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KCSE REVEALED 2021

BIOLOGY

PAPER III

This PDF consists of two sample exams that contains questions that are expected in the national exams 2021

For marking schemes call Mr Machuki 0795491185.

SAMPLE I

NAME: _____ ADM NO.:_____

CLASS : _____ SIGNATURE: _____ DATE: _____

FORM 4

BIOLOGY PRACTICAL

CONFIDENTIAL

TIE: 2½HRS

Each candidate shall require the following

i) 10ml hydrogen peroxide solution
ii) Specimen K (Irish potato)
iii) Mortar and a pestle
iv) Four test tubes
v) Distilled water in a wash bottle
vi) A scalpel
vii) Means of heating (source of heat)
viii) Test tube holder

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FORM FOUR

Kenya Certificate of Secondary Education

231/3 BIOLOGY

PAPER THREE

TIME: 1¾ HRS

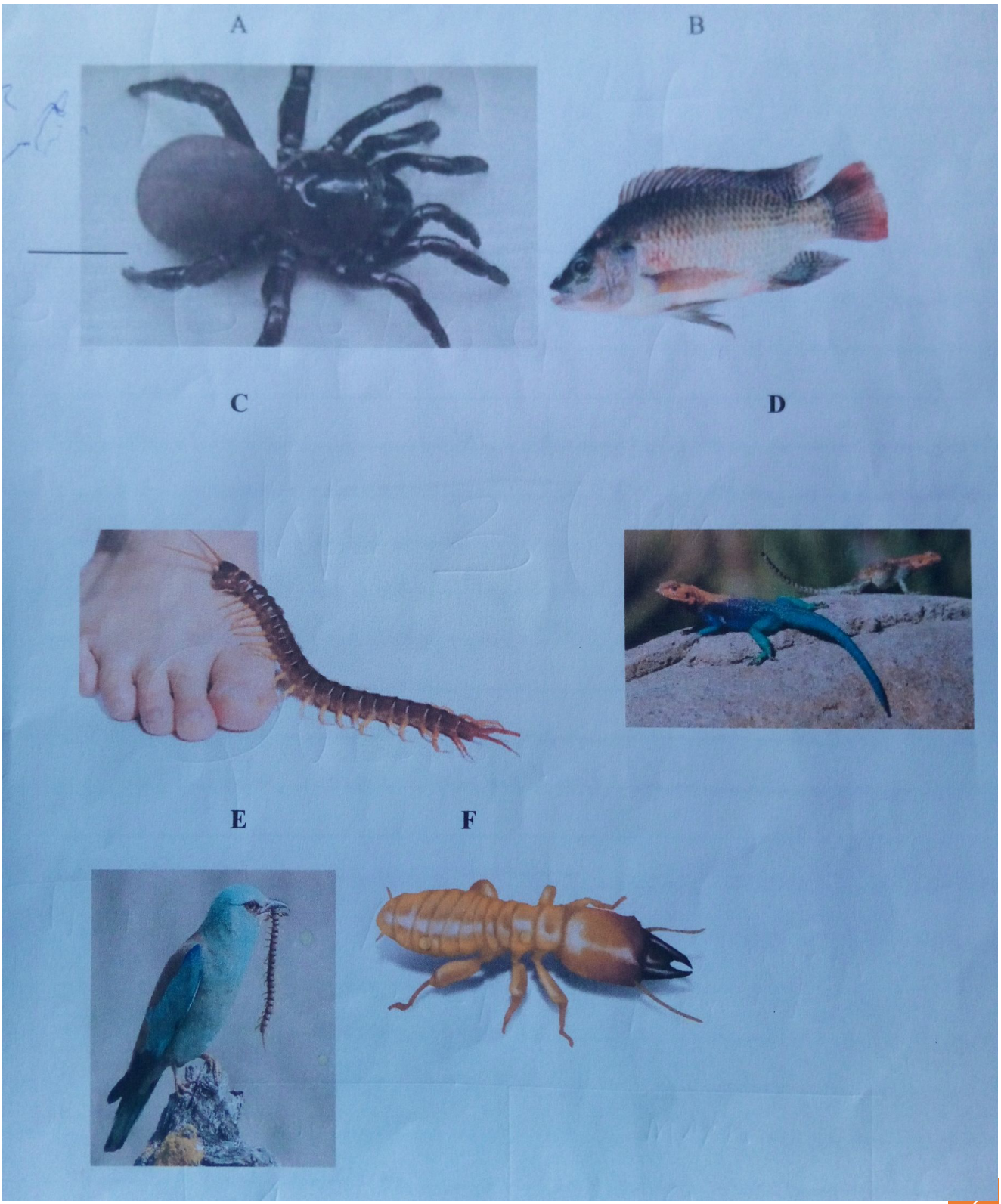
INSTRUCTIONS

1. Answer all questions in spaces provided

Examiner's Use

QUESTIONS	MAX.MARKS	CAND.SCORE
1	9	
2	13	
3	18	
TOTAL	40	

1. Study the organisms below



a) Complete and use the key below to identify the organisms (2mks)

