WAKISSHA JOINT MOCK EXAMINATIONS
MARKING GUIDE
Uganda Certificate of Education
BIOLOGY PRACTICAL 553/2
July/August 2023

Group.
M R H S
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27/08/2023
G
45

1. (a)

TEXTURE	OBSERVATION	DEDUCATIONS	
A1	Slow/moderate/ slow bubbling/moderate effervescence; Acc. Froth	Slow/moderate breakdown/ decomposition of Q; Acc: Hydrogen peroxide'	(02)
A2	Moderate/ many bubbles of gas/ rapid effervescence; A lot of froth	Moderate/fast breakdown/decomposition of solution Q;	(02)
A3	Many/ very many gas bubbles/ rapid/ very rapid effervescence; Numerous froth.	Faster/ fast breakdown/ Decomposition of solution Q;	(02)
A4	No bubbles of gas/ no effervescence; No froth	No breakdown/ no decomposition of solution Q;	(02)
A5	Very few/ few bobbles/ very slow/ slow effervescence; little	Very slow/ slow breakdown/ decomposition of solution Q;	(02)

10

Group G1

(b) (i) A1 and A2
Few / moderate bubbling in A1 because the whole cube has a small surface area; hence few enzyme molecules were exposed to solution Q; whereas there was many bubbles of gas in A2 because cutting the cube into four pieces increased surface area; exposing more enzyme molecules to solution Q;

02

(02)

(ii) A3 and A4.
There was many/ very many bubbles of gas in A3 because favourable temperature cutting the cube into eight pieces greatly increased the surface area; therefore were exposed to solution Q, Whereas there was no bubbling in A4 because boiling the pieces of the cube; denatured the enzyme, molecules; High temp. denaturing enzyme

02

Surface area was same so difference was due to temp.

(02)

(iii) A3 and A5
Very many bubbles in A3 because cutting the cube into eight pieces greatly increased the surface area, exposing many enzyme molecules to solution; whereas very few bubbles in A5 because specimen B has a low concentration of enzyme/ active substance; which catalyses the breakdown / decomposition of solution Q;

02

Surface area

(02)

(c) Effective of surface area on enzyme activity;
Effect of boiling / excessive heat / very high temperature on enzyme activity;
Effect of enzyme concentration on enzyme activity;

03
~~(02)~~

19

523/45.

(d) Role of specimen A and B is to provide the enzyme / active substance;
Or
A and B are the sources of the enzyme / active substance;

TOTAL 20 MARKS

2. (a) - Vertebrae, Rej: Vertebra Acc. Vertebra bones (01)
Reasons
- Have neural spines;
- Have neural canals;
- Have natural arches;
- Have transverse processes;

(Any 02)

(Any 03)

(b)

Specimen	Part of the body	Reasons	
K	Neck/neck region;	Has vertebraterial canals; Has divided transverse processes	(02) Any 1
L	Abdominal region/ Lumbar region;	Has long transverse processes; Has a thick centrum;	(02) Any 1

(c)
- Has long, curved, transverse processes;
- Has a short, broad, neural spine;
- Has a thick centrum;
- Has a narrow neural canal;
- Has extra processes;

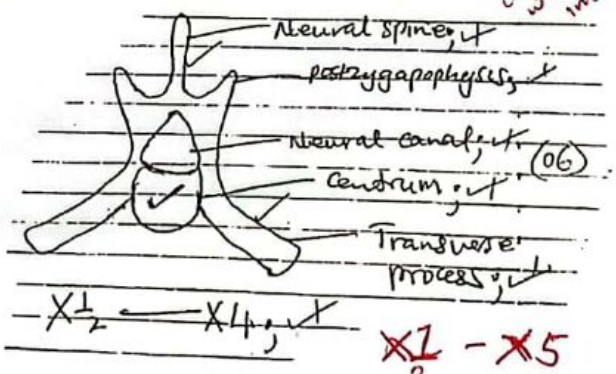
(Any 03)

(d)

Specimen K		Specimen L
• Short transverse processes	;	Long transverse processes
• Has vertebraterial canals	;	No vertebraterial canals
• Divided transverse processes	;	Transverse processes not divided
• Thin centrum	;	Thick centrum
• Wide neural canal	;	Narrow neural canal
• Transverse processes straight	;	Transfuse processes curved

Any 3 = (03 marks)

(e) Drawing of the anterior view of specimen L,



(06)

T - 01
D - 02
L - 02
M - 0½
A - 0½
N - 0½
07

20 marks

(a) Identify of R: Stem; Acc. Rhizome. **(01 mark)**

Observation features
- Has scale leaves ;
- Has nodes and internodes;
- Has buds;
- Has adventitious roots ;

Choose any two correct, underline any other correct.

