

Name..... **Tr's Guide**

Signature **Iam Muzafah**

P530/3
BIOLOGY
(Practical)
PAPER 3
MARCH 2024
3hours

JINJA PROGRESSIVE SECONDARY SCHOOL

Uganda Advanced Certificate of Education

BIOLOGY PRACTICAL TEST SET 1 TERM ONE 2024

Paper 3

3 hours

INSTRUCTIONS TO CANDIDATES:

- *This paper consists of **three** questions.*
- *Answer **all** questions.*
- *Answers must be written in the spaces provided.*
- *Additional sheets of paper must **not** be inserted in this booklet.*

FOR EXAMINER'S USE ONLY		
Question	Marks	Examiner's signature
1	40	Iam Muzafah 0706206561
2	30	
3	30	
Total	100	

①

Turn Over

1. You are provided with specimen G which is freshly killed.

(a) (i) Examine the hind limbs of the specimen and explain how they enable the organism to survive in its environment (04marks)

Webbed digits/toes to increase surface area for easy swimming ✓
 Long to increase surface area to generate strong propulsive force during locomotion ✓
 Highly muscular to generate strong propulsive force for forward thrust / swimming / locomotion ✓
 Jointed digits / limbs for maximum flexibility to provide firm grips ✓
 Jointed for flexibility to generate strong propulsive force during locomotion ✓

04max

(b) Pin the specimen with the ventral side uppermost. Dissect the specimen to display the muscles of the left thigh.

(i) Examine the upper muscle block on the outer part of the left thigh up to its attachment.

Describe the structural efficiency of the muscle to its function.

(03marks)

Thick muscle connected to a joint by cartilage, which provides support to generate propulsive force during locomotion ✓

03max

(ii) Draw and label the muscle of the left thigh.

(07marks)

