THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
DIPLOMA IN SECONDARY EDUCATTION EXAMINATION

733/2A **BIOLOGY 2A**

(ACTUAL PRACTICAL A)

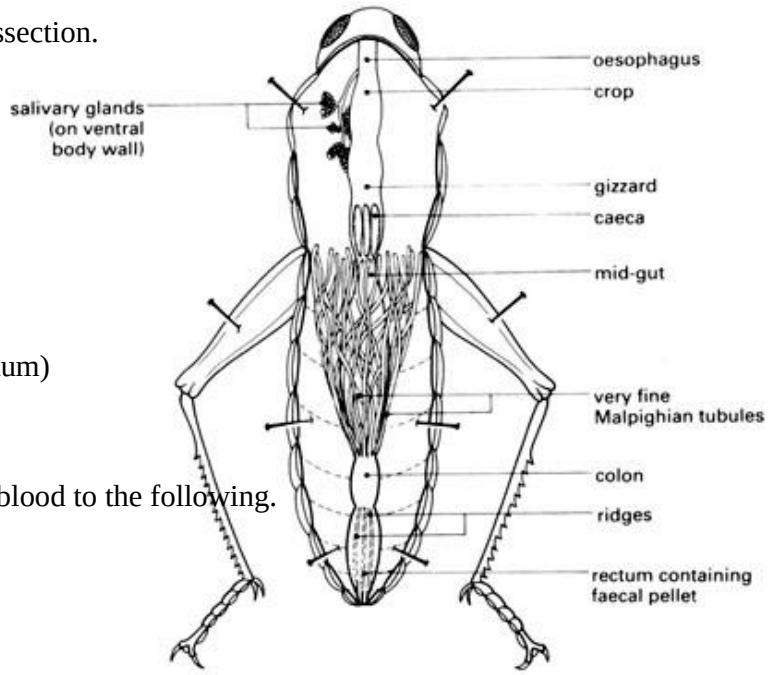
Time: 3 Hours **ANSWERS** **Tuesday, 14th May 2013**

Instructions.

1. This paper consists of **three (3)** questions.
2. Answer **all** questions
3. Question number 1 carries 40 marks and the rest carry 30 marks.
4. Cellular phones are **note** allowed in the examination room.
5. Write your **examination Number** on every page of your answer booklet(s).

1. Open the abdominal cavity of specimen H in the usual way to display the arterial system.

(a) Draw a neat well labelled diagram of your dissection.



Answer:
Your diagram should show:

- Heart
- Pulmocutaneous artery (to lungs and skin)
- Carotid artery (to head)
- Subclavian artery (to neck and arms)
- Renal artery (to kidney)
- Coeliacomesenteric artery (to intestine and rectum)
- Iliac arteries (to hind limbs)

(b) Name the parts responsible for the supply of blood to the following.

Answer:
(i) Lungs — Pulmocutaneous artery
(ii) Head — Carotid artery
(iii) Neck and arms — Subclavian artery
(iv) Kidney — Renal artery
(v) Intestine and rectum — Coeliacomesenteric artery
(vi) Hind limbs — Iliac arteries

(c) Name the contents of the blood carried to the body parts listed in 1(b) above.

Answer:

- Oxygen
- Nutrients (like glucose, amino acids, lipids)
- Hormones
- Mineral salts
- Little urea (before reaching kidneys)

(d) Leave your dissection properly displayed for assessment.

2. A Biology student at Napanamba Secondary School prepared solutions containing food substances. Unfortunately the solutions were wrongly labelled as follows:
Solution A Glucose
Solution B Sucrose
Solution C Protein

(a) Use the chemicals and reagents provided to identify the food substances present in solution A, B and C. Tabulate your work as shown in the following Table:

FOOD TESTED	PROCEDURE	OBSERVATION	INFERENCE
Solution A	Add Benedict's solution, heat in water bath	Green/yellow/orange precipitate forms	Reducing sugar (glucose) present
Solution B	Add dilute HCl, boil, cool, add sodium hydrogen carbonate to neutralize, then add Benedict's solution and heat	Colour changes to brick-red precipitate	Non-reducing sugar (sucrose) present
Solution C	Add Biuret solution	Violet/purple colour appears	Protein present

(b) (i) Among the food substances identified in (a) above, which one reduces copper II ions into copper I oxide.

Answer: Glucose (Solution A)

(ii) Briefly provide its general characteristics.

Answer:

- Sweet tasting
- Soluble in water
- Reducing sugar
- Monosaccharide

(iii) Identify the main components which constitute the food substance.

Answer:
Carbon, Hydrogen, and Oxygen

(iv) Write its general formula.

Answer:
$C_6H_{12}O_6$

(v) Suggest the source where the food substance was extracted.

Answer:
Honey, ripe banana, or orange juice

(c) (i) Name the food substance identified in (a) which is a major component of cell wall of herbaceous plants.

Answer:
Cellulose (though not tested in your table — but associated with plants' structure)

(ii) State four roles of the food substance in the body.

Answer:

1. Adds bulk to food for easy movement in the alimentary canal.
2. Prevents constipation.
3. Aids in bowel regulation.
4. Helps prevent colon diseases like cancer.

3. Study specimen X, Y and Z.

(a) Write the common names of specimen X, Y and Z.

Answer:
X: Earthworm
Y: Grasshopper
Z: Fern

(b) Classify specimen X, Y and Z to the class level.

Answer:
X: Class Oligochaeta
Y: Class Insecta
Z: Division Pteridophyta

(c) Outline three economic importance of specimen Y.

Answer:

1. Acts as a pest on crops causing significant agricultural losses.
2. Source of food to birds and reptiles.
3. Used in biological research and insect control studies.

(d) State the habitat for specimen X.

Answer:
Moist soil rich in organic matter.

(e) What observable features can you use to place specimen Z into its respective division?

Answer:

1. Presence of fronds (large divided leaves)
2. Produces spores on the underside of leaves
3. Lacks flowers and seeds
4. Vascular tissue (xylem and phloem) present

(f) Make a neat, well labelled diagram of specimen Z.

- Frond
- Petiole (leaf stalk)
- Rhizome
- Spores on underside of frond