

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 Hours

Wednesday 08th October 2008 a.m.

Instructions

1. This paper consists of five (5) questions.
2. Answer all questions.
3. Each question carries 10 marks.
4. Except for diagrams which must be drawn in pencil all writing should be in blue/black ink or ball point pen.
5. Electronic calculators are **not** allowed in the examination room.
6. Cellular phones are **not** allowed in the examination room.
7. Write your **Examination Number** on every page of your answer booklet(s)

1. Study the diagrams below.

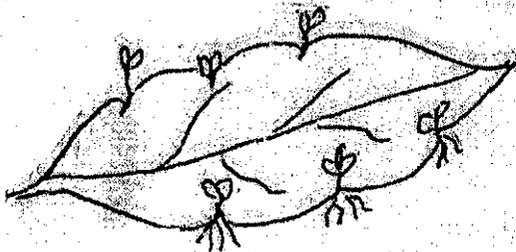


Fig. 1

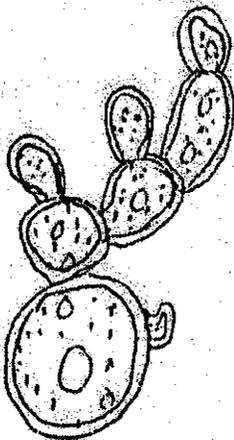


Fig. 2



Fig. 3

- (a) (i) Identify specimens represented in figures 1, 2, and 3. **(3 marks)**
(ii) Explain how each of the organisms/part of the organism represented by figures 1, 2 and 3 reproduce. **(3 marks)**
(iii) Mention the type of reproduction exhibited by the organisms/part of organism represented by figures 1, 2, and 3. **(3 marks)**
- (b) Write down the advantages and disadvantages of mode of reproduction represented by figure 1. **(1 mark)**
2. Form two students of Moivoro secondary school were asked to carry out an-experiment by their Biology teacher. The experiment was conducted as follows.
- (i) Three test tubes labelled A, B and C were set as shown in figure 4 below. Each of the three test tubes contained 1 ml saliva and 1ml water. The three test tubes were heated in water bath at different temperatures for 30 minutes.

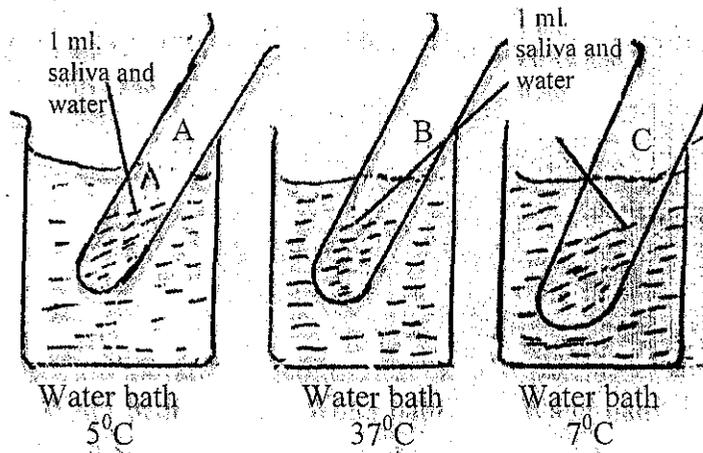


Fig. 4

- (ii) Another set of three test tubes also labelled A, B and C each containing 1 ml starch solution was heated for the same duration in water bath as shown in figure 5 below.

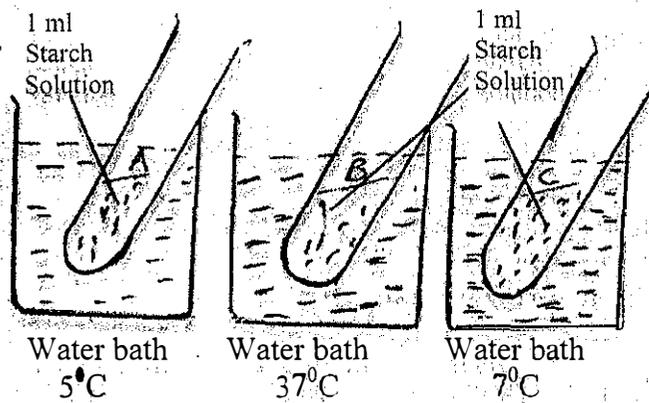


Fig. 5

- (iii) The contents of the test tubes in the corresponding water bath of figure 4 and figure 5 was mixed and heated further for 30 minutes.
 (iv) The contents of each test tube was then tested for starch using iodine solution.