1.a) Organism with endoskeleton ……...go to 2

1. b) _____.....go to 4

2. a) Has scales on the body ……..go to 4

2 b) Has no scales on the body ……mammalian

3a) Has cephalothorax ……...Arachnida

3b) Has no cephalothorax ……..go to 5

4a) _____.....Pisces

4b) Has no fins ……go to 7

5a) Has three pairs of legs ……..Insect

5b) Has more than three pairs of legs ……go to 6

6a) Two pairs of legs per segment ……..Diplopoda

6b) One pair of legs per segment ……Chilopoda

7a) Has feathers …… Aves

7b) Has no feathers ……go to 8

8a) Has a tail ……Reptilia

8b) Has no tail ……Amphibia

b) Identify the organisms above using the completed key above (6mks)

Specimen	**Steps followed**	**Identity**
A	_____	_____
B	_____	_____

C _____

_____

D _____

_____

E _____

_____

F _____

_____

c) Name the phylum in which specimens C, E and F belong to.
(1mk)

……

d) Give three reasons for your answer in (c) above (3mks)

……

……

……

e) Name one feature that is common in organisms B, E and D
(1mk)

……

2. You are provided with the following;
   i) Hydrogen peroxide
   ii) Specimen K
   iii) Pestle and mortar
   iv) 4 test tubes
   v) A scalpel
   vi) Source of heat
   vii) Test tube holder

Using a scalpel, obtain three peeled cubed from specimen K measuring about 1cm x 1cm x 1cm. For the first cube, you are required to boil it in water for five minutes. For the second cube, you are required to crush it into a paste. For the last cube, you are required to use it as it is.

Label three test tubes A, B and C and put 2ml of hydrogen peroxide in each test tube. To test tube A, add the boiled cube and record your observation.

To test tube B. add the crushed paste and record your observation.

To test tube C, add the unboiled cube remaining and record your observation.

a) Complete the table below (3mks)

Test tube	Observation
A	
B	
C	

b) Explain your observation in test tube A (1mk)

……

……

……

c) Between test tubes B and C, in which test tube was the volume of foam produced the highest? Explain (3mks)

……

……

……

……

d) Apart from temperature, state two other factors that affect the rate of enzyme controlled reactions

(2mks)

……

……

……

3. The photographs below shows specimen of different types of fruits. Examine them and answer the questions that follow.

For

a) State four differences between specimen P and R
(4mks)

……

……

……

……

……

……

b) State the types of gynoecium and placentation of specimen P, S and V
(4mks)

i) Specimen P Gynoecium ……..

Placentation …….

ii) Specimen S Gynoecium ……

Placentation……

iii) Specimen V Gynoecium ……..

Placentation ……..

c) In the table below name the mode of dispersal for each specimen and the features that adapt the specimen to its mode of dispersal.

(6mks)

Specimen	Mode of dispersal	Adaptive features
P		
Q		
R		
S		
T		
v		

d) Draw and label a plan diagram of specimen V (4mks)

SAMPLE II

Biology paper 3.

Paper 231/3.(Practical).

CONFIDENTIAL INSTRUCTIONS:

NB/Requirement instruments:

1. About 10ml of substance L.
2. 4 clean test tubes on a rack.
3. A means of heating
4. Test tube holder.
5. A scalpel.
6. A house fly labeled specimen M.
7. A dry bean seed labeled S_1.
8. A bean seedling labeled S_2.
9. A maize seedling labeled S_3.
10. 1% copper (II) sulphate solution.
11. 10% sodium hydroxide solution.
12. Benedict's solution.
13. Iodine solution.

Note:

i. To make substance L,mix egg albumen and starch.

ii. Specimen S_2 and S_3 should be ready 1 week before the exams and must have the seeds intact.

PAPER 231/3

PRACTICAL.

QUESTIONS.

MAX.40 MKS.

ANSWER ALL THE QUESTION IN THE SPACES PROVIDED.

Answer all the questions in the spaces provided.

1. You are provided with substance L.Carry out food tests on the substance using the reagents provided .Record your procedure , observations and conclusions in the table below.(9mks)

Food substance	Procedure	Observation	Conclusions

2. a
3.
4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

15.

16.

17.

18.

19.

20.

21.

22.

23.

24.

During a visit to a museum, students were shown ten specimens of organisms on display.The teacher provided a dichotomous key (shown in a separate page) to enable them to place each species on display into its taxonomic group. Five of the specimens that were on display are shown in the diagrams provided.

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Dichotomous Key.

