# THE UNITED REPUBLIC OF TANZANIA
# NATIONAL EXAMINATIONS COUNCIL
# ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

**133/1**

## BIOLOGY 1
(For Both School and Private Candidates)

**Time: 3 Hours** **Monday, 13th February 2012 a.m.**

**Instructions**

1. This paper consists of **eleven (11)** questions in section A and B.
2. Answer **all** questions in section A and **three (3)** questionsfrom section B.
3. The mark allocation is indicated at the end of each question.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).



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## SECTION A (55 marks)

Answer **all** questions in this section.

1. (a) State any four functions of lipids in living organisms.

   (b) Outline four roles of plasma membrane of a cell. **(8 marks)**

2. (a) The mammalian digestive tract has a number of digestive glands located on various part of its wall. Complete Table 1 to indicate the names of the digestive glands located in the wall of the buccal cavity and the stomach, their secretions and roles in the digestion process.

   **Table 1**

| Name of part of the digestive tract | Name of the gland | Secretion | Roles of the secretion |
|---|---|---|---|
| (i) Buccal cavity | | | |
| (ii) Stomach | | | |

   (b) State how you can prevent the following disorders of the digestive system.
   (i) Peptic ulcers
   (ii) Heart burn **(8 marks)**

3. (a) Briefly explain five factors affecting the rate of diffusion across membranes.

   (b) Briefly explain the significance of root pressure. **(8 marks)**

4. (a) Give four differences between aerobic respiration and anaerobic respiration.

   (b) The table below shows oxygen consumption and body mass of three resting mammals.

| Mammal | Mass in kg | Oxygen consumption in $mm^3$ per gram per hour at rest |
|---|---|---|
| A | 0.25 | 870 |
| B | 70.00 | 202 |
| C | 3800.00 | 67 |

   (i) Which mammal consumes the largest total volume of oxygen at rest?
   (ii) Explain why when both mammals are resting, mammal A requires much more oxygen per hour than mammal C? **(8 marks)**



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5. (a) Outline one function for each of the following hormones:
   (i) Thyroxine
   (ii) Insulin
   (iii) Gibberelin
   (iv) Auxins.

   (b) State one function which the following structures have in common.
   (i) Sclerotic layer and bony labyrinth.
   (ii) Eye lenses and basilar membranes.
   (iii) Rode, cones and sensory hair cells. **(7 marks)**

6. Study Figure 1 which is a diagram of a mammalian ovary and then answer the question that follow.

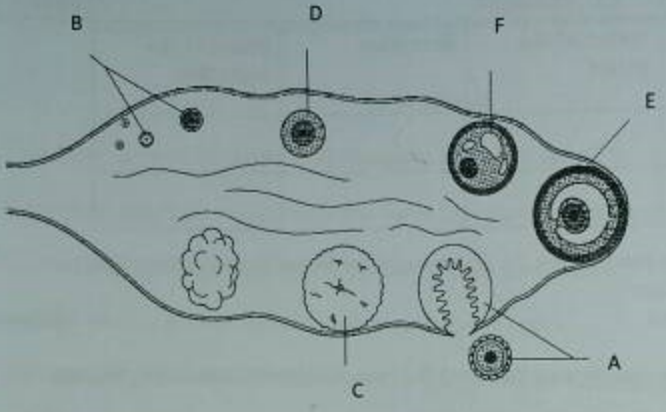


**Figure 1**

   (a) Name the structures labelled A, B, C, D, E and F.

   (b) Rearrange and explain the correct development sequence of the structures labelled A, B, D, E and F. **(8marks)**

7. (a) What are the reasons leading to a dynamic natural classification?

   (b) State the differences between natural and artificial classification systems. **(8 marks)**



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## SECTION B (45 marks)

Answer **three (3)** questions from this section.

8. (a) Explain the properties of enzyme.

   (b) In what way the knowledge of competitive inhibition is important? **(15 marks)**

9. With the aid of a diagram, describe the structure of a synapse. **(15 marks)**

10. Describe four advantages and three disadvantages of reproduction by seeds. **(15 marks)**

11. Discuss with specific example the feedback mechanism of the hormonal co-ordinationin animals. **(15 marks)**



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