



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

Friday, 05th May 2017 a.m.

Instructions

1. This paper consists of **ten (10)** questions in section A and B.
2. Answer **all** questions in section A and **two (2)** questions from section B.
3. The marks allocation is indicated at the beginning of 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 (70 Marks)

Answer all questions in this section. Each question carries 10 marks.

1. (a) Study Figure 1 and answer questions which follow.

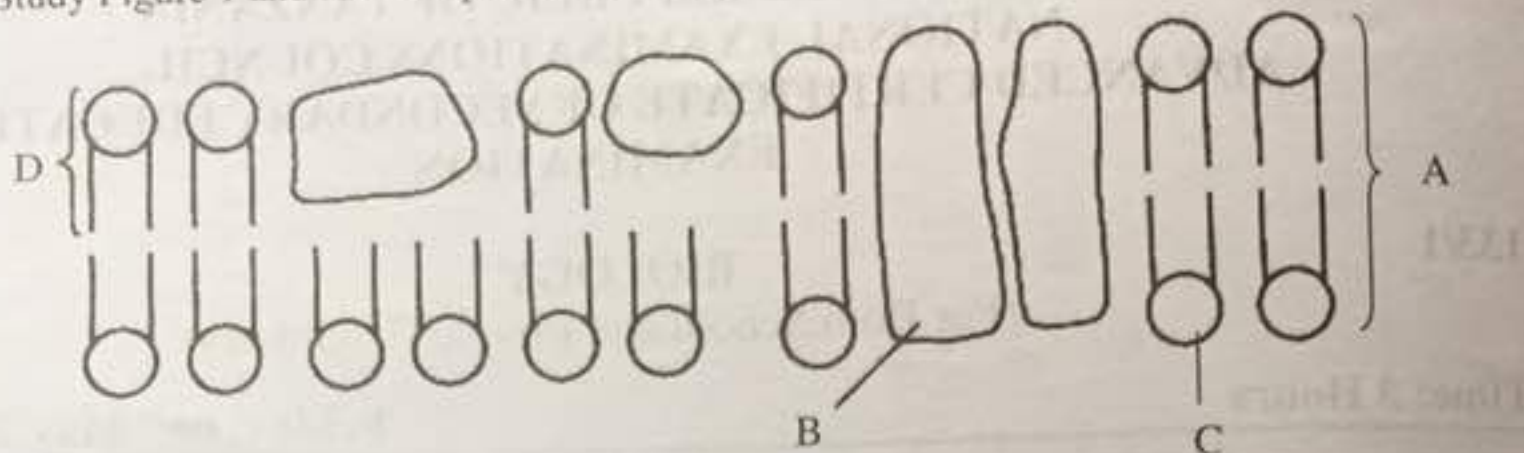


Figure 1

- (i) What structure does Figure 1 represent?
- (ii) Identify the parts labeled A, B, C and D.
- (iii) State four functions of the structure labeled B.

- (b) Describe three functions of microtubules.

2. (a) Analyze the differences between cyanobacteria and yeast cells based on the following criteria:

- (i) Cell division.
- (ii) Respiration.
- (iii) Photosynthesis.
- (iv) Protein synthesis.

- (b) Enumerate five similarities between mitochondria and chloroplast.

3. (a) (i) Briefly explain how to test for the protein in a given solution using Biuret test.
(ii) What is the basis of protein test?

- (b) Explain how each of the following factors cause protein denaturation:

- (i) Heat
- (ii) Acid
- (iv) Alkalis
- (v) Mechanical force.

4. (a) Figure 2 shows a certain stage of synaptic transmission.

