for your answer in f(i) above. (1 mark)

……

……

……..

3. Examine photographs J and K below and answer the questions that follow.



a) Identify the organ labeled Q in photograph J and the organ in photograph K.

i) Q **(1 mark)**

……

……

ii) K **(1 mark)**

……

……

b) State the class of organisms from which organ in photograph K was obtained. **(1 mark)**

……

……

c) State the common function performed by the organs shown in the photographs. **(1 mark)**

……

……

……

d) Highlight two adaptations that are common to organ Q and the organ in photograph K. **(2 marks)**

……

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……

……

e) i) Name the part labeled P, in the photograph J. **(1 mark)**

……

……

ii) Using observable features only, state how the structure you named in e (i) above is adapted to its function. **(1 mark)**

……

……

……

f) Name the part of the body from where the structure labeled Q on photograph J is found. **(1mrk)**

……

……

g) Using observable features only, state three adaptations of specimen K to its functions. **(3 mrks)**

……

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K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 3

BIOLOGY PP3 CONFIDENTIAL

Each student should be provided with the following

- 25ml bicarbonate indicator
- Lime water
- A drinking straw
- 2 test tubes
- 10ml measuring cylinder
- A boiling tube
- Dilute hydrochloric acid
- Dilute sodium hydroxide

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 3

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	10	
2	16	
3	14	
Total score	40	

1.(a) Place 2ml of bicarbonate indicator in a clean test tube. Add dilute hydrochloric acid drop by drop and shake after each drop till there is a permanent color change.

(i) State the resulting color **1mk**

……

……

……

(ii) To the mixture obtained above, now add sodium hydroxide solution dropwise until there is a permanent color change. Record your observations **1mk**

……

……

……

(iii) From your observations in a) i) and a) ii) above, what is the nature of the bicarbonate indicator **1mk**

……

……

(b) Place 10ml of a fresh bicarbonate indicator in boiling tube. Using a drinking straw, bubble air through the bicarbonate indicator until there is color change

(i) Record your observation **1mk**

……

……

(ii) What does the color obtained in b) i) above suggest about the nature of the gas breathed out **1mk**

……

……

……

c) Rinse the measuring cylinder and use it to place 2ml of lime water solution in a clean test tube. Rinse the drinking straw in (b) above and use it to bubble air through lime water solution

(i) Record your observation **1mk**

……

……

(ii) Suggest the identity of the gas that give rise to the observations above **1mk**

……

……

(d) (i) Name the physiological process in cells that leads to formation of gas named in (c)(ii) above **1mk**

……

……

(ii) Write down a word equation for the process named in (d) (i) above **1mk**

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(iii) What is the importance of the identified process in cells of living organisms **1mk**

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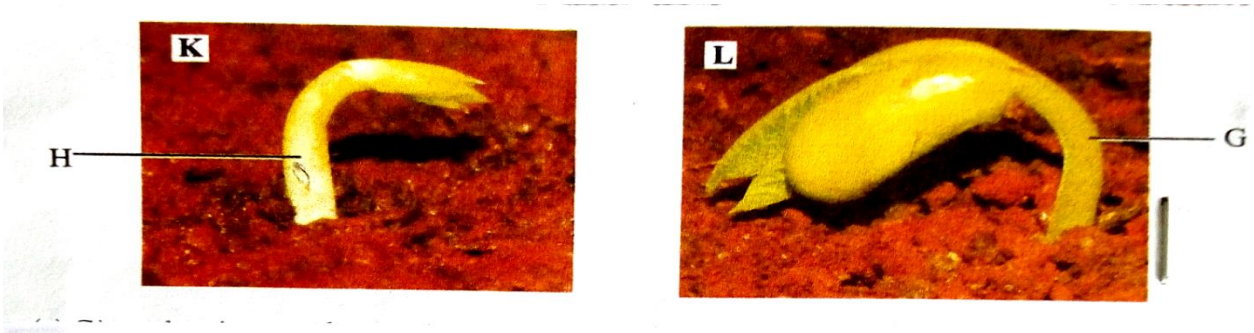
2. Below are photographs of two seedlings labeled K and L. Examine them.



a) Given that the two plants belongs to the same class, name the class and give a reason based on the observable features in any of the two seedlings or both. **2mks**

Class

……

……

Reason(s)

……

……

……

b) i) State giving a reason, the type of germination that occurs in each of the two seedlings **4mks**

K

……

……

L

……

……

ii) Explain how the two types of germination you have stated in (b) (i) above occur **2mks**

K

……

……

L

……

……

c) Name the parts labelled H and G on the seedling **2mks**

H ……

G ……

d) As germination progresses, both seedlings straightens. Explain how this occurs. **4mks**

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……

e) Name the type(s) of root system that will develop in the two seedlings **1mk**

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……

f) State another observation that will be made as seedling L straightens **1mk**

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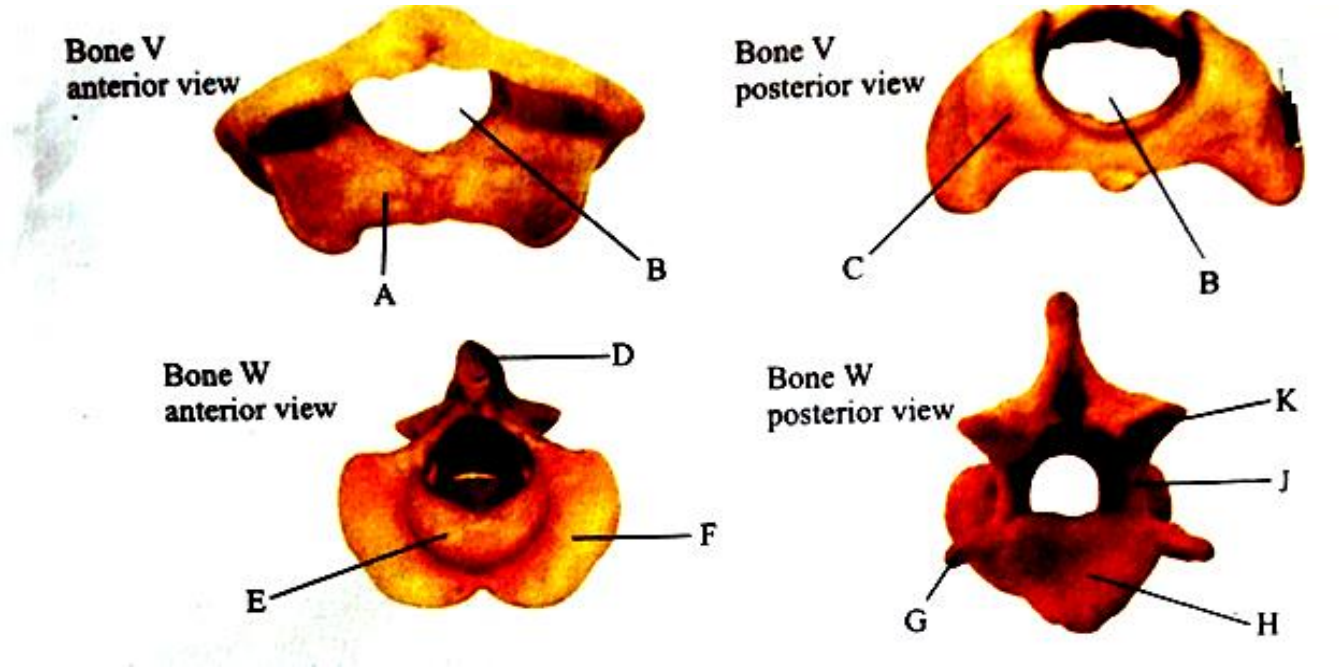
3. The photographs below are specimens from the same animal of two different bones each shown in two views. Examine them.