A drawing of the muscles of the left thigh of specimen G ✓

04 ✓



Triceps femoris ✓

Sartorius ✓

Adductor magnus ✓

Gracilis ✓

X2-X5 ✓

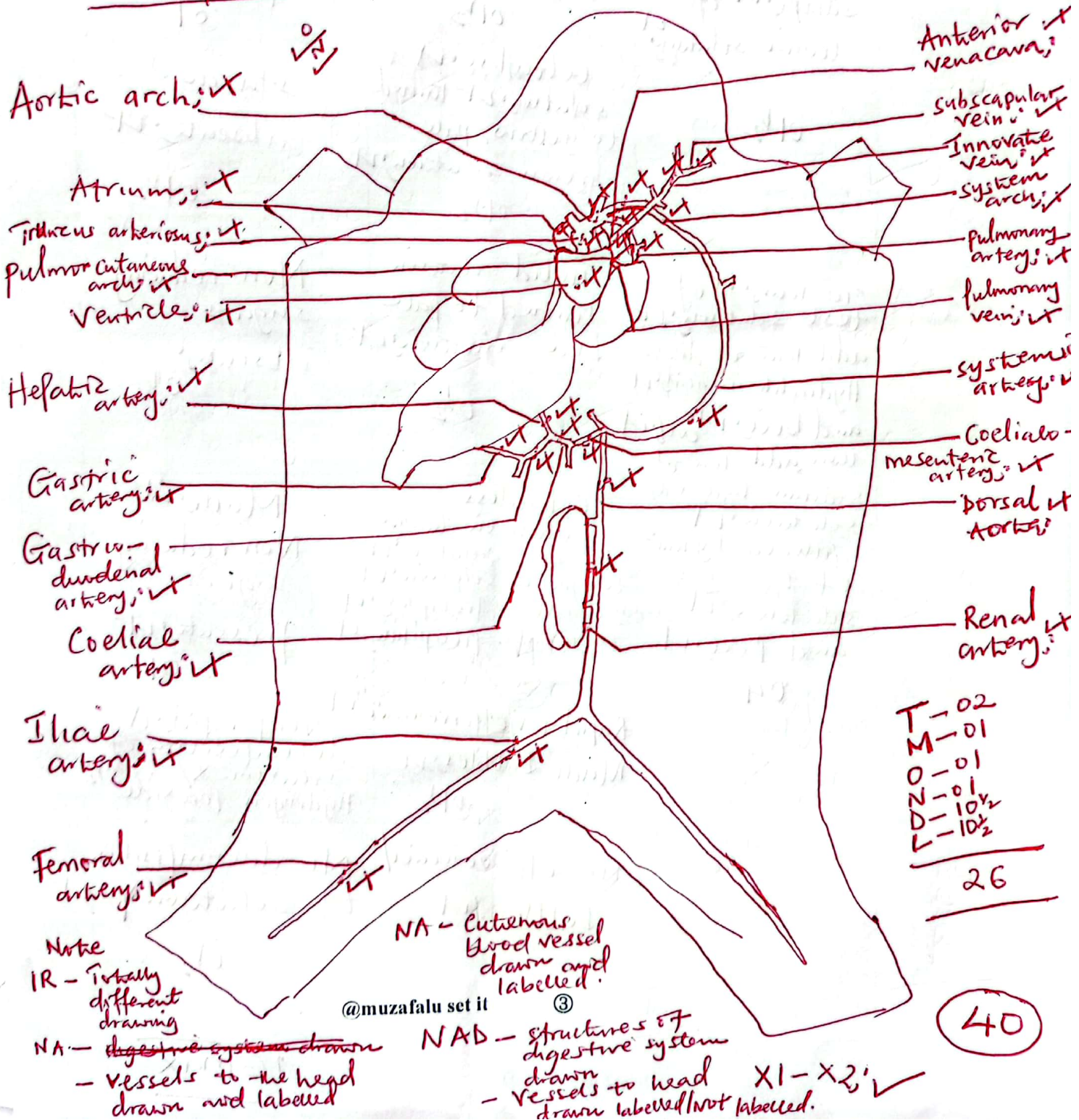
T-01
M-01
O-02
N-02
D-02
L-02

(c) By further dissection, display the blood vessels that;

- Carry blood to structures responsible for removal of metabolic wastes from the body, hind limbs and temporal food storage.
- Drain blood from upper trunk region except the skin.
- Draw and label the structures displayed in (i) and (ii) above on the same drawing to include the heart in ventral view.

(26marks)

A drawing showing blood vessels which carry blood to structures responsible for removal of metabolic wastes from the body hind limbs and temporal food storage and blood vessels draining blood from upper trunk region except from the skin of specimen G with the heart in ventral view.



2. You are provided with solutions A, B, M and active ingredient N.

- a) Carry out the following tests to identify the solutions. Record your tests, observations and deductions in the table below; (16marks)

TABLE 1

Tests	Observations	Dedications
(i) Iodine test To 1cm^3 of test solution; it add 3 drops of Iodine solution; it $0\frac{1}{2}$	A- Turbid; it solution; it turned to black solution; it $0\frac{1}{2}$ B- Colourless; it solution; it turned to yellow/pale brown solution; it $0\frac{1}{2}$	Much; it starch presents; it 01 starch absent; it $0\frac{1}{2}$
Non reducing sugar test To 1cm^3 of test solution; it add 1cm^3 of dilute Hydrochloric acid; it and boil; it cool; it then add 1cm^3 of Sodium hydroxide solution; it followed by 1cm^3 of Benedict's solution; it and boil; it 04	A- Turbid. solution turned to pale blue solution; it $0\frac{1}{2}$ B- Colourless solution turned to blue solution; it to green solution; it to yellow precipitate; it to orange precipitate; it 02	Non-reducing sugars absent; it $0\frac{1}{2}$ Much; it Non reducing sugars presents; it 01
(ii) To 1cm^3 of M, add 0.5cm^3 of lab chemical X	Rapid; it effervescence; it Much bubbles; it $0\frac{1}{2}$	very rapid; it decomposition of solution X/ Hydrogen peroxide $0\frac{1}{2}$
(iii) To 1cm^3 of M, add 0.5cm^3 of lab chemical Y	No effervescence/ bubbles; it	No decomposition of solution Y; it $0\frac{1}{2}$

