

TANZANIA UNIONS OF ISLAMIC SCHOOLS COUNCIL
FORM SIX INTER ISLAMIC MOCK EXAMINATION

133/3

BIOLOGY 3

(ACTUAL PRACTICAL)

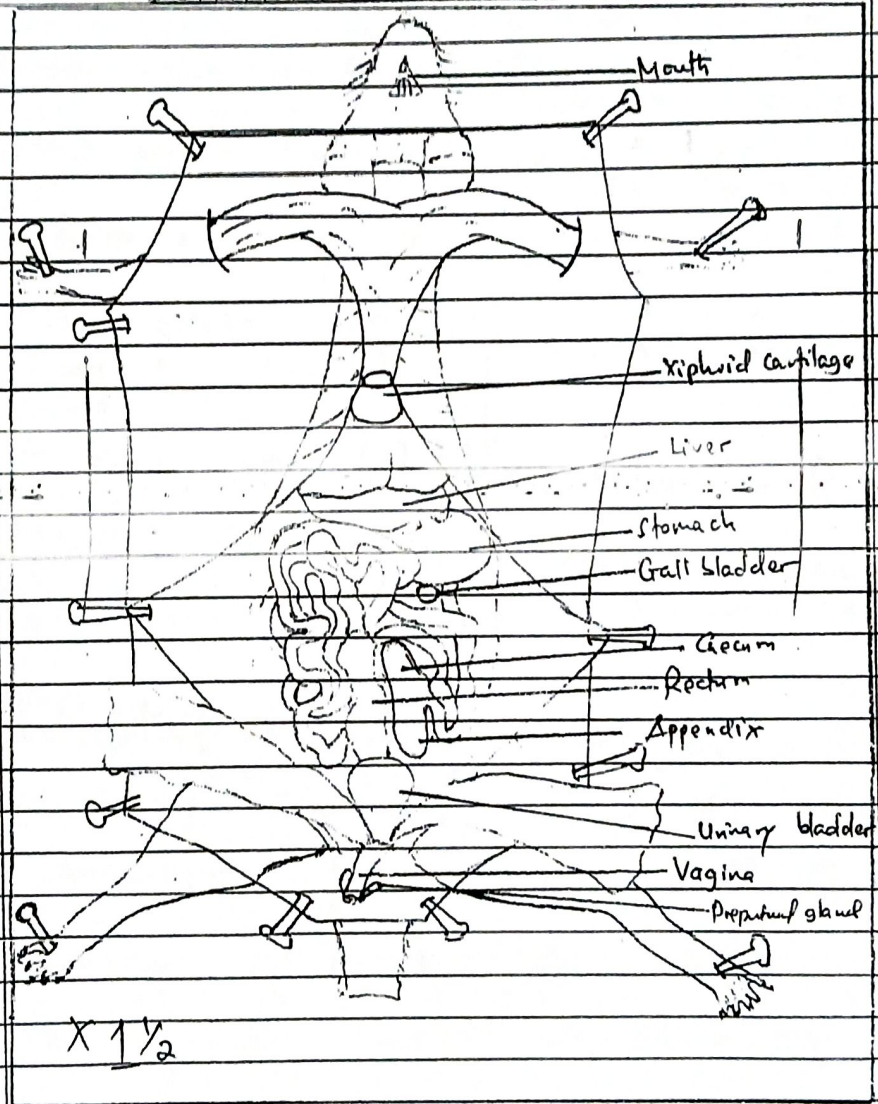
(For both school and private candidates)

MARKING SCHEME

2005

1	(a)
---	-----

A DIAGRAM OF DISSECTED SPECIMEN S1
DISPLAYING THE VISCERA IN SITU



Magnif = 01 mark

CA = 61 mark

$C_D = 0.1 \text{ m/s}$

$$CL = \text{any 10 part/label @}$$
$$00\frac{1}{2} \text{ mark}$$

$$= 05 \text{ mark}$$

08 marle

(01)

(b) (i) Associated organs of digestive system of the specimen Σ_1

- Pancreas
- Liver.

any 2 points $\frac{1}{2}$ marks

(ii) - Digestive role of the pancreas

- Production of enzymes such as pancreatic amylase, lipase and protease, which are used in digestion of starch, lipids and proteins respectively.