1.(a) Animal with a flattened body….. ……..go to 9.

(b)Animal without a flattened body…… go to 2.

2.(a)Animal with body in a shell ……Mollusca.

(b)Animal with body in shell…….. go to 3.

3.(a)Animal with segmented body….. ……go to 4.

(b)Animal with body not segmented……Nematoda.

4.(a)Animal with jointed appendages go to 6.

(b) Animal without jointed appendages to 5.

5.(a)Animal with long and cyndrical body……..annelida.

(b)Animal with short stout body…….. Trenada.

6.(a) Animal with antennae……...go to7.

(b) Animal without antennae ….. ……go to 8.

7.(a)Animal with one pair of antennae…… Insecta.

(b) Animal with more than one pair of antennae…….. crustacean.

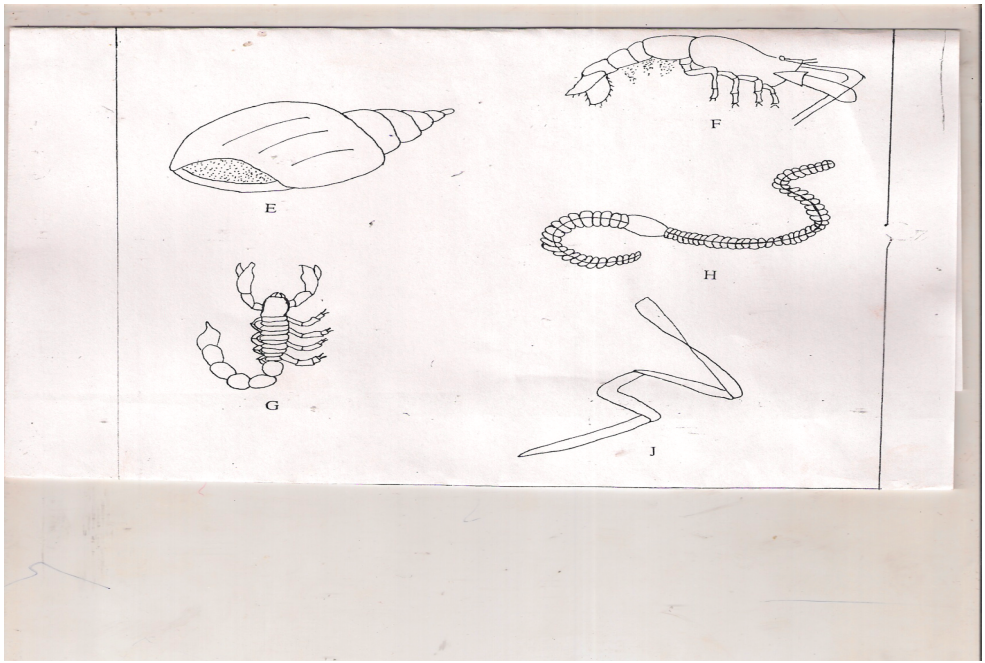
8.(a)Animal with pincer –like mouthparts…….. Arachida.

(b) Animal with sucking mouth parts……..Acarina.

9.(a)Animal with long ribbon-like body ……cestoda.

(b) Animal with circular body…….. rinoidea).

Use the dichotomous key to identify the taxonomic group of each of the five specimens shown in the drawings.



In each case, show in sequence the steps (ef 1a,2a,5a, 7b) in the key that you followed to arrive at the identify of each specimen.(5mks)

Animal	Steps followed	Identity
E	……..	……..
F	……..	……..
G	……..	……..
H	……..	……
J	……	…….

b)i)Nam the phylum and the class to which specimen M belongs(2mks)

Phylum:

Class:

ii) Name the observation features that enabled you to place it in the class above.(3mks)

(c)With the help of a hand lens, examine the body of specimen M.

i)State with a reason in each case he observable features that enable the specimen to be a disease vector.(2mks

(ii) Name one disease transmitted by specimen M.(1mk)

iii) State two methods that can be used to prevent specimen M from spreading diseases.(2mks)

25. You are provided with specimens labeled S_1 S_2 and S_3

    a. Using a scarpel blade split S_1 longitudinally and draw a well labeled diagram to show the internal structures.

       State your magnification (4mks)

b. With a reason ,state the class to which the plant from specimen S_1 belongs to.

Class(1mk)

Reason(1mk)

c. Specimen S_2 is a germinated seedling of S_1.In the table below, name three structures and say which structure in S_1developed into the structure in S_2.

Structure in S_1	Structure in S_2

d.(i) Using specimens S_1 and S_3 ,name the type of germination in :-

S_1

S_3 (1mk)

ii. Give the difference between the this type of germination in (d) (i) above (2mks)

iii.Account for the type of germination in :-

S_1 2mks

S_3(2mks)