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

133/1

BIOLOGY 1
(For Both School and Private Candidates)

Time: 3 Hours **Year : 2021**

Instructions

1. This paper consists of sections A and B with a total of **ten (10)** questions.
2. Answer **all** questions in section A and **two (2)** questions from section B.
3. Section A carries **seventy (70)** marks and section B carries **thirty (30)** marks.
4. Except for diagrams which must be drawn in pencil, all writing should be in blue or black ink.
5. Cellular phones and any unauthorized materials are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

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SECTION A (70 Marks)

Answer **all** questions in this section. Each question carries **ten (10)** marks.

1. (a) Briefly describe the stages of oestrus cycle.

   (b) Justify the need for oestrus cycle in female animal.

2. (a) Find the Respiration Quotient (RQ) for a complete respiration of glucose.

   (b) Giving seven points, justify the need for fermentation processes to animals.

3. Give four points to support each of the following facts:
   (a) Natural system of classification has never been achieved in the fullest sense.

   (b) Scientists prefer to use Natural than Artificial System of Classification.

4. (a) Eukaryotic cells possess many organelles with special structures suitable for performing specific functions. How does each of the following structure enable the respective organelle to perform its role?
   (i) Tonoplast in vacuole
   (ii) Glycocalyx in pasma membrane
   (iii) DNA in nucleus
   (iv) Cristae in mitochondria.

   (b) Describe the 'lock and key' model of enzyme action.

5. (a) State digestive roles that will be impaired if the pancreas is severely damaged. Give four points.

   (b) Briefly describe what would happen to duodenal enzymes if the pH in the duodenum remained at 2.

6. (a) Why most of the reactions of the cell take place in the cytoplasm? Give four points.

   (b) Why is cytoplasm an important part of the cell? Give six points.

7. Using well labeled diagrams, describe the conduction of a nerve impulse along an unmyelinated neuron.

SECTION B (30 Marks)

Answer **two (02)** questions in this section. Each question carries **fifteen (15)** marks.

8. Describe the adaptation of the mammalian foetus, mountain dwellers and divers to oxygen uptake.

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9. Figure 1 represents the changes in the level of hormones in the blood during the course of menstrual cycle. Study the figure and answer the questions that follow:

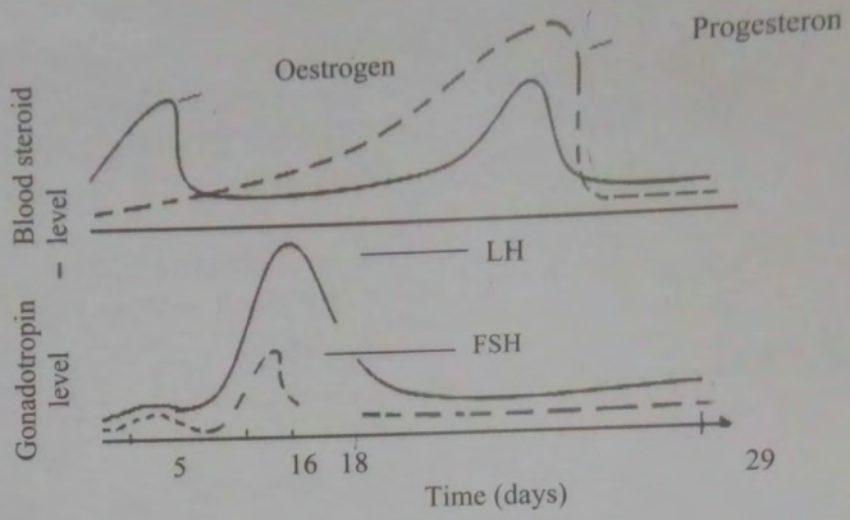

Figure 1

(a) Why are the hormones shown in the Figure 1 important in menstrual cycle?

(b) Predict four hormonal changes which would have occurred if pregnancy had occurred on the 18th day of menstrual cycle.

10. (a) How does xylem adapted to water transportation? Give six points.

(b) Explain how capillarity force governs the upward movement of water and mineral salts.

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