16 marks

- b) Label two test tubes A,B and to each, add 2cm^3 of the respective solution followed by half spatula endful of active ingredient N. Cover the tubes tightly with a cork and incubate for 20 minutes in water bath at $37-40^\circ\text{C}$. After 20 minutes, filter each mixture into test tubes labelled A₁ and B₁.

04marks

Table 2

Tube	Observation	Deductions
A ₁ +iodine solution	Turbid solution turned to blue / black / pale black / pale blue solutions ✓ or 2	Much/moderate/little ✓ starch present ✓ 01
A ₁ + non reducing sugar test	Turbid solution turned to pale blue solution ✓ to dk green solution ✓ to yellow solution ✓	little ✓ reducing 01 sugars present ✓
B+ iodine solution Non-reducing sugar test	Turbid solution turned to pale blue solution ✓ to green solution ✓ 01	little Non-reducing sugars present ✓ or Non-reducing sugar absent
B+ non reducing sugar test	Turbid solution turned to pale blue solution ✓ to green solution ✓ to yellow precipitate ✓ orange precipitate ✓	Much/moderate ✓ reducing sugars present ✓

Explain the results in
(i) TABLE 1 ABOVE

M+X

(04marks)

Solution M provided an enzyme / catalase / active substance ✓ which catalysed the break down / decomposition of a substrate in solution X / hydrogen peroxide ✓ resulting into very high rate of decomposition ✓
04max

M+Y

The enzyme in solution M was not able to catalase ✓ the decomposition of substrate ✓ in solution Y ✓
02

08

(ii) TABLE 2 ABOVE

A+ IODINE

(04marks)

Substance N had an enzyme/active substance ✓
which likely catalysed the break down of
of starch to reducing sugars/glucose ✓

A+non reducing sugar test

B+ Iodine solution

Omitted

B+non reducing sugar test

Substance N had an active substance/enzyme ✓
which catalysed the break down of substrate
in solution B / Non-reducing sugars ✓ into
reducing sugars/glucose ✓ 0.2 max

(c) Suggest the purpose of covering tubes A and B tightly with cork. (02marks)

Prevents entry of oxygen / creates an anaerobic
conditions ✓ which provides favourable condition
for proper functioning of active substance/
enzymes in N ✓ 0.2

30

06

3. You are provided with specimen Q, R and S.

Examine the specimens R and S using a hand lens and answer the questions that follow.

a) Describe the arrangement of the florets of specimens;

(i) R (*Bidens pilosa*) (3marks)

Numerous florets, ✓ sessile florets, ✓ attached onto a flattened,
expanded apex peduncle, ✓ florets are surrounded by numerous
bracts / involucre bracts, ✓ at ~~periphery~~ ~~circular~~ / ring
~~latter~~ ✓ closely packed, ✓ Ray florets arranged at
periphery, ✓ in circular / ring pattern, ✓ at the centre, ✓
~~are~~ ~~not~~ 0.3 max

(ii) S (Bougainvilleae).

(3marks)

Three/5. It stalked/ sessile. It fused at the base. It forming a common main axis / peduncle. The pedicel of each floret is fused with the midrib of the bract.

02½

b) Open and observe one floret of specimen Q with a hand lens and State three descriptive features of parts of the floret : (6marks)

(i) Androecium

Four/4. It free stamens. It with large. It bilobed. It elongated/long. It ovoid shaped anthers. It attached to short. It thin. It fused with petals filaments.