Any 2 = (02 marks)

Identity of S: Bulb; Acc. Onion bulb. **01 mark**

Observation features
- Has thick fleshy leaves,
- Has a short stem with Adventitious roots; Scale leaves

Any 2 = (02 marks)

(b) Class monocotyledoneal; Liliopsida **(01 mark)**

Reasons
- Leaves have parallel venation; 1 leaf sheath
- Has fibrous root system; Any two

(02 marks)

(c) - Thin; dry; Parallel veined; scale leaves
- Thick; fleshy; succulent; Parallel veined; fleshy leaves

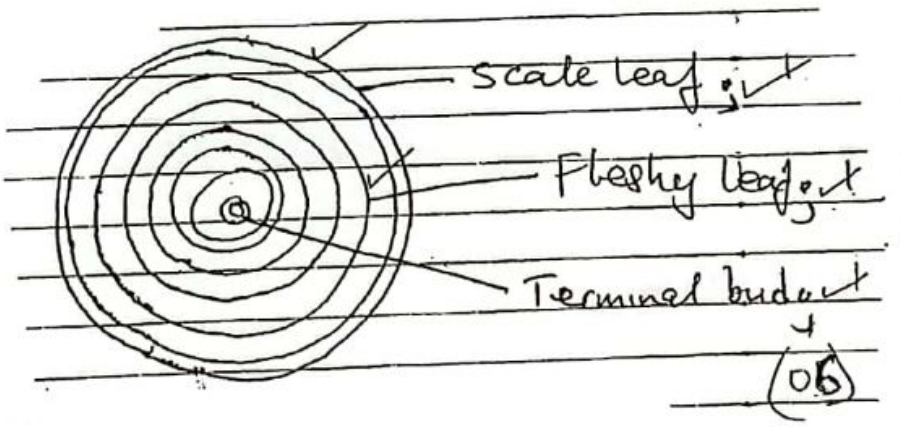
Thin scale leaves. Dry scale leaves. Thick fleshy leaves. **Any 6/2 = (03marks)**

Full mark for any 3 correct points.

(d) - R has buds for vegetative propagation;
- Has adventitious roots for absorption of nutrients/water and mineral salts / for anchorage;
- It is thick / swollen for storage of food;

Acc. ENABLE. **Any 2 = (02 marks)**

(e) Drawing of a transverse section of specimen S;



T – 01
D – 02
L – 01
M – 01
A – 0½
N - 0½

Wrong section drawn; cannot observable structures seen in transverse section.

Show where your come from by showing a tick or a cross.

Drawing points
- Scale leaf must be thin with continuous outline.
- Fleshy leaf

20 marks

END

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1. (a)

TESTS	OBSERVATIONS	DEDUCTIONS	
(i) To 1cm³ of solution D in a test tube; add 1/2/3 drops of Iodine solution;	Turbid solution; turns blue-black / black solution;	Starch Present;	(02½)
(ii) To 1cm³ solution D in a test tube; add 1cm³ of Benedicts solution; and boil;	Turbid solution; turns to blue solution; and remains blue solution;	Reducing sugars absent;	(03½)
(iii) To 1cm³ of solution D in a test tube; add 1cm³ of dilute hydrochloric acid; and boil; cool; then add 1cm³ of sodium hydroxide solution; followed by 1cm³ of Benedicts solution; and boil;	Turbid solution; turns to blue solution; to green solution; to yellow / brown precipitate;	Non-reducing sugars present;	~~(06)~~ 05½
(iv) To 1cm³ of solution D, add 1cm³ of Sodium hydroxide solution; followed by 1/2/3/4 drops; of Copper(II) Sulphate solution;	colourless solution; Turbid solutions, turns to purple solution;	Proteins present;	(03½)

~~20½~~ 20

(b) (i) Starch; Non-reducing sugars; Proteins; (01½)

(ii) - Starch from cassava / Maize / Rice (Owtte);
- Proteins from eggs / Ground nuts (Owtte);
- Non-reducing from sugarcane etc; 02½ ~~(01½)~~

(c) Starch/Non-reducing sugars – Marasmus;
Proteins – Kwashiorkor; (01½)

~~20~~ 01

~~20 MARKS~~ 20 marks

2. (a)
- Brightly coloured petals;
- Have superior ovaries;
- Large bilobed anthers;
- Free stamens;
- Separate sepals / free sepals;
- Smooth petals;
- Veined petals;

Any 3 = (03marks)

(b) (i) Specimen E

- Brightly coloured petals to attract pollinators; ✓
- Brightly coloured anthers to attract pollinators; ✓ Any 3
- Sticky stigma for pollen grains to stick on it; ✓
- Firm anthers to support weight of pollinators; | Firm filaments to support weight of pollinators

Any 3 x 1 = (03 marks)

(ii) Specimen F

- Brightly coloured petals to attract pollinators; ✓
- Nectar guides to guide insects to nectary gland; ✓ Any 3
- Sticky stigma for pollen grains to stick on it; ✓
- Large corolla to make it conspicuous for pollinators;
- Scented to attract pollinators;

(c) **Any 3 x 1 = (03 marks)**

	Specimen E (Cassia)		Specimen F (morning glory)
(i)	Free petals	; ✓	Fused petals
(ii)	Stamens not hairy ~~at base~~	; ✓	Stamens hairy at the base.
(iii)	Curved pistil	; ✓	Straight pistil
(iv)	Stamens of different sizes	; ✓	All stamens almost all of same size.
(v)	Unilobed stigma	;	Bilobed stigma
(vi)	Short style	;	Long style
(vii)	No nectar guides	;	Has nectar guides

