NAME...MARKING GUIDE.....Comb.@ Ramas..

P530/3 SSENTAYI MOSES RAFAEL
BIOLOGY
(Practical)
Paper 3
July. 2024
3¼ hour

1	40
2	35
3	25
T	100%

INTERNAL MOCK EXAMIINATION SET2
Uganda Advanced Certificate of Education
BIOLOGY
(PRACTICAL)
Paper 3
3 hour 15 minutes

INSTRUCTIONS:

Write the answers in the spaces provided. **No** additional sheet of paper should be used.

You are advised to plan and present neat and clean work.

1. You are provided with specimen **K** which is freshly killed.

(a) Examine the specimen, with reasons state the phylum to which the specimen belongs. (04 marks)

(i) Phylum

Arthropoda; ✓

(ii) Reasons

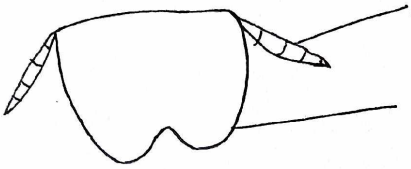
Exoskeleton; ✓
Segmented body; ✓
Jointed limbs/appendages; ✓ 04

(b) Examine the last tergum of the specimen from the ventral view.

i) Draw and label (07 marks)

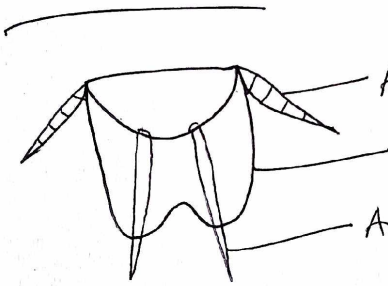
Drawing of the last tergum of specimen K from the Ventral view.

T – 01
D – 02
L – 01
M – 01
N – ½ 01
O – ½ 01



X 2 – X10

For ~~female~~ Male



X 2 – X10

ii) Giving reasons state the sex of the specimen. (04 marks)

Sex

Male

Reasons

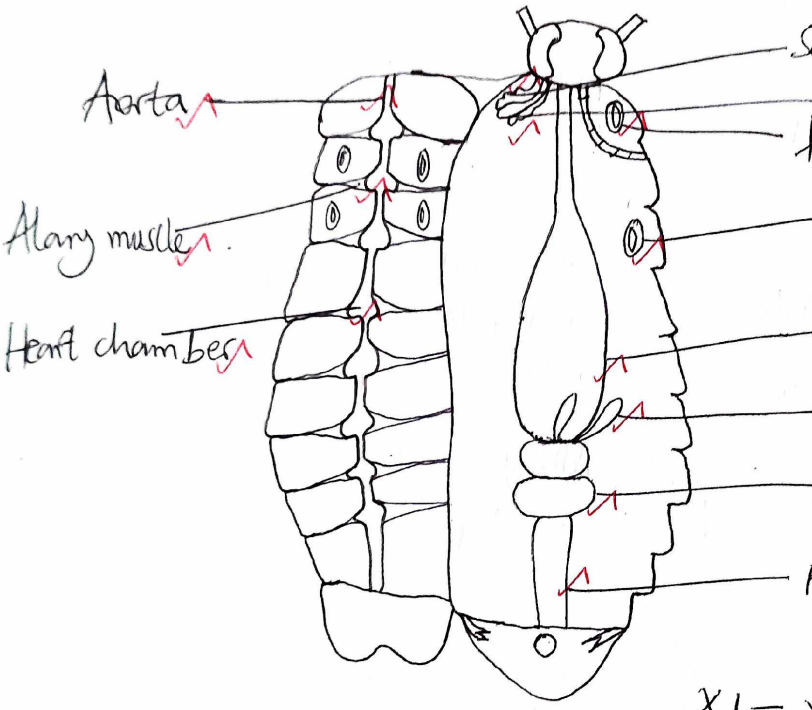
Male → Narrow abdomen; Anal styles; Pointed gonapophyses

Female → Broad abdomen; blunt gonapophyses;

04

(c) Pin specimen K with the dorsal side uppermost. Dissect along the right lateral line of the specimen. Displace the dorsal cuticle and clear any fat tissue. Without displacing any other structures, draw and label visible structures on ventral and dorsal cuticle. (25 marks)

Drawing showing visible structures on ventral and dorsal cuticle of specimen K without displacing any other structures.



X1 – X3

T – 01
A – 10
L – 10
M – 01
N – 01
O – 01
A – 01

N/A for labelled
- gizzard, Ileum, malpighian tubules; or colon;

2. You are provided with solution A and B both of which are food mixtures. Using the reagents provided carry out tests on A and B for the food substances specified in the table below. Record your tests, observations and inferences. (25 marks)

Experiment	Solution	Observation	Inferences
Biuret test To 1cm³ of solution; add 1cm³ of sodium hydroxide solution; 3 drops of copper (II) sulphate solution; ~~and~~	A	Colourless solution; turned pale blue solution;	Proteins absent;
	B	Milky solution; turned pale blue solution;	Proteins absent.
Starch To 1cm³ of test solution; add 3 drops; of iodine solution;	A	Colourless solution; turns pale yellow/ pale brown;	Starch absent
	B	Milky solution; turns black;	Much starch present.
Reducing sugars To 1cm³ of test solution; add 1cm³ of Benedicts solution and boil;	A	Colourless solution turns; pale blue solution; green solution; yellow precipitate; orange precipitate;	Much reducing sugars present.
	B	Milky solution; turns pale blue solution; green solution; yellow precipitate; orange precipitate;	Much reducing sugars present.
Non-reducing sugars To 1cm³ of test solution; add 1cm³ of dilute hydrochloric acid; boil; cool; add 1cm³ of Sodium hydroxide solution; 1cm³ of ~~Benedicts~~ solution; and boil;	A	Colourless solution turned pale blue; green solution; yellow precipitate; orange precipitate;	Much non-reducing sugars present;
	B	Milky solution turned pale blue; green solution; yellow precipitate; orange precipitate;	Much reducing present.