a) Identify the two specimens **2mks**

Specimen V……

Specimen W……

b) Give four observable differences between bones V and W **4mks**

Bone V	**Bone W**

c) Name the structure that articulates with part labeled A **1mk**

……

……

d) State two roles of opening labeled B **2mks**

……

……

……

……

e) Name the part labelled E and state its role **2mks**

Name

……

……

Role

……

……

f) Which of the labelled part(s) are used for articulation with adjacent vertebra **1mk**

……

……

g) State a common role of the parts labelled H and J **1mk**

……

……

……

h) Which of the labeled part(s) is(are) used for muscle attachment 1mk

……

……

……

K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 4

CONFIDENTIALS

BIOLOGY (231/3)

Requirements

The information contained in this paper is to enable the head of the school and the teacher in charge of Biology to make adequate preparations for the Biology practical examination NO ONE ELSE should have access to this paper or acquire knowledge of its contents. Great care MUST be taken to ensure that the information here in does not reach the candidates either directly or indirectly. The teacher in charge of Biology should NOT perform the experiments in the same room as the candidates nor make the results of the experiments available to the candidates or give other information related to the experiments to the candidates.

Each candidate will require the following.

- $10cm^3$of dilute hydrogen peroxide.
- Scapel
- 1 piece of Irish potato.
- 1 boiling tube
- Source of heat
- Small amount (2mls) of corn oil labeled ***Z***
- $2cm^3$ of milk in test tube labeled as solution ***C***
- 1 lemon labeled ***X***
- 3 clean test tubes
- $2cm^3$ of sodium hydrogen carbonate solution.

Requirements

-5 test tubes

-2 beakers; Labeled 1 and 2;

In beaker 1 place 50mls of solution ***X***;

In beaker 2 place 50mls of solution ***Y***

-**Solution X**; Glucose and starch solution

-**Solution Y**; Distilled water

-A visking tubing measuring 8cm

-Two pieces of Kneading thread 4.0cm.

Access to;

-Iodine solution in beaker labelled ***Q*** with a dropper

-Benedicts' solution in beaker labeled ***R*** with a dropper

-Means of heating

- 10mls measuring cylinder

-10mls syringe

- Test tube holder

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 4

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	14	
2	15	
3	11	
Total score	40	

1. Take 2 clean test tubes and into each add $5cm^3$ of dilute hydrogen peroxide. Label the test tubes as ***A*** and ***B***. Cut 2 cubes of Irish potato measuring about $1cm^3$ each. Boil one cube in a boiling tube with some water for about 5 minutes. Drop the boiled cube into test tube ***A*** and unboiled cube into test tube ***B***.

State your observations.

(a) Test tube **A** **(1mark)**

……

……

Test tube **B** **(1mark)**

……

……

(b) ***Account for*** your observations in:

Test tube **A** **(2marks)**

……

……

……

Test tube **B** **(2marks)**

……

……

……

……

(c) Take a small amount of substance ***Z*** provided and add to it $2cm^3$ of sodium hydrogen carbonate.

(i) ***State*** your observations **(1mark)**

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……

……

(ii) ***Which process*** in the body is illustrated above? **(1mark)**

……

……

(iii) ***State*** the part of the body where the process takes place. **(1mark)**

……

……

(iv) ***What*** is the significance of the process? **(1mark)**

……

……

……

(d) Put 2cm^3 of liquid labelled as ***C*** into a test tube. Squeeze some juice from specimen ***X*** into a beaker. Draw some of the juice into a dropper. Add 3 drops of the juice into the test tube with solution ***C***.

(i) State your observation. **(1mark)**

……

……

ii) ***State*** the part of the human body where the process demonstrated above occurs and the enzyme that carries out the process.

Part of body **(1mark)**

……

……

Enzyme **(1mark)**

……

……

(iii) ***Which*** gland produces the enzyme stated in (ii) above? **(1mark)**

……

……

(iv) ***Which*** hormone stimulates the production of the enzyme stated in (ii) above? (1mark)

……

……

2. Study the photographs shown below then answer the questions.

(a) Suggest the identity of substance labeled **P** on S_1. **(1mark)**

……

……

……

(b) State the mode of nutrition of R_1 and S_1 and for each case give a reason for your answer.

R_1

Mode of nutrition …… **(1mark)**

Reason for mode of nutrition **(1mark)**

……

……

……

S_1

Mode of nutrition **……** **(1mark)**

Reason for mode of nutrition **(1mark)**

……

……

……

(c) Name parts labeled **S_2** and **T**.

S_2 …… **(1mark)**

T…… **(1mark)**

(d) Name structures responsible for reproduction in **S_1 ……..…… (1mark)**

(e) Explain the importance of organism **S_1** in nature. **(1mark)**

……

……

……

(f) Name generations **M** and **N**

M …… **(1mark)**

N …… **(1mark)**

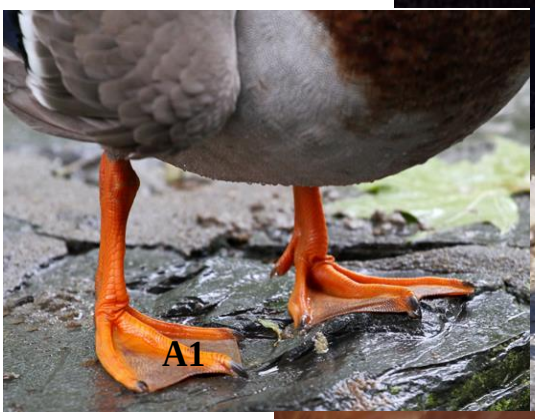
3. Study photographs shown below then answer the questions.