Any 4

Short filaments Long filaments

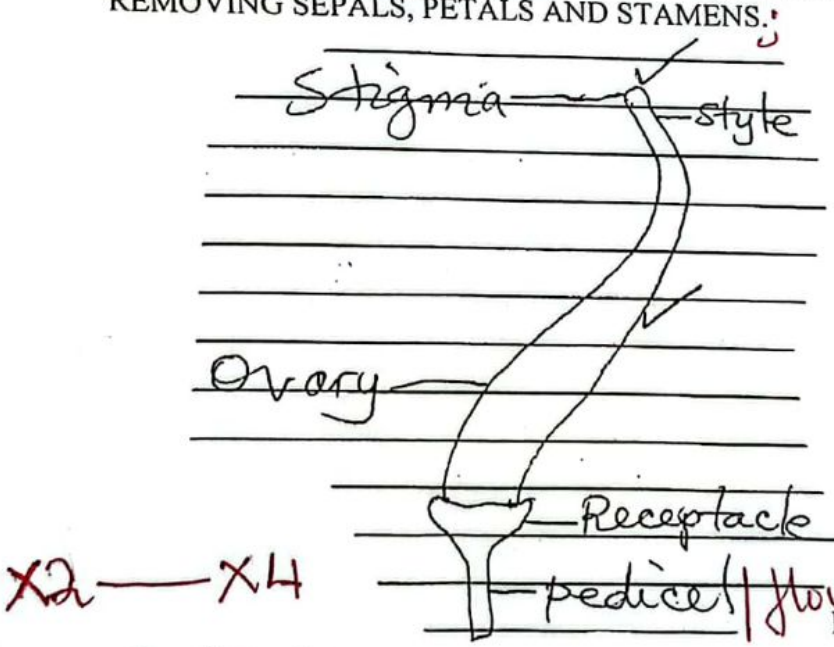
(d) Advantages of F over E; **(04 marks)**

F has broad corolla | large petals making it more conspicuous to the pollinators unlike specimen E whose corolla is small sized; ✓

03

(01 mark)

(e) DRAWING OF THE REMAINING PART OF SPECIMEN E AFTER REMOVING SEPALS, PETALS AND STAMENS.



T – 0½
D – 02
L – 02
M - 0½
A - ½
N - ½

X2 — X4

06

Labelling = Any $\frac{4}{2}$ = 02 marks

Drawing points;

- Elongated curved ovary
- Unilobed stigma

20 marks

(a) Exoskeleton;(S)
- Jointed legs / appendages;
- Segmented bodies;
Accept segmented body

03

(03marks)

(b)

	Specimen U (Tick)		Specimen V (Cockroach)
(i)	Two main body parts	;	Three main body parts.
(ii)	4 pairs of legs	;	3 pairs of legs
(iii)	No wings	;	Has wings
(iv)	No antennae	;	Has antennae
(v)	No eyes	;	Has eyes
(vi)	Has chelicerae	;	No chelicerae
(vii)	Has pedipalps	;	No pedipalps

Any 3

Has no compound eyes Has compound eyes

Any 3 x 1 = (03 marks)

(c)
- Thick exoskeleton for protection;
- Dull coloured body for camouflage;
- Has chelicerae for attachment / sucking fluids;
- Dorsal-ventrally flattened body to hide on animal's body;
- Jointed legs for easy locomotion; Jointed legs for flexability during locomotion

Any3

Any 3 x 1 = (03 marks)

(d) DICHOTOMOUS KEY

1 a) With wings ..... go to 2.
1 b) Without wings..... go to 3,

2 a) With mandibles..... V.
2 b) with a proboscis..... X,

03

(03 marks)

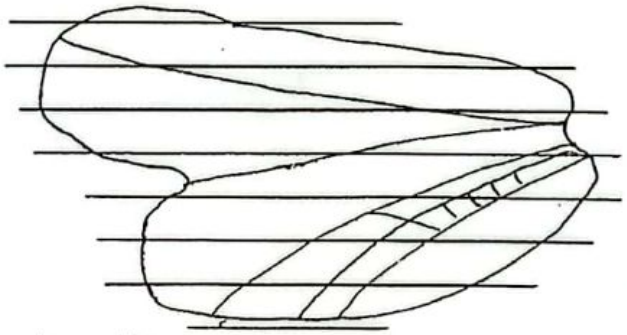
3 a) With 3 pairs of limbs..... W.
3 b) With 4 pairs of limbs..... U,

(e) X has wings which enable it to fly and can easily escape predation unlike specimen W which lacks wings;

07

(01 mark)

(f) DRAWING SHOWING AN INNER WING OF SPECIMEN V.



T – 01
D – 03
M - 01
A - 01
N - 01

07

Drawing points;
- Narrowing towards point of attachment
- Any complete vein.
- Notch

Any 3 = 2marks

X1 — X3

20

~~4marks~~
~~20 marks~~

END