20 marks

- Digestive role of the liver.

- Secretion of bile used in digestion of lipids.
- Production of bile salts which creates the basic media for enzymes to work.

20 marks

(iii) Adaptation of the pancreas

- Presence of pancreatic duct for passage of enzymes for digestion to the duodenum.
- Secretion of inactive form of enzymes to avoid self digestion of secreting cells.

20 marks

Adaptation of the liver

- Presence of gall bladder for storage of the bile juice.
- Presence of bile duct for the passage of bile juice to the duodenum.

20 marks

1

- ⑥ ④ Adaptation of Pancreas for sugar regulation.
- Presence of Islet of Langerhans which secretes insulin and glucagon hormones used for the conversion of sugar (regulation).

Adaptation of the liver for sugar digestion.

- Presence of special cells that convert sugars into usable or stored form.
- Ability to store excess sugars.

2. @ Procedures of Preparing food solution.

Solution E_1 .

- Specimen E_1 was peeled to remove the outer cover and cut into small pieces.
- The peeled specimen E_1 was put in a mortar and ground by using pestle to obtain the paste.
- The paste was put in a beaker, then 30ml of water were added and stirred.
- The mixture was filtered using sieve to obtain clear solution of E_2 .

Solution E_2 .

- Specimen E_2 was put in a mortar and ground by using pestle.
- 30ml of water was then added to and sieved to obtain solution E_2 .

(03) any 2 points @ 1 mark = 0 marks

2 (b) Food test report.

Test for	Procedures	Observation	Inference
Starch	2cm³ of the solution E₁ and E₂ was put into a dry and clean separate test tubes. - Three drops of iodine solution were added in each solution and shaken well. only 1/2 mark	Blue black colour was observed in mixture of solution E₁ while the mixture of solution E₂ retained the brown colour of iodine solution. only 1/2 mark	Starch Present in solution E₁ and absent in solution E₂ only 1/2 mark
Reducing Sugar	2cm³ of the solution E₁ and E₂ was put into a dry and clean separate test tubes. - Then 2cm³ of Benedict's solution were added in each test tube and the mixtures heated to boil. only 1/2 mark	The mixture of both solution E₁ and E₂ retained the blue colour of Benedict's solution. only 1/2 marks	Reducing Sugar absent in both solution E₁ and E₂ only 1/2 marks
Non-reducing Sugar	2cm³ of the solution E₁ and E₂ were put in a separate clean dry test tubes and 1cm³ of dilute HCl was added in both solutions and boiled then left to cool. only 1/2 mark - 1cm³ of sodium hydroxide was added followed by 2cm³ of Benedict's solution and both mixtures	The mixture of both solution E₁ and E₂ retained the blue colour of Benedict's solution. only 1/2 mark	Non-reducing Sugar absent in both solutions. only 1/2 marks

Test for	Procedures	Observations	Inferences
Proteins	2 cm³ of the solution E₁ and E₂ was put into separate dry clean test tubes. 2 cm³ of sodium hydroxide solution were added in each test tube followed by 3 drops of 1% copper (II) sulphate solution in each solution.	The mixture of both solution E₁ and E₂ retained the blue colour of Copper (II) Sulphate solution.	Proteins absent in both solution E₁ and E₂ 0 1/2 marks

Lipids	2 cm³ of solution E₁ and E₂ was put in separate dry and clean test tubes. 3 drops of Sudan (III) solution were added in each test tube and the mixtures were thoroughly shaken and left to settle.	The mixture of solution E₁ retained red colour of Sudan III solution. while the mixture of solution E₂ form red ring on top	Lipid was absent in solution E₁ and present in solution E₂. 0 1/2 marks
--------	---	---	---

2 (C) (i) End products of food digestion.