Q

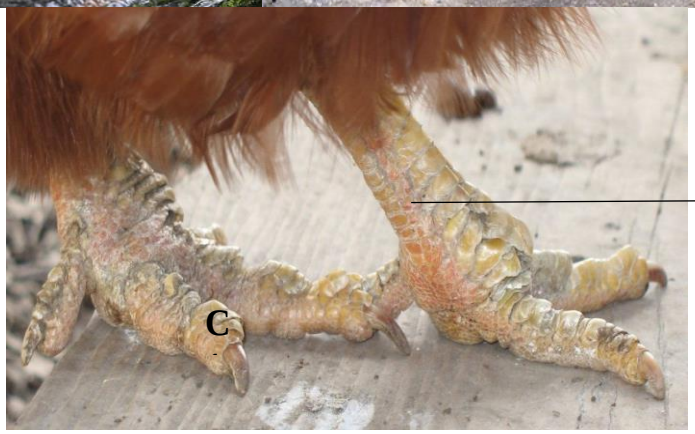
R

S

A



B



C

(a) ***State*** the type of evolution represented by structures **Q_1, R_1** and **S_1**. **(1mark)**

……

……

(b) ***Explain*** the type of evolution identified in (a) above. **(1mark)**

……

……

……

(c) ***Give*** the evolution term used to describe structures:

(i) **Q_1, R_1** and**S_1.** **(1mark)**

……

……

(ii) A_1, B_1 and **C_1.** **(1mark)**

……

……

d). ***What*** type of evolution is illustrated by the limbs (**A1**, **B1** and **C1**)? **(1mark)**

……

……

……

……

e) (i) ***Name*** class for each **Q, R** and **S.**

Q …… **(1mark)**

R …… **(1mark)**

S …… **(1mark)**

(ii) ***Give two*** observable reasons for your answer for class **S.** **(2marks)**

……

……

……

……

……

(f) (i) ***Suggest*** the diet of animals **B** and **R**.

B.…… **(1mark)**

R.…… **(1mark)**

(ii) How is beak of animal **B** adapted to its function? **(2marks)**

……

……

……

……

K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 5

Confidential

- Hibiscus flower (labelled P)
- Maize seedling(germinated for 8-10 days) (labelled Q)
- Benedict's solution
- Iodine solution
- Two tes tubes
- Test tube holder
- Labels
- Means of heating
- Scalpels
- Hand lens
- Distilled water
- Mortar and pestle

NAME: ……..……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 5

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	12	
2	15	
3	13	
Total score	40	

1. a)You are provided with specimen labelled Q. Remove the endosperm and crush using a motor and pestle. Add distilled water and obtain a solution. Decant the mixture to obtain solution Q1. Using the reagents provided, test the food present in solution Q1. **(8marks)**

Food	Procedure	Observation	Conclusion

b) Account for your observation in (a) above **(3marks)**

……

……

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……

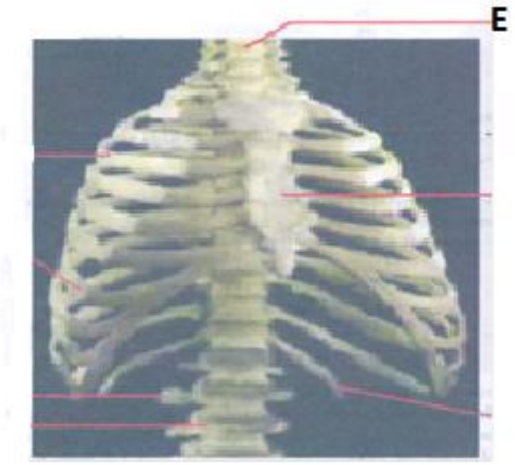
……

c) Name the type of germination represented in the specimen above **(1 mark)**

……

……

2. a). You are provided with a photograph with part of human skeleton. Use it to answer questions that follow.



i) Name the first vertebra labelled E and state how it is adapted to its function. **(4marks)**

Name……

Adaptations

……

……

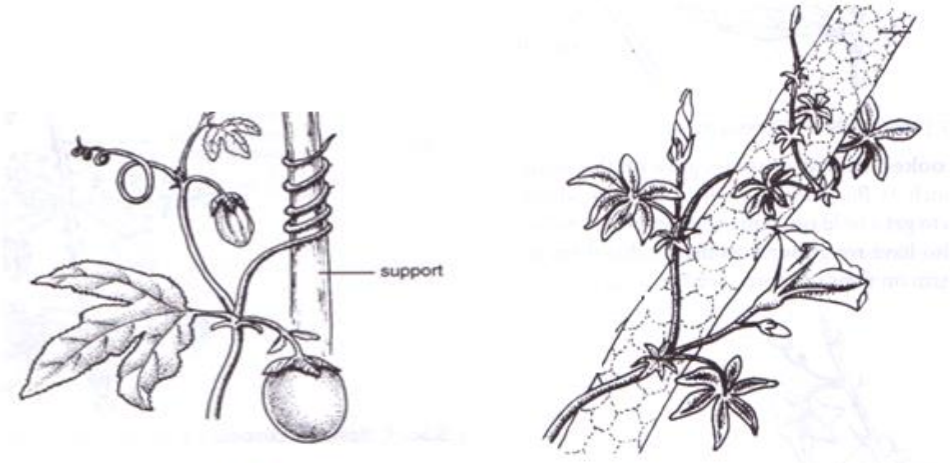
……

ii) Name the structure in the skull that articulates with the vertebra E **(1mark)**

……

……

(iii) Below are two photographs of plants.



M R

(a) Identify support structures used by the plants in photographs M and R shown above. **(2marks)**

……

……

……

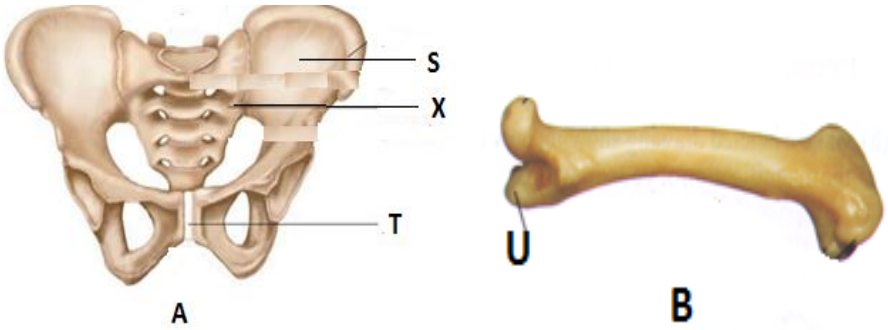
……

(b) Other than the structures illustrated above, name any one support structure in herbaceous plants. **(1 mark)**

……

……

b) The photographs below represent some skeletal materials obtained from a certain mammal. Study them then answer the questions that follow.



