553/2

Biology practical

Paper 2

July - August 2018

UGANDA MUSLIM TEACHERS' ASSOCIATION

UMTA JOINT MOCK EXAMINATIONS – 2018

NAME.....

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	

1. You are provided with solutions **X**, 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^3 of solution **X** add $1cm^3$ of dilute hydrochloric acid followed by a piece of un boiled liver.		
iii) To $3cm^3$ of solution **X** add $1cm^3$ of dilute sodium hydroxide solution followed by a piece of un boiled liver.		
iv) To $3cm^3$ of solution **X** add $1cm^3$ of distilled water followed by a piece of un boiled liver.		
v) To $3cm^3$ of solution **X** add a piece of boiled liver.		
vi) to $3cm^3$ of distilled water add a piece of un boiled liver.		

b) (i) What is the nature of solution **X** (01 mark)

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

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

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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 given. (06 marks)

Phylum.....

Reasons.....

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Class.....

Reasons.....

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

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

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

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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 answer **(03 marks)**

Identity

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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)

END

UMTA MOCK EXAMINATIONS 2018.

O-Level P553/2

Requirements for each candidate.

1. Specimens B - cockroach
C - Horse fly
D - solder termite
K - Mango fruit
L - Orange fruit
M - Castor oil fruit / Thorn apple (Datura ssp)

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.

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(a)

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

(b)(i) Hydrogen peroxide ; 01 mk

(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)(iv) X is decomposed by Active ingredient in liver ; Base alkaline and neutral; mediums are suitable ; for the active ingredient. (06 MKS)

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

(c) → Specific in action ;
→ Works better in Alkaline / neutral pH or. Does not work in acidic pH ; (01 MKS)
→ Denatured / destroyed by high temp / boiling

Max 21 marks

22

2 (a) phylum — Arthropoda

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

- Class — Insecta Rej — insect
  — insector
  — inseeter
  — insects

- Reasons — Have 3 main body parts / (03mks)
  Head, thorax & abdomen / 3 body divisions
  — 3 pairs of / 6 legs;
  — 3 thoracic segments; any 2
  Rej 3 body parts

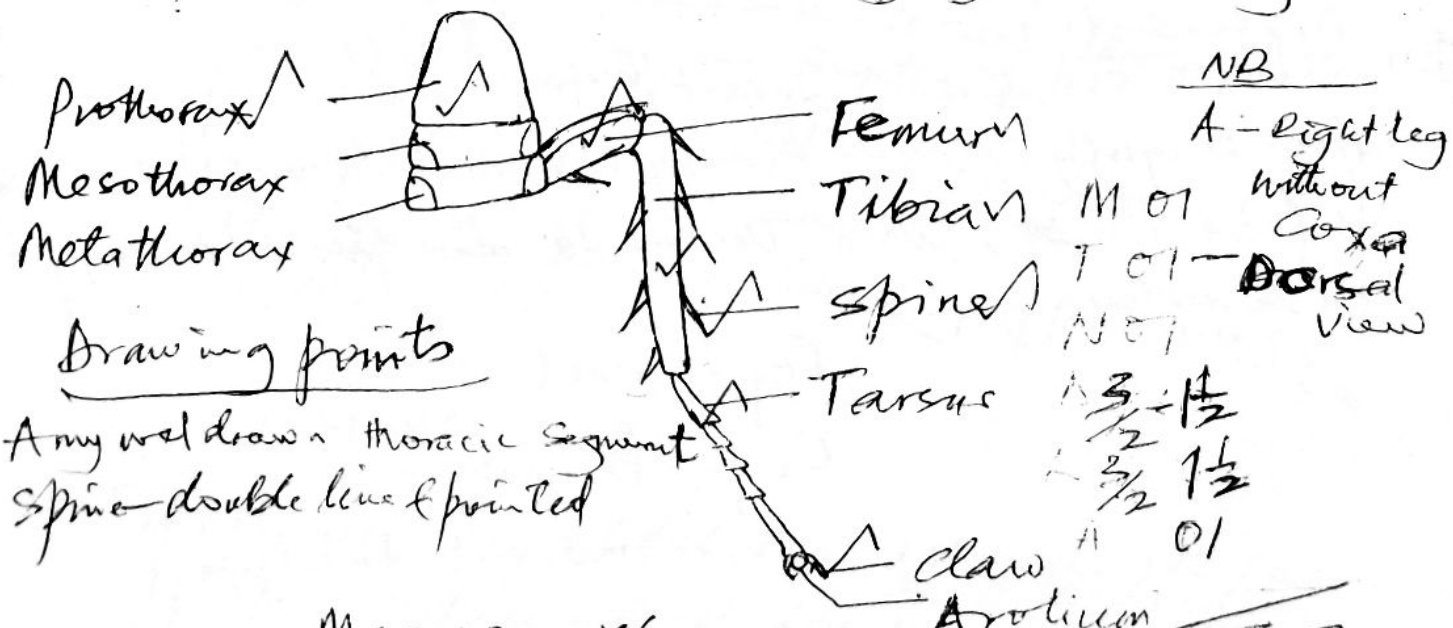
(b)

