

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

**033/2**

**BIOLOGY 2  
ALTERNATIVE TO PRACTICAL  
(For Both School and Private Candidates)**

**Time: 2:30 Hours**

**Friday, 07<sup>th</sup> November 2014 a.m.**

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**Instructions**

1. This paper consists of **five (5)** questions. Answer **all** questions.
2. Each question carries 10 marks.
3. Except for diagrams which must be drawn in pencil, all writings should be in blue or black ink.
4. Calculators and cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

1. A form two biology teacher was teaching a topic on plant nutrition. He went to the garden and pick up a leaf with network veins.
  - (a) (i) Draw a well labeled diagram of the leaf that the teacher picked up.
  - (ii) State the role played by each part of the leaf labeled in 1 (a) (i) above.
  - (b) What is the general function of the leaf?
  - (c) List two raw materials and two conditions necessary for the leaf to carry out the function you mentioned in 1(b) above.

2. A biologist collected data from an athlete after a period of running. The following table shows his data.

Running time (in minutes)	Concentration of lactic acid in blood (mg/ 100cm <sup>3</sup> )
0	3
2	10
4	28
6	45
8	50
10	44
12	40
14	36
16	33
18	30
20	26
30	12
40	8
50	5
60	3
65	3

- (a) (i) Draw a graph of a concentration of lactic acid against running time by using the data given .
  - (ii) Which period on the graph shows the period of recovery?
  - (b) (i) Name the process which led to the production of lactic acid in the body of the athlete?
  - (ii) Define the process named in (b) (i) above.
  - (iii) Which tissue was responsible for the production of the lactic acid?
  - (iv) State one effect of the excessive accumulation of lactic acid in the body.
  - (c) Describe five factors which affect the rate of respiration.
3.
  - (a) Draw a well labeled diagram of a half longitudinal section of hibiscus flower.
  - (b) What is the mode of pollination shown by the flower? Give three reasons.

In an experiment, 5cm<sup>3</sup> of starch solution was placed in each of 4 test tubes labeled A, B, C and D. The contents of the test tubes were maintained at 37 ° C but varied as shown in the table below.

Test tube	Contents
A	5cm <sup>3</sup> of starch + 2 cm <sup>3</sup> of saliva and few drops of dilute hydrochloric acid.
B	5cm <sup>3</sup> of starch and few drops of dilute hydrochloric acid.
C	5cm <sup>3</sup> of starch + 2 cm <sup>3</sup> of saliva and few drops of sodium carbonate.
D	5cm <sup>3</sup> of starch.

After 20 minutes, 2cm<sup>3</sup> of the content from test tube C was taken into a test tube and tested using Benedict's solution.

- (a) (i) What was the aim of the experiment?
- (ii) Explain the changes which occurred in each test tube shown in the table above.
- (b) Explain the changes observed after adding Benedict's solution and boiling the content from the test tube C.

You are provided with a list of seven different organisms named butterfly, fish, owl, bat, rat, honey bee and lizard. Answer the following questions:

- (a) (i) Identify four organisms from the list which show the same mode of locomotion.
- (ii) Name the mode of locomotion shown by organisms mentioned in (a) (i) above.
- (b) For each organism listed in the table below, name structure(s) that they use for locomotion. Present your answer as shown in the table below.

S/n	Organism	Structure(s) used for movement
1	Butterfly	
2	Lizard	
3	Bat	
4	Rat	
5	Honey bee	
6	Fish	

- (c) State three importance of movement in animals.