

553/2

Biology practical

Paper 2



July - August 2018

UGANDA MUSLIM TEACHERS' ASSOCIATION

UMTA JOINT MOCK EXAMINATIONS - 2018

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INDEX NO.....SIGNATURE.....

UGANDA CERTIFICATE OF EDUCATION

BIOLOGY PRACTICAL

PAPER 2

2 HOURS

Instructions to Candidates

- Answer all questions.
- Answers must be written in the spaces provided.
- Use sharp pencils for your drawings.
- coloured pencils or ink must not be used
- Additional pages must not be inserted.

Question	Marks
1	
2	
3	
Total	

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1. You are provided with solutions dilute hydrochloric acid, dilute sodium hydroxide solution and distilled water. You are also provided with five pieces of liver, boil one piece for 5 minutes. Carry out the following test using liver and the solutions provided.

Record your observation and deductions in the table below. (12 marks)

a)

Tests	Observations	Deductions
i) To 3cm ³ of solution X add a piece of un boiled liver.		
ii) To 3 cm of solution X add 1cm ³ of dilute hydrochloric acid followed by a piece of un boiled liver.		
iii) To 3cm of solution X add 1cm ³ of dilute sodium hydroxide solution followed by a piece of un boiled liver.		
iv) To 3cm of solution X add 1cm ³ of distilled water followed by a piece of un boiled liver.		
v) To 3cm of solution X add a piece of boiled liver.		
vi) to 3cm of distilled water add a piece of un boiled liver.		

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b) (i) What is the nature of solution X

(01 mark)

(ii) Explain your results in tests (ii), (iii), (iv) and (vi) (06 marks)

c) State the properties of the active ingredient in the liver. (02 marks)

2. You are provided with specimens B, C and D which are animals.

(a) State the phylum and class to which they belong. Give two reasons for phylum and class (06 marks) given.

Phylum....

Reasons.....

Class....

Reasons.....

@

b) Examine specimens C and D using a hand lens where necessary, and describe three structural differences between the specimens. (03 marks)

c) (i) Describe the wings of specimen B (02 Marks)

(ii) How are the wings of specimen B adapted to their functions? (02 marks)

d) Cut off the wings of specimen B as close to the body as possible. Draw and label the dorsal view of the thorax with the right hand leg

(07 marks)

3. You are provided with specimens K, L and M. which are plant parts. Cut transverse sections of specimens K and L.

a) (i) Identify the plant part to which all the specimens belong. Give two reasons for your (03 marks) answer

Identity

Reasons

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ii) State four structural differences between specimens K and L. (04 Marks)

Specimen K	Specimen L

b) Using observable features, describe how each specimen is dispersed. (06 marks)

i) Specimen K

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ii) Specimen L

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iii) Specimen M

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c) Draw and label the mesocarp and internal structures inside it of specimen L (07 marks)

UMTA MOCA EXAMINATIONS 2018

O-Level P553/2

Requirements for each candidate.

1. Specimens
- B - cockroach
 - C - House fly
 - D - solder termite
 - K - mango fruit
 - L - orange fruit
 - M - Castor oil fruit / Thorn apple
(Datura spp)

NB: All specimens must be mature.

2. SOLUTIONS: 25ml W - Hydrogen Peroxide (4V)
15ml of 2M NaOH
15ml of 2M HCl.
15ml of distilled water
3. Liver : 6 pieces of liver
(0.5x0.5x0.5) each piece.
4. Heat source.
5. 6 test-tubes.



(a) Tests	Observations	Deductions	02
(i)	Effervescence / bubbles of gas produced ✓	Active ingredient in liver catalysed; decomposition of X ; ✓ acc. breakdown of W	02
(ii)	No effervescence / gas bubbles; produced	No decomposition / breakdown of X ; by active ingredient in liver; ✓	02
(iii)	Effervescence / gas bubbles; produced acc. many bubbles / rapid effervescence	Active ingredient; in liver decomposes X ; ✓ acc. rapidly	02
(iv)	Effervescence / gas bubbles produced; ✓ acc. Very many gas bubbles	Active ingredient in liver decomposed X ; ✓ acc. very rapidly	02
(v)	No effervescence / gas bubbles produced; ✓	No decomposition of X ; by active substance; in liver ✓	02
(vi)	No effervescence / gas bubbles produced	No decomposition of water; by active ingredient; in liver	02

(b)(i) Hydrogen peroxide; ✓ 01 mark

(ii) - In test (ii) solution x is not decomposed / broken down by active ingredient in liver; ✓
base acid medium is not suitable; ✓

