THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

033/2B **BIOLOGY 2B**

(ACTUAL PRACTICAL B)

(For Both School and Private candidates)

Time: 2:30 Hours **Year: 2021**

Instructions

1. This paper consists of **two (2)** questions**.**
2. Answer **all** questions**.**
3. Each question carries twenty **five (25)** marks**.**
4. All writing must be in **blue** or **black** ink **except** drawing which must be in pencil.
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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1. You are provided with irish potato, knife/scalpel, scooper, table salt and water. Carry out experiments as directed in procedures (i) – (vii), then answer the questions that follow:

   (i) Using knife/scalpel slice a small portion at the upper part of the Irish potato to create a flat surface.

   (ii) Mark the centre of the cut surface as "C" to determine the right and left side.

   (iii) On the left side of the Irish potato, use a scooper to make a shallow hole of about 2.5 cm deep. Do the same to the right side of the Irish potato. The distance from one hole to another hole must be 5-8 mm apart but take care not to damage the central part.

   (iv) Use a marker pen to label the hole on the left side as A and on the right side as B.

   (v) In hole A, put 3 g of table salt.

   (vi) In hole B put distilled water until the hole is full.

   (vii) Make sure that the setup of your experiment is as shown in **Figure 1**. Leave the experiment for 40 minutes and observe the changes.

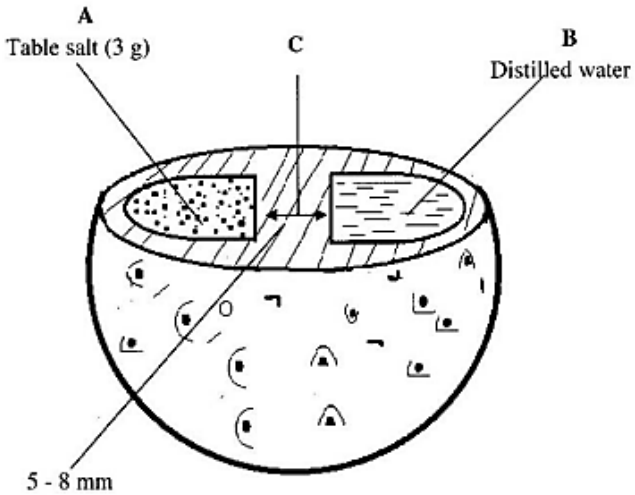

Figure 1

Questions

(a) With reference to your experiment, what does the part labelled by letter **C** represent?

(b) How does part **C** work in the process of osmosis?

(c) What are the observations in the holes **A** and **B** after 40 minutes

(d) Account for the observations made in 1(c).

(e) Give the biological terms used for the concentrations in the holes **A** and **B**.

(f) Identify two osmotic activities which take place in plants by nature.

(g) Based on the observation made from the experiment, how the knowledge of osmosis can be applied in your daily life? Give two points.

(h) What is the aim of the experiment?

(i) How does osmosis differ from diffusion?

2. You are provided with specimens **Q**, **R**, **S** and **T**. Study them and answer the following questions:

(a) (i) Identify each of the specimens **Q R, S** and **T** by its common name.

(ii) Why is it important for scientists to use the knowledge of classification in identification of the specimens instead of common names you used in 2(i)? Give two points

(b) (i) Classify each of the specimens **Q** and **R** to the class level.

(ii) Give three reasons for the specimens **Q** and **R** to be placed into different classes.

(c) Why is the specimen **R** said to be economically important to human being while specimens **S** and **Q** are said to be detrimental? Give one point for each.

(d) What are the two observable differences between the specimens **S** and **T** at class level?