Food substance Identified	End product of its digestion.
Starch	Glucose
Lipids	fatty acids and glycerol

any 2 points @ $\frac{1}{2}$ mark = 01

(ii) Parts of the body for the storage of excess food identified.

Food substance	Parts stored.
Starch	Liver and muscles
Lipids	Adipose tissues.

any 2 points @ $\frac{1}{2}$ mark = 01 max

(iii) Functions of each food identified

Starch

- Used to provide energy to the body

Lipids

- Acts as a shock absorber around delicate organs.

- Provide the insulation to prevent heat loss

- Speed up transmission of nerve impulse.

any 2 points @ $\frac{1}{2}$ mark

= 01 max

2 Q(iv) Enzymes responsible for the digestion of identified food substances.

Food	Part of alimentary canal	Enzyme
Starch	mouth	Salivary amylase
	Duodenum	Pancreatic amylase
	Ileum	Maltase
Lipids	Duodenum	Pancreatic lipase

02

any 2 enzyme @ 00 1/2 marks = 01 mark
 (ii) Ileum - responsible for absorption of end products - 00 1/2 marks

3 Q(i) L = Bean seed 00 1/2 marks M = Breadmould 00 1/2 marks

01 mark

(ii) Specimen L

Kingdom	Phylum/division	Class
Plantae	Angiospermophyta	Dicotyledonae

@ 00 1/2 marks = 01 1/2 marks

01 1/2

(iii) Specimen M belongs to phylum Zygomycota which have the following features.

- They produce sexual spores called Zygospores
- They are eukaryotic organisms with aseptate hyphae with well branching mycelia.
- They undergo both sexual and asexual reproduction.

01 mark

- They are saprophytes, they feed on decaying organic matter.

Any 3 points @ 1 = 03 marks

03

3 (b) (i) Specimen X is Earthworm. 00½ marks / 0.4

(ii) Adaptations of Earthworm

- Have ideal shape with chaetae for burrowing
- Have gizzard for breaking up plant tissue
- Have Clitellum which holds together Earthworms during copulation
- Secrete mucus which help to bind the walls of burrows and help them to pass through smoothly.
- Their haemoglobin has high affinity to oxygen.
- They have chaetae that are used for movement.

Any four (4) points @ 01 = 04 marks / 0.4

(iii) Importance of specimen X in agriculture

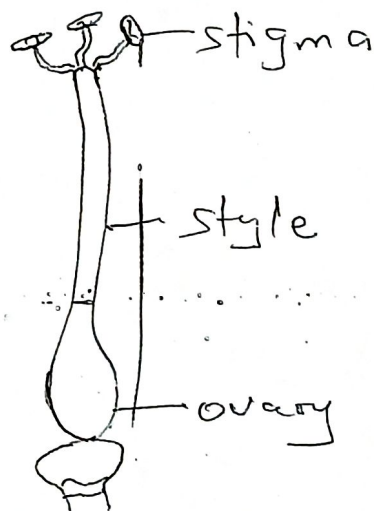
- They improve soil aeration, drainage and increase depth of the soil through burrowing and mixing of the soil layers.
- They help in nutrient circulation in the soil since they feed on decaying organic matter

Any two (2) points @ 01 = 02 marks / 0.2

3 (c) (i) Biological name for the remaining part = Carpel or gynoecium.
01 marks

(ii) - Self pollination 00½ marks
- Because all the reproductive parts are enclosed within the same flower.
00½ marks

(iii) THE STRUCTURE OF CARPEL / GYNOECIUM



Caption = 00½ marks
Diagram = 00½ marks

Labelling any ~~three~~ @ 00½ = ~~01½~~ marks 01
2'e

Time (22½) 02 min