Study the above procedures carefully and then answer the following questions:

- (a) What was the aim of the experiment? **(2 marks)**
 (b) Why was it necessary to heat the tubes for 30 minutes before mixing their contents? **(2 marks)**
 (c) State the colour change you would expect in each test tube after adding iodine solution. **(3 marks)**
 (d) Account for the expected observations. **(3 marks)**

3. In an ecological study a student caught an organism represented by figure 6 below.

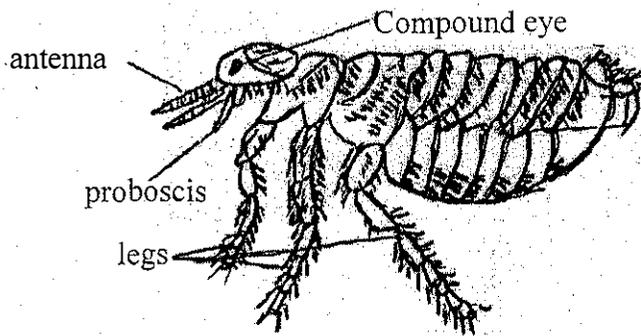


Fig. 6

- (a)
- (i) Name the kingdom and phylum to which the organism belong. **(2 marks)**
 - (ii) Name the class to which the organism belongs. Give reason (s) for your answer. **(3 marks)**
 - (iii) Suggest its feeding habits. **(2 marks)**
 - (iv) Suggest its mode of locomotion. **(1 mark)**
- (b) Suggest how the organism is adapted to its habitat. (any 2) **(2 marks)**

4. A Form four student was interested to investigate osmosis phenomenon and decided to set the experiment as shown in figure 7 below. Study this figure and answer the questions that follow.

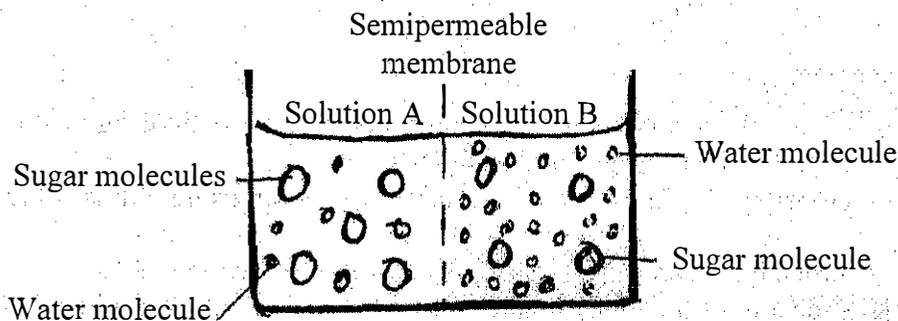


Fig. 7

- (a) Which solution has a higher concentration of free water molecules? **(1 mark)**
- (b) Which solution has high solute concentration? **(1 mark)**
- (c) In which direction will osmosis occur? **(1 mark)**
- (d) What does the semi-permeable membrane correspond to within an animal cell? **(1 mark)**
- (e)
 - (i) What is osmosis? **(1 mark)**
 - (ii) Name **five (5)** processes in living things that depend on osmosis. **(5 marks)**

5. The diagram in figure 8 shows the set up of an experiment to investigate a certain physiological process in a plant. Study the apparatus set up and then answer the questions that follow.

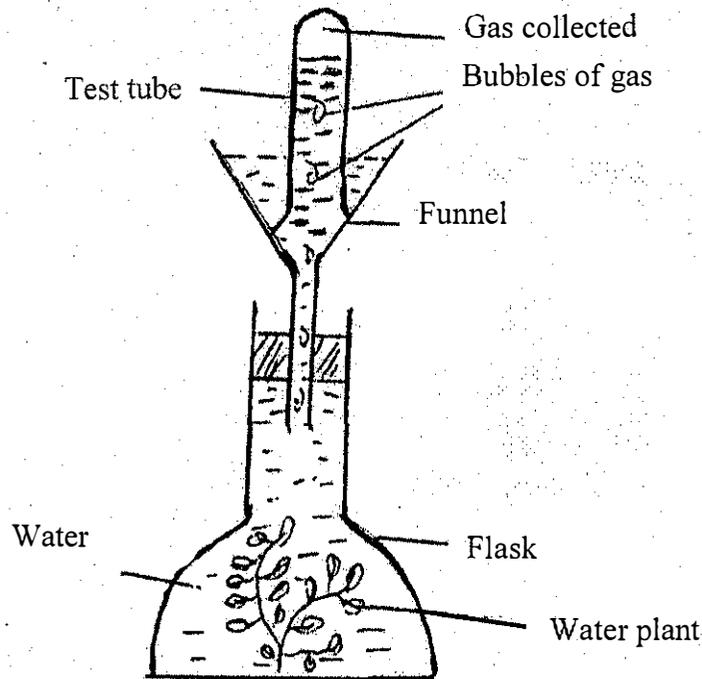


Fig. 8

- (a) (i) Which gas is collected in the test tube? **(1 mark)**
 (ii) Where does it come from? **(1 mark)**
 (iii) During which process is this gas produced? **(1 mark)**
 (iv) Write conditions necessary for the process to take place. **(2 marks)**
 (v) Suggest a test for this gas and expected results. **(1 mark)**
- (b) What will happen if the apparatus is kept in a dark place? **(1 mark)**
- (c) What was the aim of the experiment? **(1 mark)**
- (d) There was a mistake in assembling the apparatus. With a reason, point out that mistake. **(1 mark)**
- (e) Why is water held up in the test tube without running on to the funnel? **(1 mark)**