A B

i) Identify fused bone labelled X **(1mark)**

……

……

ii) Name parts S and T on photograph A and part U on photograph B **(3mrks)**

……

……

……

……

iii) Name the type of joint formed at the proximal and distal end of bone B **(2marks)**

Proximal end…..……

Distal end……...

iv) Name the type of joint found in structure labelled X **(1mark)**

……

……

3. a).You are provided with specimen labelled P. Using a sharp scalpel, cut the specimen longitudinally to obtain two halves. Draw a large well labelled diagram of one of the sections obtained. **(5marks)**

b) i) Identify the agent of pollination of the above specimen **(1mark)**

……

……

ii) Give three reasons for your answer above **(3 marks)**

……

……

……

……

……

iii) Describe the floral parts of specimen P **(4mark)**

……

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K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 6

BIOLOGY FORM 4

CONFIDENTIAL

About 3ml of solution L- enzyme diastase per student

About 3ml of 0.05% NaCl solution with a dropper

About 3ml of 1.4% NaCl solution with a dropper

About 10ml of starchsolution per student

3 test tubes

Measuring cylinder (5 ml or 10 ml)

White tile

Iodine solution with a dropper

Benedict's solution with a dropper

Test tube holder

Warm water bath maintained between 35-38°C

Thermometer

Means of labeling for the three test tubes

1 dropper

Test tube rack

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 6

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	14	
2	12	
3	14	
Total score	40	

1. You are provided with solution L ,starch solution and sodium chloride in two different concentrations 0.05% and 1.4%. Place 3ml of starch solution in test tubes labeled 1,2 and 3. Add 3 drops of 0.05% sodium chloride to the test tube labeled 2.Then; add 3 drops of 1.4% sodium chloride to the test tube labeled 3. Add 3 ml of solution L to each of the test tube labeled 2 and 3.

(a) Place a drop of the contents from each test tube 1, 2 and 3 on white tile. To each drop, add iodine solution. Record your results in the table below. **(3mks)**

Test tube	Observations at the start of the experiment	Observations at the end of the experiment
1		
2		
3		

(b) Place the test tubes in a water bath maintained at 37°C and allow to stand for 30minutes. Place a drop of the contents from each test tube on a white tile. To each add a drop of iodine solution. Record your observation in the table above. **(3 marks)**

(c) Add equal amounts of the Benedict's solution to test tubes labeled 2 and 3; heat to boil. Record your observation.

Test tube 2 **(1 mark)**

……

……

Test tube 3 **(1 mark)**

……

……

(d) Why was the test tube labeled 1 included in the experiment? **(1 marks)**

……

……

……

(e) Account for the results in tubes 1, 2 and 3. **(3 mark)**

……

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……

(f) Suggest the identity of solution L. **(1 mark)**

……

……

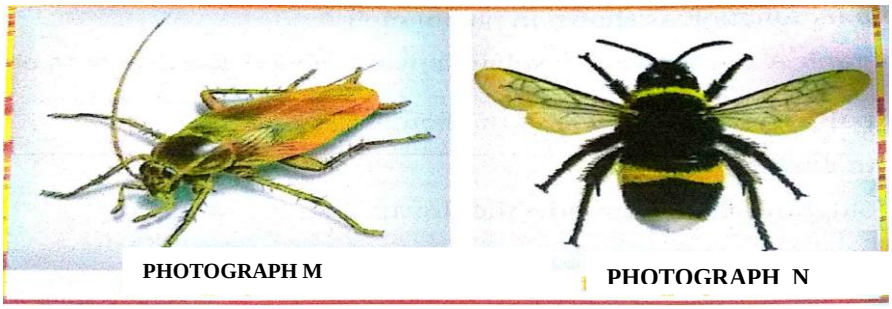
(g) Why were the test tubes placed in water bath maintained at 37°C **(1mk)**

……

……

……

2. You are provided with photograph M and N below. Examine them.



PHOTOGRAPH M

PHOTOGRAPH N

a) With reasons, name the class to which each of organisms belongs. **(4 marks)**

Organism	Class	Reason
M		
N		

b) State two similarities and one difference in the two species.

i. Similarities- **(2 marks)**

……

……

……

……

ii. Difference- **(1 mark)**

……

……

……

c) Based on external features, suggest the habitat of the animal in photograph M and state your reasons.

i. Habitat: **(1 mark)**

……

……

ii. Reasons: **(3 marks)**

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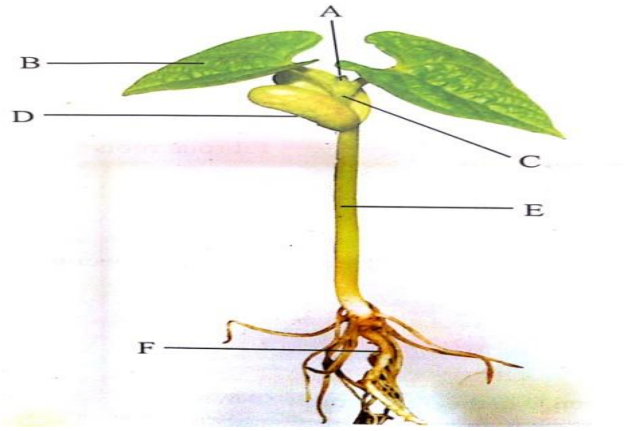
……

……

3. Examine the photograph of a seedling specimen shown below and answer the questions that follow.



a) Name the parts labeled A,C ,D and E **(4 marks)**

A ……..

C ……

D ……

E ……

b) i) Name the class to which the specimen belongs **(1 mark)**

……

……

ii) Give three reasons, using observable features to support your answer in (b) (i) above **(3 marks)**

……

……

……

……

……

c) Give three functions of the structure labeled D during germination. **(3 marks)**

……

……

……

……

……

d) (i) Which of the parts labeled A-F is the first to emerge from the seed during germination**. (1 mk)**

……

……

ii) Why is it necessary that the part you mentioned in d (i) above to emerge first? **(1 mark)**

……

……

e) Name the type of germination exhibited by the seedling. Give a reason for your answer.**(2 mrk)**

……

……

……

K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 7

231/3 – BIOLOGY PAPER 3

CONFIDENTIAL

Each candidate should be provided with the following:-

REQUIREMENTS

- 2 Boiling tubes
- 2 test tubes
- Test tube rack
- Means of heating
- 1% copper sulphate solution
- 2M sodium hydroxide solution
- Iodine solution
- Mortar and pestle
- Scalpel
- 20% Hydrogen peroxide solution
- Fresh potato
- Droppers
- 100ml

Schools should also have ordinary laboratory apparatus in addition to those listed above.

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 7

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	14	
2	12	
3	14	
Total score	40	

SECTION A (40 MARKS)

Answer all questions in this section in the spaces provided.

1. You are provided with specimen Q, which is a fresh potato, liquid R (Hydrogen peroxide) and reagents 1% copper sulphate, 2M sodium hydroxide and iodine solution. Use them to carry out the tests below.