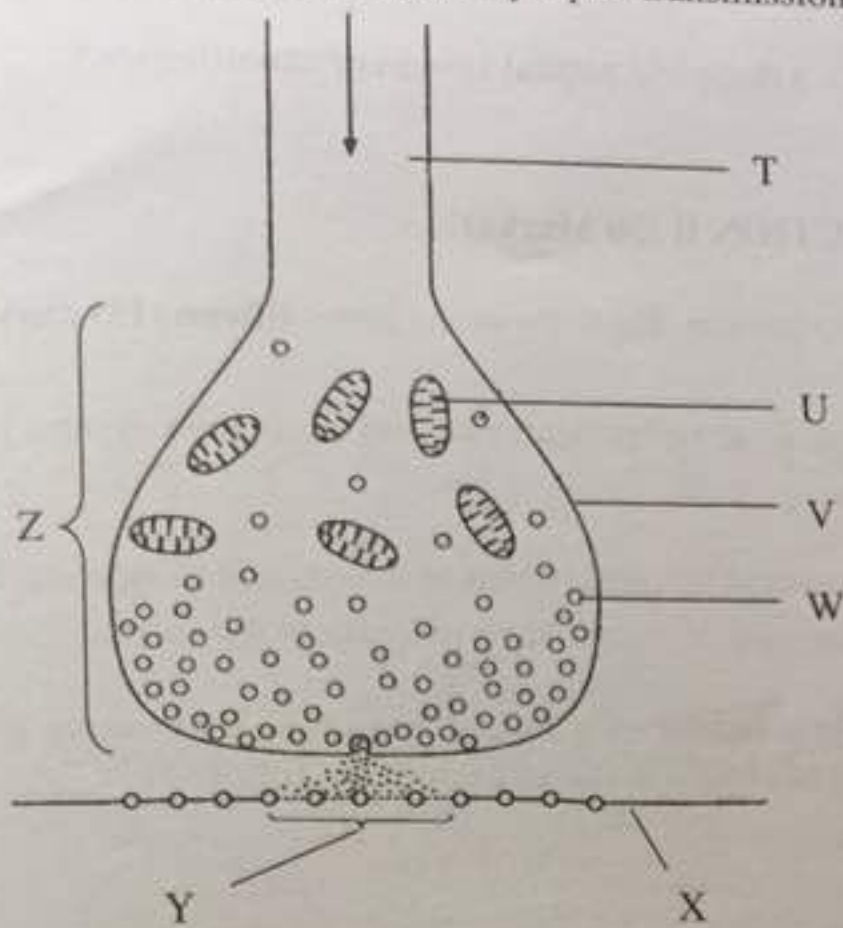


Figure 2

- (i) Identify each of the parts labeled T, U, V, W, X and Z.
 (ii) What is the state of the region shown by letter Y?
 (iii) State the role played by structure labeled U and W respectively.
- (b) Why do some impulses arriving at the pre-synaptic membrane fail to produce an action potential in the post synaptic neuron whereas several impulses arriving in succession can do so?
5. (a) Briefly explain the roles of the following in photosynthesis:
 (i) NADP.
 (ii) Ribulose diphosphate.
 (iii) Photosystems I and II (PSI and PSII).
- (b) Giving reason, explain the effect of lowering oxygen concentrations on:
 (ii) C₃ photosynthesis.
 (iii) C₄ photosynthesis.
- (c) Why the rate of photosynthesis decreases at high temperatures?
6. (a) Draw the structure of animal cell as seen under electron microscope.
- (b) (i) Name a double membrane organelle found in plant cells only.
 (ii) How is the organelle adapted to its role?

7. (a) What is meant by natural system of classification?
(b) Why is it difficult to achieve a complete natural system of classification?

SECTION B (30 Marks)

Answer two (2) questions from this section. Each question carries fifteen (15) marks.

8. Elaborate the main adjustments that occur to the heart rate and circulatory system just before, during and after a 100m race.
9. (a) (i) Briefly explain the concept of capacitation as it is related to reproduction.
(ii) Outline two protective role of mammalian placenta to the foetus.
- (b) The chromosomes number in a radicle of a certain species of a flowering plant is 16. Giving reason, calculate the number of chromosome in each of the following cells:
(i) Pollen tube nucleus.
(ii) Antipodal cell.
(iii) Endosperm.
(iv) Pollen mother cell.
(v) Integument cell.
10. Identify the vascular tissues in plants and explain how they are adapted to their roles.