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** **Monday, 13th May 2015**

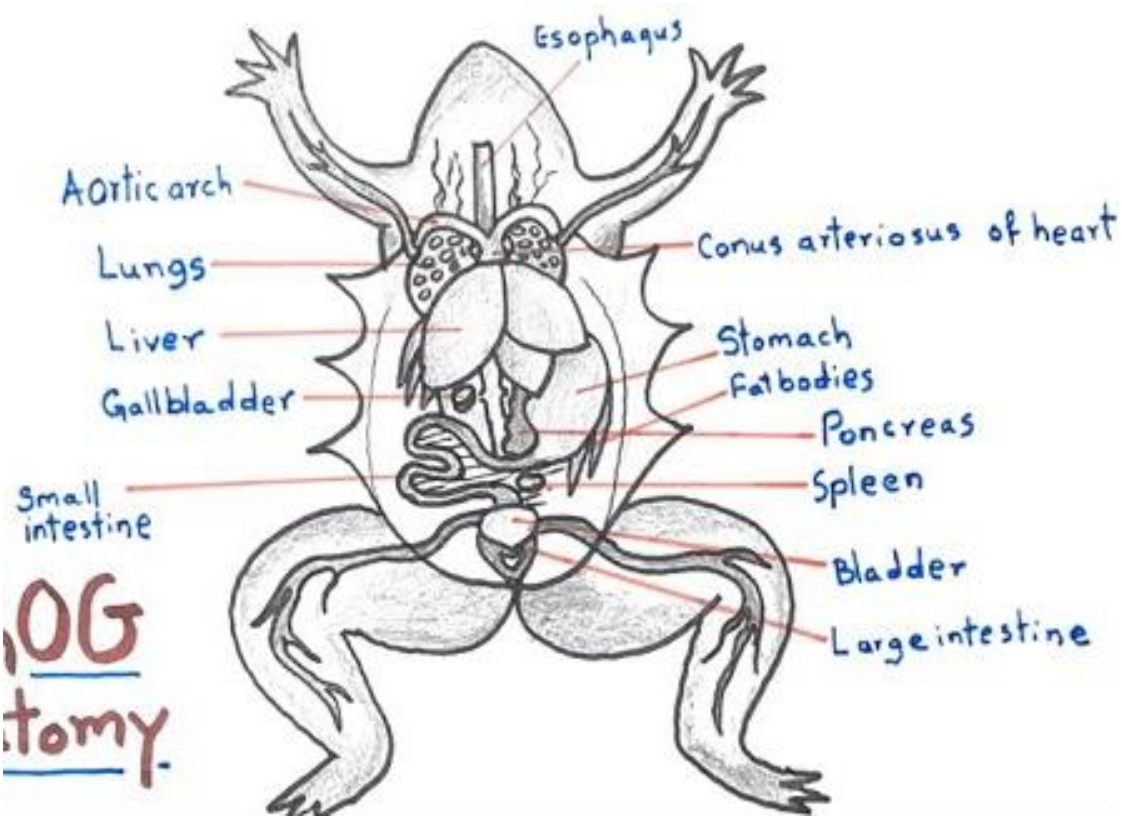
Instructions.

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. You are provided with specimen R. Carry out dissection to display the digestive system.

(a) Draw a large diagram of your dissection and label only the structures related to the parts displayed.

Answer:



(b) Classify specimen R to class level.

Answer:
Kingdom: Animalia
Phylum: Chordata
Class: Amphibia

(c) Briefly describe two adaptations of specimen R to its mode of life.

Answer:

1. It has a long, sticky tongue that can rapidly extend to catch flying insects for food.
2. It possesses webbed hind limbs adapted for efficient swimming in aquatic environments.

(d) Give four reasons why biologists use specimen R for dissection instead of other larger mammals.

Answer:

1. It is small, easily available, and inexpensive to obtain.
2. Its internal organs are simple, easily accessible, and clearly visible.

3. Its body structure represents a typical vertebrate plan, useful for learning comparative anatomy.
4. It requires less space, equipment, and preservation resources compared to larger mammals.

(e) Leave your dissection properly displayed for assessment.