(a) Using a scalpel, cut two small cubes measuring 1cm x 1cm x 1cm from the fresh potato. Place one of the cubes in boiling water for 10 minutes, then remove the cube and let it cool. Place it in a boiling tube and label it A.

Place the fresh piece of potato cube in another boiling tube labelled B and then add equal amounts of hydrogen peroxide to each test tube at the same time. Write your observations.

Observations:

(i) Boiling tube A **(1mk)**

……

……

(ii) Boiling tube B **(1mk)**

……

……

(b) Explain your observation in (i) and (ii) above. **(4mks)**

……

……

……

……

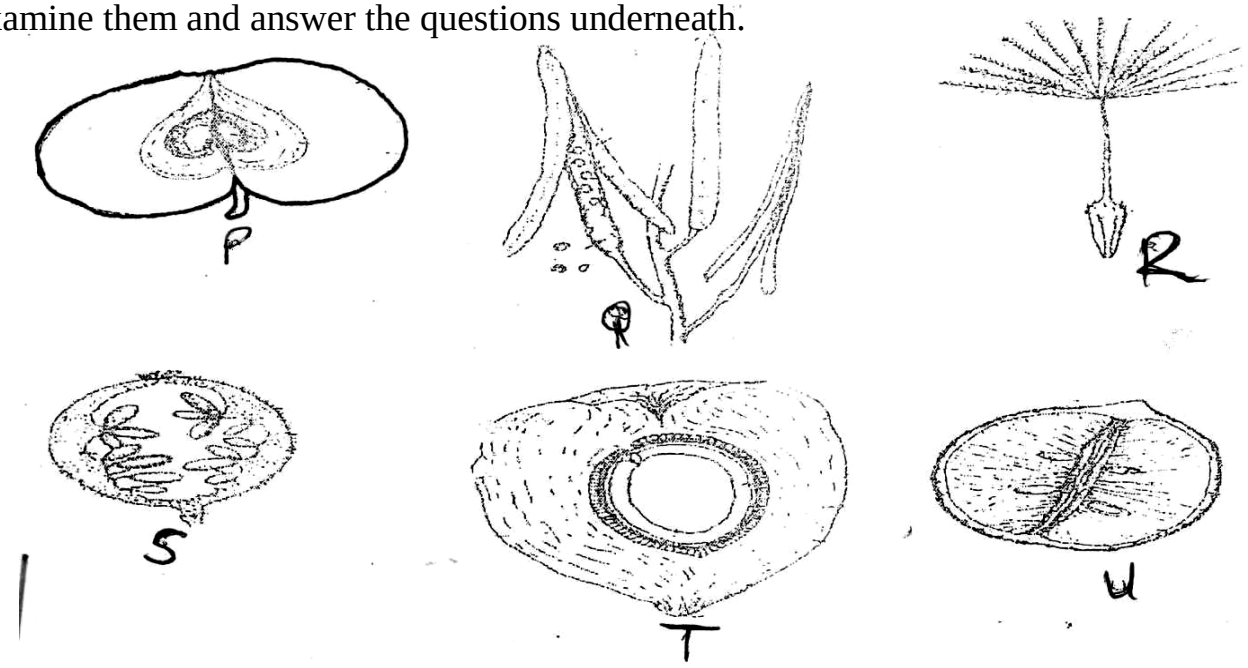
……

……

(c) Crush a small piece of the remaining potato in a mortar. Add a little amount of distilled water to make a mixture. Use it to carry out food tests below. **(6mks)**

Food substance	Procedure	Observation	Conclusion

2. Below are photographs labeled P, Q, R, S, T and U of fruits obtained from different plants. Examine them and answer the questions underneath.



(a) With reasons, determine the modes of dispersal for the fruits labeled Q and R . **(4mks)**

Q:……

Reasons:

……

……

…….

R:……..

Reasons:

……

……

…….

(b) State the form of placentation in Q, S, T and U. **(4mks)**

Q: ……

S:……

T:……

U:……

(c) With a reason, identify the type of fruit represented by specimen P. **(2mks)**

Type of fruit:**…….**

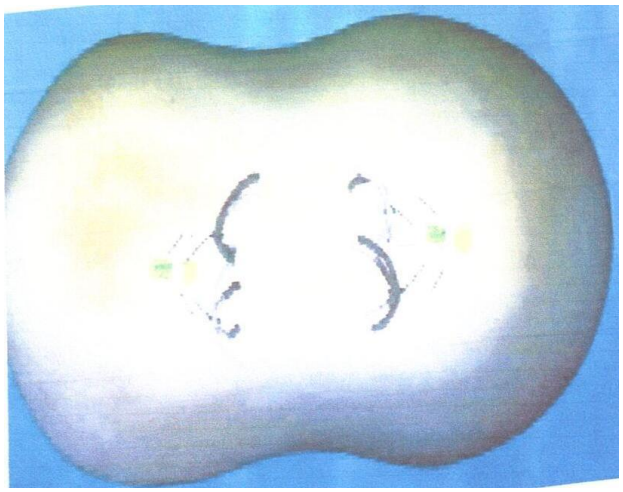
Reason:

……

……

…….

(d) Below is a photomicrograph of a certain process in reproduction. Study it carefully and answer the questions that follow.



(i) Identify the process shown in the photomicrograph. **(1mk)**

……

……

(ii) Name the exact stage and place of the process shown in the photomicrograph. **(1mk)**

……

……

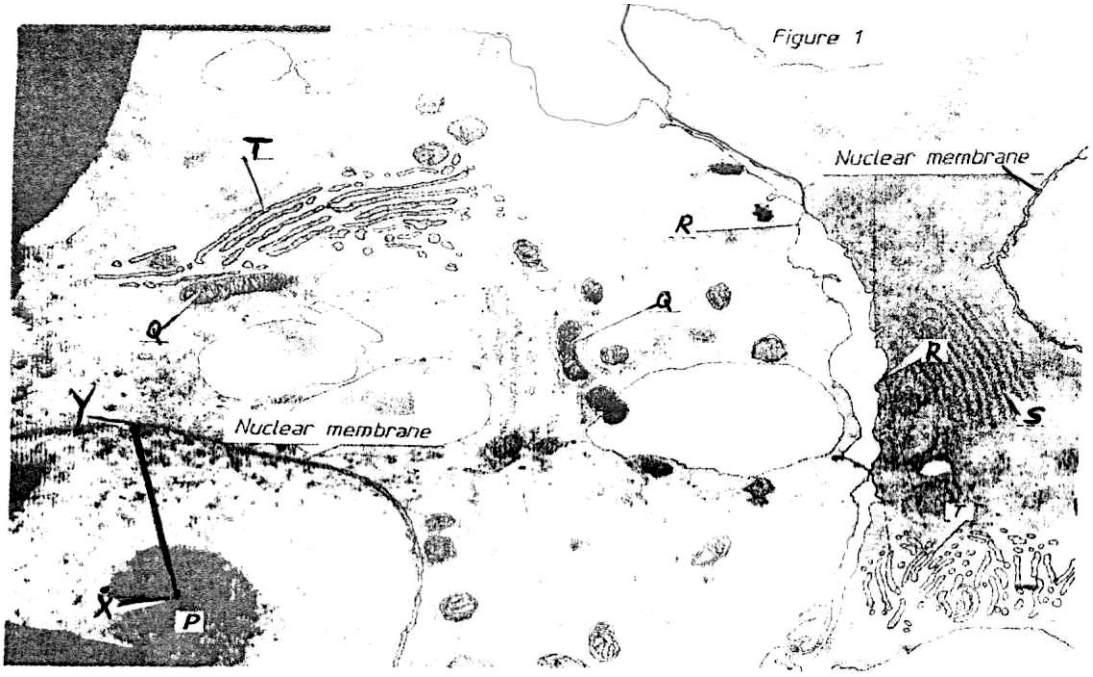
(iii) What is the significance of the process at its completion? **(1mk)**