Specimen C (Housefly)	Specimen D Cockroach
- Hairy body surface	not hairy Smooth body surface (03mks
- Has proboscis expanded at the tip	A pair / pointed / sharp mandibles
- A pair / of wings membranous / veined.	Has no wings / Rej - does not have
- A pair of halteres	Rej - Has no membranous wings / Has no halteres / simple
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;
– Dull coloured wings; Rej – dull wings
– brown wings
– dark wings
– black wings
any 2 (02 MKS)

(ii) – Hard outer wings for protection;
Inner Membranous wings for flight;
– Have veins for strengthening wings / for air circulation;
– Dull coloured for camouflage;
any 2 (02 MKS)

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



NB
A – Right leg without Coxa
T 01 – Dorsal view
M 01
F 01
A 01
A 3/2 – 1½
3/2 1½

Drawing points
Any well drawn thoracic segment
Spine – double line & pointed

Mag x2 – x6

07

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

Reasons :- Have 2 scars ; (03 mks)

- Have pericarp ;

(ii) Differences in structure :

Specimen K (mango)	Specimen L (orange)
- One seed	- many seeds
- Hard / woody endocarp	- fleshy / juicy endocarp
- Thick mesocarp	- Thin mesocarp
- Big seed	- small seeds
- One locule / no septum	- many locules / many septa
- No succulent hairs / juicy hairs	- Has juicy / succulent hairs
- NO citric acid glands	- Has citric acid glands
- NO septum	- Has septa any 4

(b) Dispersal

Specimen K : Has brightly coloured fleshy which attracts animals to feed on the fleshy fruit ; when the seeds are thrown away / dispersed elsewhere ; ✓

Rej - eat it.

Rej - brightly coloured alone without feature.

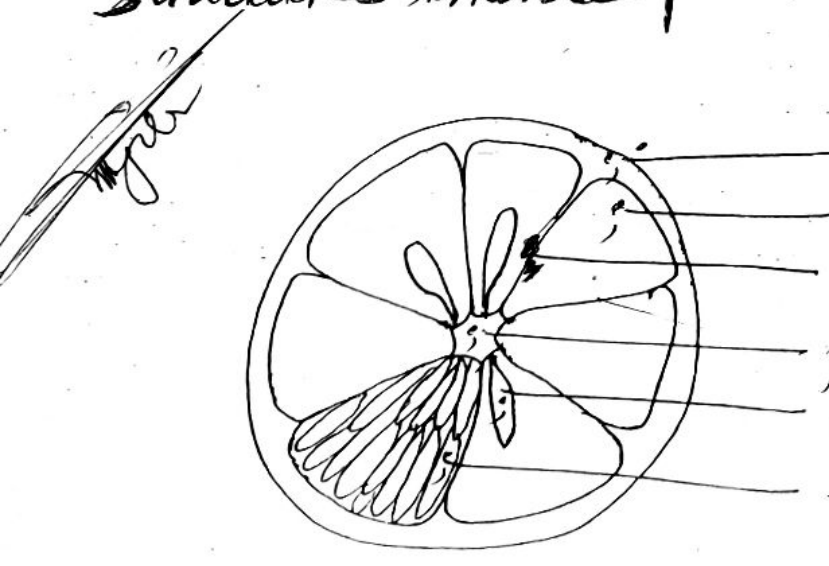
Specimen L;

- Has brightly coloured epicarp/surface 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; 02 When mature & dry

(c) Drawing of cross/transverse section of specimen L showing the mesocarp and structures inside.



M ½
T ½
N ½
Dia ½ 02
L ½ 02
A ½
06

Mag - x ½ - x 3

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