

**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

Thursday, 14th February 2013 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)** questions from section B.
3. The marks allocation for each question is indicated in each section.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).



SECTION A (55 marks)

Answer all questions in this section.

All questions carry 8 marks except question two (2) which carries 7 marks.

1. (a) List two roles of the cell membranes.
(b) Mention one function for the following organelles and briefly explain how each organelle is adapted to its function.
 - (i) Golgi body
 - (ii) Endoplasmic reticulum
 - (iii) Chloroplast
 - (iv) Mitochondrion
2. (a) Explain the characteristic features of a respiratory surface.
(b) The equation for respiration of the fat tripalmitin is:
$$2C_{51}H_{98}O_6 + 145O_2 \longrightarrow 102CO_2 + 98H_2O$$

What is the RQ of tripalmitin?
3. The diagram in Figure 1 represents a transverse section of the cochlea of the mammalian ear.

Diagram of a TS of cochlea

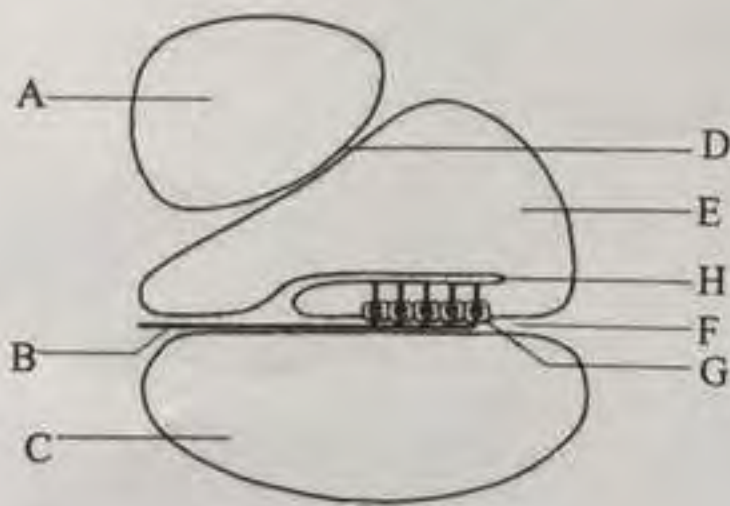


Figure 1

- (a) (i) Name the parts labelled A, B, C, D, E, F, G and H.
(ii) Which parts make up the organ of Corti?
- (b) Explain how the organ of Corti is adapted to its function.
4. (a) What is the meaning of meristematic tissue?
(b) Mention the types of meristematic tissues in dicot plants. Where is each located?
(c) State any four adaptations of xylem tissue to the functions it performs.
5. (a) Draw a diagram of a mature mammalian ovum and label its parts.

- (b) Describe the events which take place during fertilization of a mature mammalian ovum.
- 6. (a) Briefly explain why it is important that active transport is employed in the absorption of the end products of digestion?
- (b) Elaborate the role of the liver in the digestion and metabolism of the end products of digestion.
- 7. (a) Suggest the conditions in which the following may be the limiting factors in photosynthesis.
 - (i) Light intensity
 - (ii) Carbon dioxide concentration
 - (iii) Temperature
- (b) Briefly explain how photorespiration affects the rate of photosynthesis.

SECTION B (45 Marks)

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

Each question carries **fifteen (15) marks**.

- 8. (a) Justify why a cell is said to be the basic unit of life.
- (b) Explain three roles played by each of the following organelles:
 - (i) Nucleus
 - (ii) Lysosomes
 - (iii) Microtubules
- (c) Describe four advantages of membrane-bound organelles.
- 9. (a) Explain four internal and four external factors affecting transpiration.
- (b) Give an account of any five effects of transpiration in plants.
- 10. Account for the mechanism of body balance in mammals.
- 11. (a) Define the term Oestrus.
- (b) Explain the stages of the oestrus cycle.
- (c) State the significance of oestrus.
- (d) Distinguish oestrus cycle from menstrual cycle.