……

……

……

3. Figure 1 represents parts of two adjacent liver cells as seen under an electron microscope. Study the micrograph and answer the questions that follow.



(a) (i) Name the organelles labelled P, R, T. **(3mks)**

P:……

R:……

T:……

(ii) State **one** function of each of the organelles labelled Q and S. **(2mks)**

Q:……

S:……

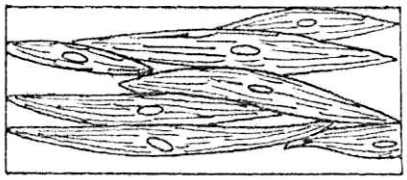
(iii) The magnification of the cells in the micrograph is x20,000. Use a ruler to measure the radius of the nucleus between points X and Y in millimeters.

Radius of nucleus:……..mm **(1mk)**

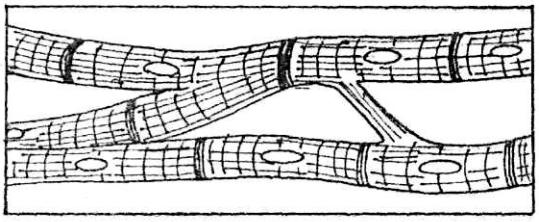
(iv) Calculate the actual radius of the nucleus before magnification in micrometers (µm)

Q: **(1mk)**

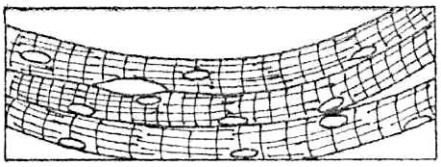
(b) Figure 2 represents different types of muscles. Study them carefully and answer the questions that follow.



B



C



D

(i) Identify the muscles labelled C and D. **(2mks)**

C:……

D:……

(ii) Using observable features only; state **two** differences between muscles labelled B and D. **(2mks)**

……

……

……

……

(iii) State **one** function of each of the muscles labelled B and C. **(2mks)**

Q: ……

S: ……

(iv) Give **one** adaptation of a muscle labelled C to its function. **(1mk)**

……

……

……

……

K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 8

CONFIDENTIAL INSTRUCTIONS TO SCHOOLS

The information contained in this paper is to enable the Head of the school and the teacher in charge of Biology to make adequate preparations for the Biology practical examination.

NO ONE ELSE should have access to this paper or acquire knowledge of its contents.

Great care MUST be taken to ensure that the information herein does not r each the candidate either directly of indirectly.

The teacher in charge of Biology should NOT perform any of the experiments or give any information related to these instructions to the candidates.

Each student will require:

- 80ml of iodine solution in a 100ml beaker
- 8cm visking tubing
- 2 pieces of strong cotton thread 20cm long
- Means of timing/wall clock
- 10ml measuring cylinder
- 100ml water in 250ml beaker
- 10ml of 10% starch solution labelled X

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 8

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	13	
2	15	
3	12	
Total score	40	

1. You are provided with iodine solution visking tubing, a beaker and a solution labelled X.

Tie one end of the tubing tightly using the thread provided.

Measure 5cm3 of solution X And pout it into t h e visking tubing. Tie the other end of the tubing tightly. Ensure there is no leakage.

Rinse the outside of the tubing with distilled water and immerse it with its contents in a beaker containing iodine solution.

Allow it to stand for 15 minutes.

a) i)) Record your observation at the beginning and end of the experiment in the table below. 4mks

Experimental set up	**Solution X inside the tubing**	**Iodine solution outside the tubing**
Beginning of experiment		
End of experiment		

ii) What was the identity of solution X. **1mk**

……

……

iii) Suggest the nature of visking tube. **1mk**

……

……

iv) Account for the results obtained in a(i) above. **4mks**

……

……

……

……

……

……

……

b) i) Which physiological process was being investigated in this experiment? **1mk**

……

……

ii) State two factors which affect the process being investigated. **2mks**

……

……

……

……

2. The photograph below is of a mammalian heart. Study it and answer the questions that follow.

a) Name the parts labelled **D** and **F.** **2mks**

D: .....

E: .....

b) State the role of part **D** **1mk**

……

……

c) Account for the structural differences between the parts marked **C and E.** **3mks**

……

……

……

……

……

d) State the function of

i)Valve **A** **1mk**

……

……

ii) Part **B** **1mk**

……

……

e) i) Name the part marked **G**. **1mk**

……

……

ii) Account for the structural differences between the parts marked **G** and **E**. **3mks**

……

……

……

……

f) i) Name the blood vessel marked **M** **1mk**

……

……

ii) State two defects of the circulatory system. **2mks**

……

……

……

3. You are provided with three sets of seedlings, labelled Set A_1, set A_2 and Set B. Examine them and use them to answer the questions that follow.

i) Name the phenomenon exhibited by seedlings in set A_1. **1mk**

……

……

ii) Give a reason why plants exhibit the phenomenon named in (i) above. **1mk**

……

……

iii) Name the response exhibited by the seedlings in Set B. **1mk**

……

……

iv) Explain how the response named in (iii) above occurred. **3mks**

……

……

……

……

v) State four differences between seedlings in set A_1 and A_2 4mks

Set A_1	**Set A_2**

iv) State the conditions under which th seedlings in set A1 and A2 were grown. **2mks**

Set A_1 .....

Set A_2 .....

K.C.S.E EXAMINERS' PREDICION SERIES 1

QUESTION PAPER NO: 9

231/3 - BIOLOGY PRACTICAL - Paper 3

CONFIDENTIAL INSTRUCTIONS

Each candidate should have:

- Starch suspension labelled Liquid X
- Iodine solution
- Benedict's solution
- 2M hydrochloric acid (1ml)
- 2 Droppers
- Measuring cylinder (10 ml size)
- Means of heating/Bunsen burner
- 6 test-tubes
- Water in a small beaker
- Thermometer
- Test-tube holder
- 3 boiling tubes
- Tripod stand and gauze
- 6 labels
- White tile
- Water bath
- Diastase/ amylase enzyme (0.5g per student) – labelled Q

NB: -Liquid X is prepared by dissolving 5g of soluble starch in 50m1 of distilled water. Thorough stirring is required whenever it is being used.