2. During Terminal Examinations Mr. Uweza prepared four solutions for his students each containing one food substance only. At the end of the examination he discovered that the labels attached to the solutions were interchanged as follows:
Solution P Glucose
Solution Q Starch
Solution Y Protein
Solution Z Lipids

(a) Design and conduct an experiment to identify the correct food substance present in each solution by using the reagents provided. Present your report in the following form:

FOOD TESTED	PROCEDURE	OBSERVATION	INFERENCE
Glucose (P)	Add Benedict's solution and heat	Colour changes from blue to green/yellow/orange	Reducing sugar (glucose) present
Starch (Q)	Add iodine solution	Blue-black colour appears	Starch present
Protein (Y)	Add Biuret solution	Violet/purple colour appears	Protein present
Lipid (Z)	Add ethanol, then water, shake	White emulsion forms	Lipid present

(b) One of the food substance contained in one of the four solutions, its storage in the body is influenced by a hormone, so that it should not occur in excess.

(i) Name the food substance concerned.

Answer: Glucose

(ii) Name the hormone involved.

Answer: Insulin

(iii) In which form is the food substance stored?

Answer: Glycogen

(iv) Where in the body is the food substance stored?

Answer: Liver and muscles

(v) Where does the digestion of the food substance take place?

Answer: Mouth (by salivary amylase) and small intestine (by pancreatic amylase)

(c) Among the food substances identified in (a), one is mostly recommended to children.

(i) Name the food substance recommended.

Answer: Protein

(ii) What will happen if a child aged below five years lacks such food substance in her meals.

Answer: The child may suffer from kwashiorkor, a condition characterized by stunted growth, muscle wasting, swollen belly, and weakened immunity.

(iii) Suggest three sources of the food substance.

Answer:

1. Eggs
2. Milk
3. Meat

3. You have been provided with specimens K_1, K_2, S_1 and S_2.

(a) Give two similarities and three differences between K_1 and K_2.

Answer:

Similarities:

1. Both are plant seeds/fruits.
2. Both contain an embryo for germination.

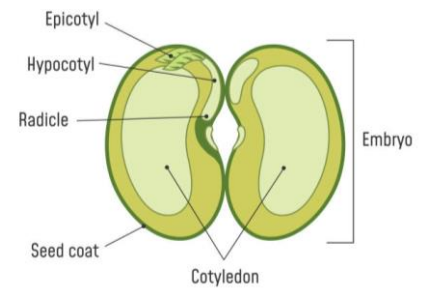
Differences:

1. K_1 may be a dicot seed while K_2 could be a monocot seed.
2. K_1 has two cotyledons, while K_2 has one.
3. K_1 may have a net-veined leaf, while K_2 has parallel-veined leaves (if germinated).

(b) Carefully cut specimen K_1 longitudinally into two equal parts. With the cut surface facing uppermost, draw and label all the observable structures of the specimen.

Answer:
Your diagram should display:

- Testa (seed coat)
- Cotyledon
- Plumule
- Radicle
- Embryo

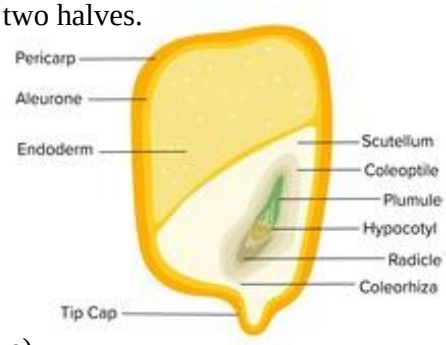


(c) Open specimen K_2 longitudinally into two halves.

(i) Draw a large labeled diagram of the two halves.

Answer:
The diagram should show:

- Seed coat
- Endosperm
- Embryo
- Plumule
- Radicle
- Scutellum (in monocot if maize)



(ii) Name and state the economic propagation and dispersal for the plant from which specimen K_2 was collected.

Answer:
Name: Maize (Zea mays)
Economic propagation: By planting seeds (cultivation)
Dispersal: By man (artificial dispersal during cultivation)

(d) With the aid of a hand lens, carefully study specimen S_1 and S_2.

(i) Identify each specimen by its common name.

Answer:
S_1: Housefly
S_2: Spider

(ii) State how specimen S_1 is adapted to its mode of feeding.

Answer:
It has a proboscis adapted for sucking up liquid food.

(iii) Draw and label specimen S_2 as seen by using a hand lens.

Answer:
Diagram should show:

- Cephalothorax
- Abdomen
- Legs (4 pairs)
- Spinnerets
- Eyes

(iv) Suggest the possible habitat for specimen S_2.

Answer:
In corners of houses, trees, or under leaves where it can spin webs.

(v) State how specimen S_2 is adapted to its habitat.

Answer:
It has spinnerets for producing silk threads to make webs for trapping prey and protection.

(vi) Classify specimens S_1 and S_2 to class level.

Answer:
S_1: Class Insecta
S_2: Class Arachnida