Vitamin C To 1cm³ of DCPIP in a test tube; add solution drop-wise until in excess;	A	Blue solution; turns pale blue solution;	Vitamin C absent;
	B	Blue solution; turns colourless;	Vitamin C present

Solution A contains..... Reducing sugars and Non-reducing sugars;

.....

Solution B contains ..... Starch; Reducing sugars and Vitamin C;

.....

b) Obtain 6cm3 of the food mixture B. label three test tubes, **1, 2 and 3** add 2cm3 of the mixture to each test tube.

Rinse your mouth with water and spit out about 2cm3 of saliva into a test tube. Dilute with **equal volume of water**.

To test tube **1** add 1cm3 of saliva.

To test tube **2** add 1cm3 of saliva and 4 drops of sodium hydroxide

To test tube **3** add 1cm3 of saliva and 4 drops hydrochloric acid.

Incubate all the three test tubes in a water bath maintained at 37-40°C for 20 minutes.

i) Carry out tests for starch in all the three test tubes, 1, 2 and 3 (06 marks)

Test tube	Observations	Inferences
1	Turbid solution; turn colourless; turns to pale brown/yellow solution;	Starch absent;
2	~~Turbid~~ Milky solution; turns black solution;	Starch present;
3	Milky solution; turns black solution;	Starch present;

ii) Explain the results obtained in tests tubes in b) (i) above (04 marks)

Test tube 1, Starch absent; because salivary amylase in saliva was activated; catalysed hydrolysis of starch to reducing sugars; 1

Test tube 2, starch present; because sodium hydroxide solution denatured salivary amylase; no hydrolysis of starch; 1

Test tube 3, Starch present; because hydrochloric acid denatured salivary amylase; no hydrolysis of starch; 04

3. You are provided with specimen F, G, H, and J. study them carefully and answer the questions that follow.

With reasons, identify the phylum to which each belong. (04 marks)

Phylum... Arthropoda;

Reasons

Exoskeleton;

Jointed limbs / appendages;

Segmented body; 04

b) Identify the class to which specimen G belong. Give a reason for your answer. (03 marks)

Class of G..... Arachnida

Reason

Two (2) main body Parts

Four (4) Pairs of legs / 8 legs. 03

c) Examine specimen F and G state three differences between them. (03 mark)

Specimen F	Specimen G
Three Pairs of legs / 6 legs	Four Pairs of legs / 8 legs
Three main body Parts	Two main body Parts
Has wings	Lack wings
Hairy body	hairless body / lacks hairs

03

d) i) With aid of a hand lens examine the thorax of specimen H, describe the features of the thorax. (02 marks)

Three(3) segments; small; open holes/spiracles; numerous; long; hairs; hard exoskeleton;

02

ii) Explain how the features of thorax enable it to survive in its habitat. (03 marks)

Segmented to increase flexibility during locomotion;
Hard exoskeleton to minimise water loss/prevent desiccation;
Spiracles for ventilation;

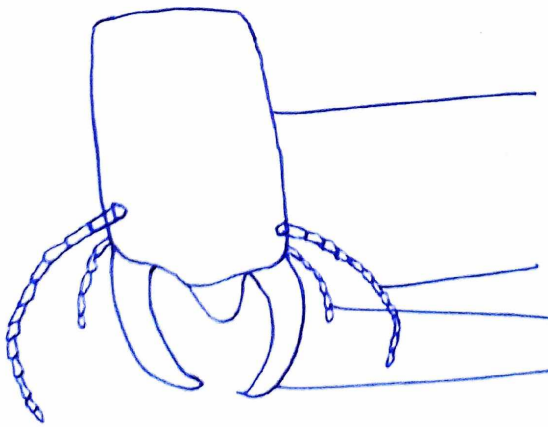
Reject gaseous exchange; Prevent water loss; movement for locomotion;

e) Explain the ecological significance of specimen H in nature. (03 marks)

Pollinates flowers
Food for other organisms
Make honey used/eaten as food by other organisms;

f) Draw the head of specimen J. (04 marks)

Drawing of the head of specimen J. X



T – 04
D – 02
L – 01
N – 01/2

T – 04

X3 – X10 X

(g) Using a hand lens examine the antennae of the specimens, construct a dichotomous key to identify them in the order F,J and H. (03 mark)

Dichotomous Key to identify the specimen in order F, J and H ✓

1 a) Specimen with short antennae F ✓1
b) Specimen with long antennae J and H ✓1

2 a) Specimen with ~~ben~~ straight antennae --- J ✓1
b) Specimen with bent antennae ------ H ✓1

03

END

Confidential

Each student should be provided with;

Specimen K – Cockroach

Specimen G – Tick

Specimen H - Honey bee

Specimen J - Termite

Specimen F - Housefly

Solution B Mixture of starch, sucrose, glucose and vitamin C.

Solution A mixture of glucose and sucrose

Sodium hydroxide solution

Hydrochloric acid

All reagents for food test

Source of heat

Six(6) test tubes