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……..… CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 9

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above

(b) Answer all questions in the spaces provided

(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.

(d) This paper consists of four printed pages.

(e) Additional papers must not be inserted.

(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	12	
2	13	
3	15	
Total score	40	

1. You are provided with liquid **X** and substance **Q**

(a) Place three drops of liquid **X** onto a white tile. Add four drops of iodine solution and record your observation. **(lmk)**

……

……

……

(b) Pour 2ml of liquid **X** into a test-tube. Add equal amounts of Benedict's solution boil the mixture. Record your observation **(lmk)**

……

……

……

(c) Label three boiling tubes as set-ups **A**, **B,** and **C**. Place 3m1of liquid X into each of the set-ups.

Divide substance **Q** into three equal portions.

To set-up A, add one portion of substance **Q** and shake.

• Place the second portion of substance **Q** into a test tube. Add 1ml of water to it and boil for four minutes. Add it to set-up **B** and shake.

• To set —up **C**, add the third portion of substance **Q**. Add 8 drops of 2M

hydrochloric acid and shake.

Place the three set-ups in a warm water bath maintained at 37°C for 30minutes.

Cool the set-ups by dipping the boiling tubes in cold water

Place 2m1 of the contents of each set-up into three separate test tubes. Add equal amount of Benedict's solution to each of the three test-tubes and boil.

Record your observations (3mks)

Set-up **A**

……

……

Set-up **B**

……

……

Set-up **C**

……

……

(d) Account for your observations in the set-up **(3mks)**

Set-up **A**

……

……

Set-up **B**

……

……

Set-up **C**

……

……

(e) Give the most likely identity of substance **Q** **(1mk)**

……

……

(f) Why was the water bath maintained at 37°C **(lmk)**

……

……

……

(g) What is the fate of the product of set up A in an organism? **(2mks)**

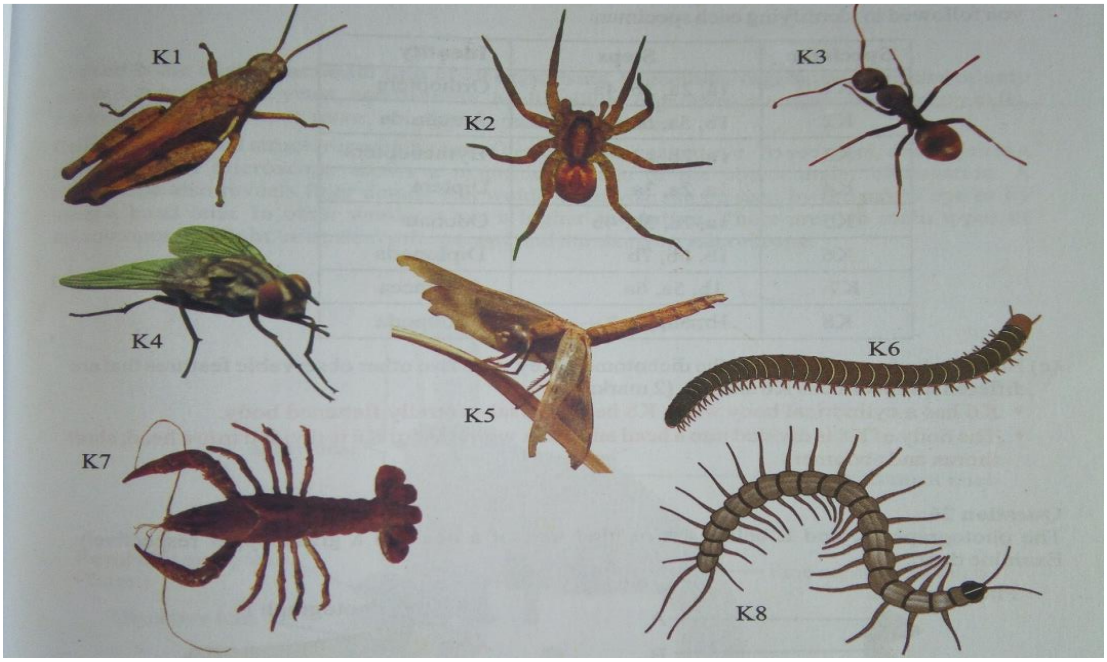
……

……

……

……

2. Below are photographs of a variety of invertebrates. Examine them and answer the questions that follow.



a. Complete the dichotomous key given below. (5mks)

1a. Animal with three pairs of legs……..go to 2

b. _____.....go to 5

2a. Animal with wings……..……go to 3

b. Animal without wings……...Hymenoptera

3a. Animal with one pair of wings…….Diptera

b. _____.....go to 4

4a. Fore wings hard……..Orthoptera

b. Fore wings membranous…….Odonata

5a. _____.....go to 6

b. Animal with more than four pairs of walking legs……go to 7

6a. _____.....Crustacea

b. Animal without antennae……..Arachnida

7a. _____…….……..Chilopoda

b. Animal with two pairs of legs in each body segment ……..Diplopoda

b. Use the dichotomous key to identify the specimen in the photographs above. (8mks)

Specimen	**Steps followed**	**Identity**
K1		
K2		
K3		
K4		
K5		
K6		
K7		
K8		

3. All members of plant division Spermatophyta exhibit alternation of generation. The photographs below show stages in the growth and development of a spermatophyte.

a. i. Processes I, II and III. **(3mks)**

I ……..

II …….

III ……

ii. Structures K, P, R and W. **(4mks)**

K …….

P …….

R …….