- In test (iii) x is decomposed by Active ingredient in liver; ✓ base alkaline ✓
and neutral; media are suitable; for the active ingredient. ✓ (06 marks)

- No decomposition of water; because it is not a ^{suitable} substrate for the active ingredient; ✓

(c) → Specific in action; ✓

→ Works better in Alkaline / ~~acid~~ neutral; ✓

pH OR. Does not work in acidic pH; ✓ (07 marks)

→ Denatured / destroyed by high temp / boiling

Max 21 marks

22

2 (a) ~~Q~~ Phylum - Arthropoda

- Reasons - Have exoskeleton; (03 mks)
- Have segmented body;
- Jointed legs / limbs / appendage
any 2

- Class - Insecta
- Rej - insect
- insector
- insecter
- insecte

- Reasons - Have 3 main body parts / (03 mks)

Head, thorax & abdomen / 3 body divisions

- 3 pairs of / 6 legs;
- 3 thoracic segments; any 2
- Rej 3 body parts



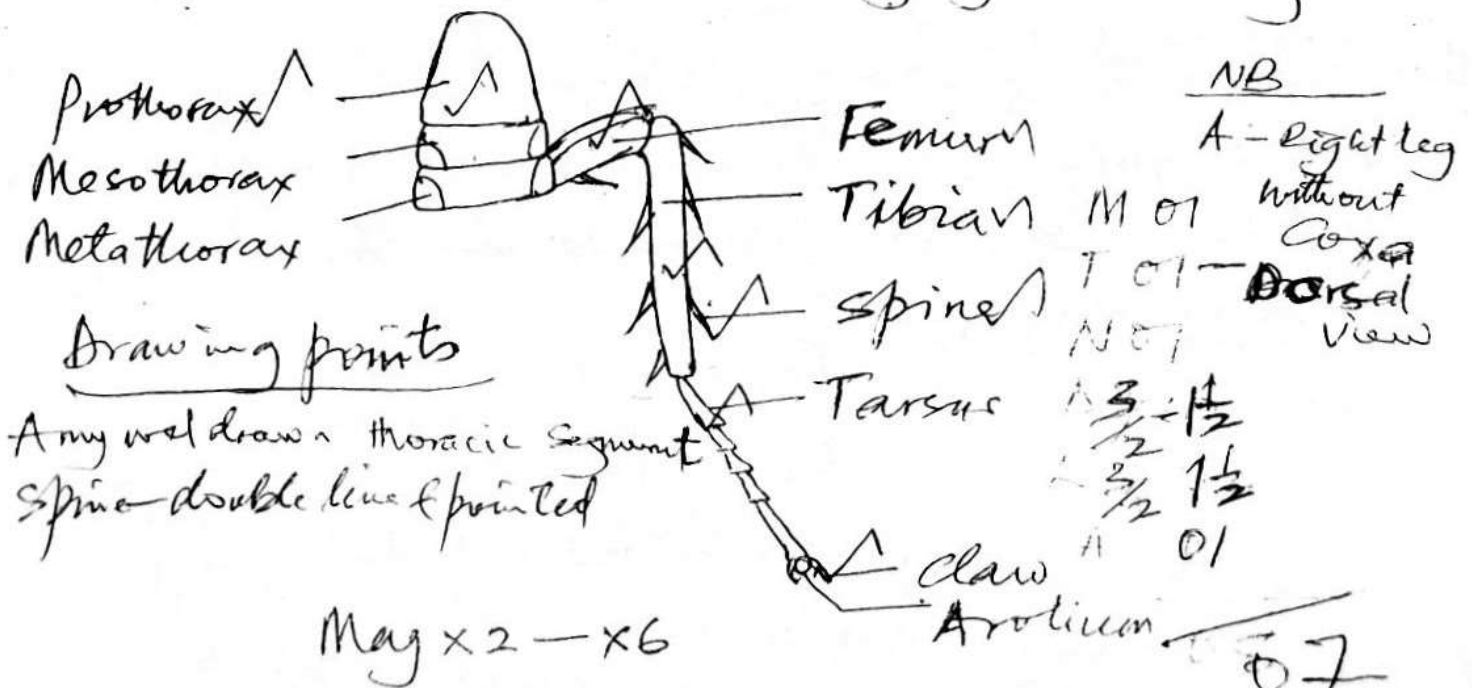
(b)