03½ max

(ii) Gynoecium

Bilobed. It obliquely attached. It stigma to a broad base. It superior ovary. It by short. It thin. It style.

03.

(c) Make a longitudinal section through specimen ^R and make a slice from one side of the longitudinal section. Observe one slice of the specimen under medium power of a microscope (i) Describe the structures observed (03marks)

Hairy. It stigma attached into short styles. It tubular / Fused petals narrow at the base and broad at the top. It slender / elongated sepals. It closely packed. It on the apex of a peduncle. It by a single peduncle / bract. It elongated. It tapering. It at the base ovary.

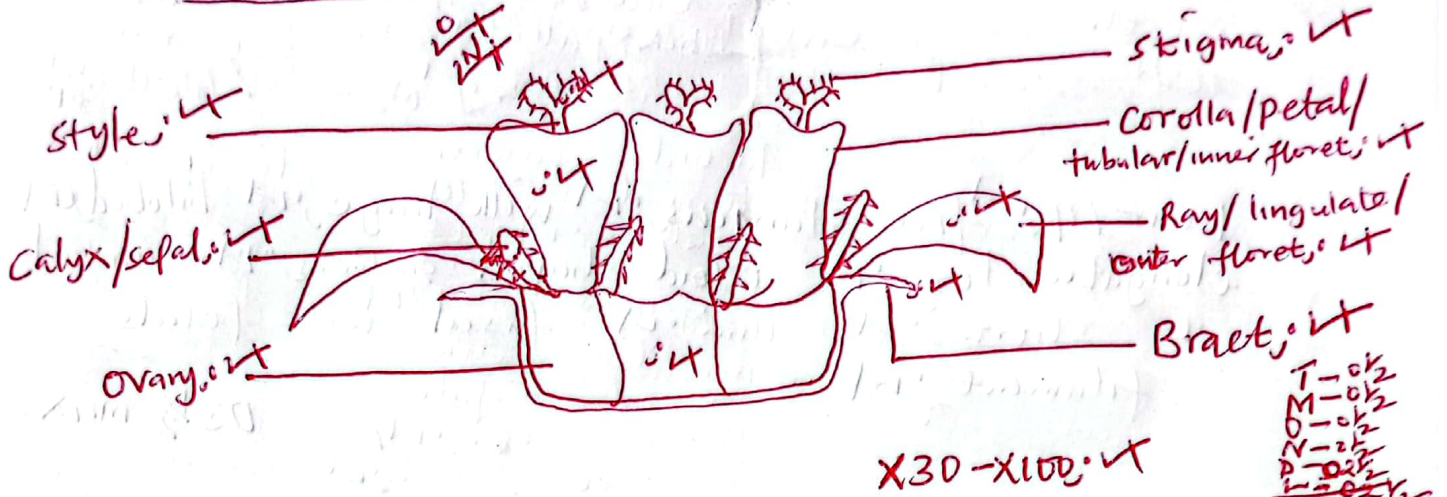
03 max

12

(ii) Draw and label the structures observed

(07marks)

A drawing of longitudinal section of specimen R observed under medium power of a microscope ✓



(d) Identify the type of pollinating agent of specimen R and explain how it is well adapted for the agent mentioned. (4marks)

Type of agent

Insect ✓

Adaptations

Hairy stigma for attachment of pollen grain ✓
 Divided stigma head increases surface area for trapping pollen grain ✓
 Closely packed florets to provide firm support to increase surface for landing of pollinators ✓
 Many florets to increase surface area for maximum exposure to the agents of pollination ✓
 Ray florets on the outside have large to be easily seen by the pollinators ✓

(e) Outline the structural difference between the florets of specimen Q and R (04marks)

Q (Lantana camara)	R (Biden's pilosa)
Bilobed stigma	Forked / Fused stigma ✓
Round ovary	Elongated ovary ✓
Longer style	shorter style ✓
Not hairy stigma	Hairy stigma ✓

END

30

15