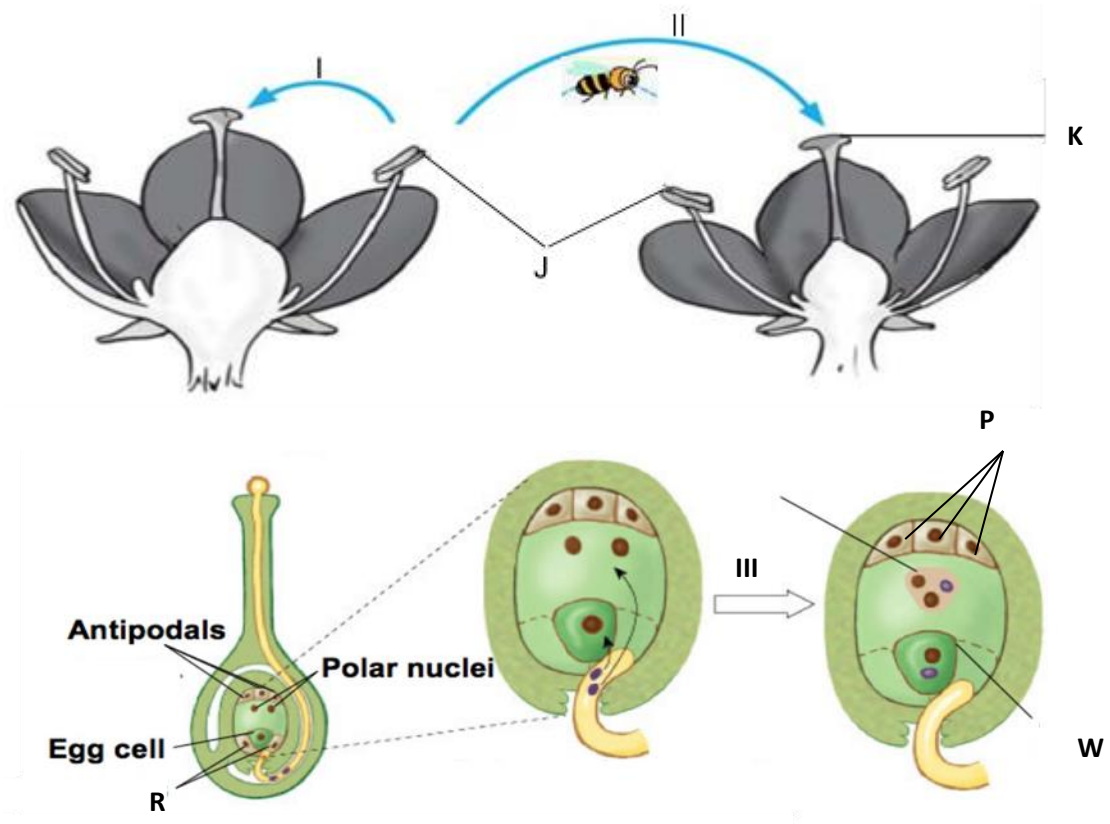
W ……..

iii. The cell division process that occurs in structures J. (1mk)

……

……

iv. The products of the process named in (iii) above. (1mk)



b. Explain the role of the following in promoting process II in the flowering plants.

i. Petals **(2mks)**

……

……

……

……

ii. Filaments. **(2mks)**

……

……

……

……

c. The photographs above represents one of the phases in alternation of generations in spermatophytes. Name the phase. **(1mk)**

……

……

(NO CONFIDENTIAL FOR QP. NO. 10)

NAME: ……..……..……..……..

SCHOOL: ……..……

INDEX NO: ……..…..……. CANDIDATE'S SIGNATURE: ….…..……...

DATE: ……..…….

K.C.S.E EXAMINERS' PREDICION SERIES 1 QUESTION PAPER NO: 10

231/3
BIOLOGY
PAPER 3 (PRACTICALS)
$1^3/4$ HRS

INSTRUCTIONS

(a) Write your name and index number in the spaces provided above
(b) Answer all questions in the spaces provided
(c) You are required to spend the first 15 minutes of the $1^3/4$ hrs around for this paper reading the whole paper carefully before commencing your work.
(d) This paper consists of four printed pages.
(e) Additional papers must not be inserted.
(f) Answer all questions in English.

FOR EXAMINERS USE ONLY

Question	Maximum score	Candidates score
1	14	
2	13	
3	13	
Total score	40	

1.You are provided with visking tubing labeled Q, a piece of thread and a solution labeled K. Dip the visking tubing in distilled water to moisten it, open it, and then tie one end tightly with the thread provided. Half-fill the visking tubing with solution K then tie the open end of the tubing tightly. Ensure solution K does not spill out of the tubing. Immerse the visking tubing into distilled water in a beaker. Ensure that the visking tubing is completely immersed in the distilled water.

Leave the set-up for 20 minutes. Record your observations after 20 minutes.

(a)(i) Observation **(1mk)**

……

……

……

(ii) Explain you observations in a (i) above **(2mks)**

……

……

……

……

(b)Remove the visking tubing carefully. Ensure the contents of the visking tubing do not mix with that of the beaker. Using the reagents provided, test for the food substance present in the visking tubing and the beaker. **(8 Marks)**

I Solution in the Visking tubing

Food test	Procedure	Observations	Deductions
Starch			
Reducing sugars			

I Solution in the Beaker

Food test	Procedure	Observations	Deductions
Starch			
Reducing sugars			

(c)Explain the observations and deductions in (b) above. **(2 marks)**

……

……

……

……

d) State **one** application of the physiological process demonstrated above. **(1 Marks)**

……

……

……

Q2. The diagrams below show different types of fruits. Use them to answer the question that follow.

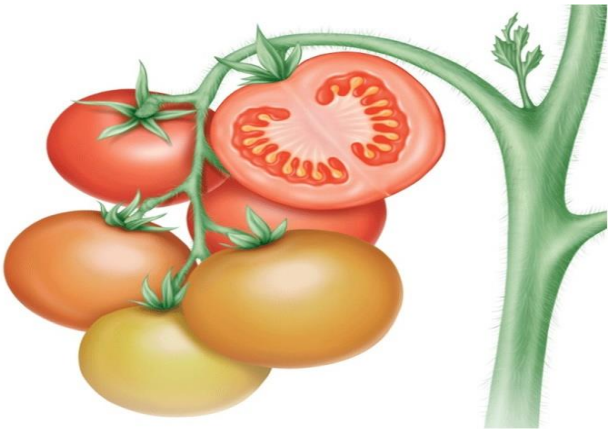
R 1

R 2

R 3

R 4

R 5



R 6

2 (a) i) Name the type of placentation shown in photograph R5 and R6 **(2 Mark)**

R5……

R6……

(ii) Draw a well labeled diagram of one on the fruits in photograph R1 in the diagram above **(3Mrk)**

(b) State the mode of dispersal and give reasons for the fruits shown in photograph R1, R2 and R3 **(6 Marks)**

R1……

Reason

……

……

R 2……

Reason

……

……

R 3……

Reason

……

……

c) Explain **two** adaptations of fruit shown in photograph R 4**.** **(2 Marks)**

……

……

……

……

Q 3. The diagrams below show different bones of the appendicular skeleton. Use them to answer the question that follows.

S1

S2

S3

S4

3 (a). (i) On the diagram, label **three** parts of the bone labeled S1 **(3 Marks)**

ii) State the function of at least one part that you have labeled in the diagram above **(1 Marks)**

……

……

b) Identify S2 and S3 and give reasons for your answer. **(4 marks)**

S2……

Reasons

……

……

S3……

Reasons

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c) i) Name bone S4…… **(1 Mark)**

ii) State **two** adaptation of bone named in c (i) above to its function **(1 Mark)**

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