Specimen C (Housefly)	Specimen D (Soldier termite)
- Hairy body surface	Smooth ^{not hairy} body surface (03 mks)
- Has proboscis expanded at the tip membranous / veined	A pair / pointed / sharp mandibles
- A pair of wings	Has no wings / Rej - does not have
- A pair of halteres	Rej - Has no membranous wings / No halteres / It does not
- ^{large} A pair of compound eyes	No compound eyes
	Acc. has no eye

- c) (i) - Two pairs of wings;
 - A pair of hard outer wings;
 - A pair of membranous inner wings;
 - Veined wings / with or have veins; (0.2 mks)
 - Dull coloured wings; Key - dull wings
 any 2 - brown wings
 - dark wings
 - black wings

- (ii) - Hard outer wings for protection;
 Inner Membranous wings for flight;
 - Have veins for strengthening wings / for air circulation;
 - Dull coloured for camouflage; (0.2 mks)
 any 2

(d) Drawing of the dorsal view of the thorax of Specimen B with the right hand leg.
 Acc. any right hand leg.



3. (a)(i) identity : - Fruit ; Acc fruits

Reasons : - Have 2 scars ; (03 marks)
 - Have pericarp ;

(ii) Differences in structure:



specimen K (mango)	specimen L (orange)
One seed	many seeds thick

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- Thick mesocarp	- Thin mesocarp
- Big seed	- small seeds *
- One locule / no septum	- many locules / many septa of fine
- No succulent hairs / juicy hairs	- Has juicy / succulent hairs
- No Citric acid glands	- Has citric acid glands
- No Septum	- Has septum any 4
- Thin endocarp	- Thick endocarp

(b) Dispersal
 specimen K: ^{apical surface}
 Has brightly coloured, fleshy ^{the fleshy part} which attracts animals to feed on it, then the seeds ~~are~~ thrown away elsewhere; ✓
 Rej - eat it.
 Rej - brightly coloured above

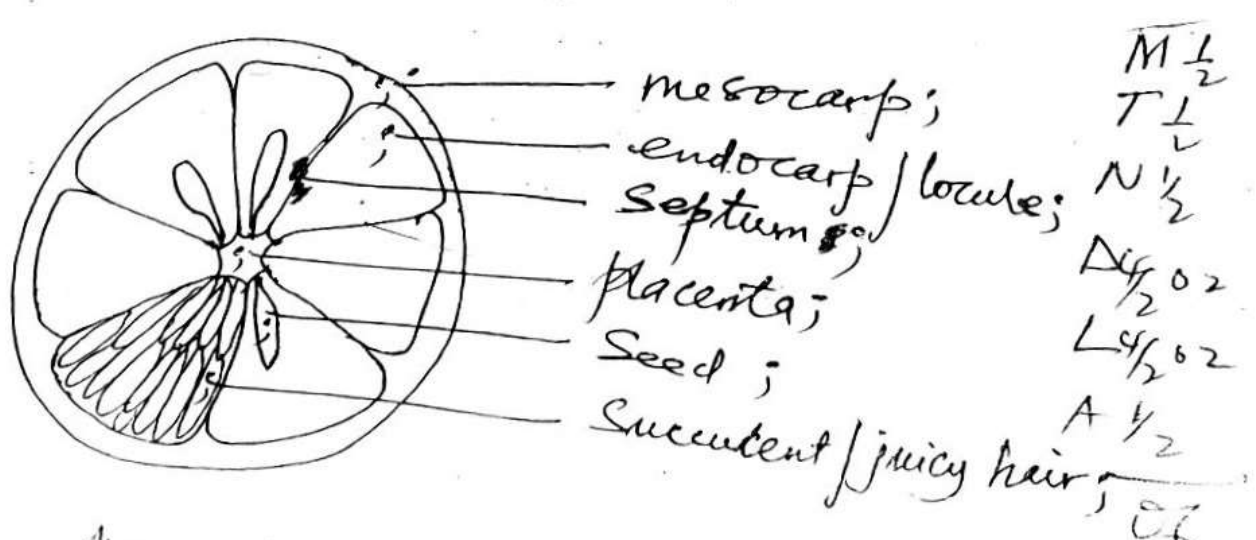
specimen L; epicarp / surface

- Has brightly coloured / fleshy that attracts animal to feed on it; then seeds are 0 2 thrown away elsewhere; ✓

* specimen M;

Has sutures / lines of weakness along which it splits open; to release / scatter seeds; 0 2 ✓
When mature & dry

⊙ Drawing of cross / transverse section of specimen L showing the mesocarp and structures inside.



Mag - x 1/2 - x 3

NB. - If epicarp drawn & labelled, all marks are lost; except title & neatness;
- If epicarp drawn & not labelled give correct labels;
* Title & neatness
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