BIOLOGY WORKSHEET 1

1. You are provided with a portion of a raw banana and two solutions of different concentration labelled **L_1** and **L_2**.
   Cut off about 2cm thick from the banana and peel it.
   Obtain two cubes from the peeled banana measuring about $1cm^3$.
   (a) Press the two cubes gently between your fingers. Record your observation. (1 mark)

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   Place one cube in the solution labelled **L_1** and the other in the solution labelled **L_2**.
   Allow the set up to stand for 10 minutes.

   (b) After 10 minutes, remove the cubes and press each gently between your fingers.

   (i) Record your observations.
   (2 marks)

   L_1
   .....
   .....

   L_2
   .....
   .....

   (ii) Account for the observations made in (a) (i) above.

   Cube in solution **L_1**
   (3 marks)

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Cube in solution **L_2**
(3 marks)

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(c) State **four** roles of the physiological process being investigated above in plants.

(4 marks)

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2. You are provided with a portion of a raw banana and two solutions of different concentration labelled $\mathbf{L_1}$ and $\mathbf{L_2}$.
Peel the banana and remove all the banana flesh from the peel.
Using a scalpel blade prepare two thin, straight flat strips from the raw banana peel.
Each strip should measure about 4cm by 2mm.
Immerse one strip in solution $\mathbf{L_1}$ and the other in solution $\mathbf{L_2}$ and leave the set ups undisturbed for 10 minutes.

(a) (i) State your observations in in solution $\mathbf{L_1}$ and $\mathbf{L_2}$ after 10 minutes.
Solution $\mathbf{L_1}$

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Solution $\mathbf{L_2}$

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(ii) Account for the observations made in (a) (i) above.

Solution $\mathbf{L_1}$
(3 marks)

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Solution **L_2**
(2 marks)

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(b) Describe the nature of the solutions **L_1** and **L_2** in relation to the cell sap in the banana peel used in the experiment.

L_1.....(1 mark)

L_2.....(1 mark)

(c) With reference to the observations made, compare the nature of the outer and inner surfaces of the banana peel.
(1 mark)

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(d) (i) Name the cell structure responsible for the observations made in the experiment. (1 mark)

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(ii) Explain how the cell structure named in (d) (i) above works to bring about the observations made.
(2 marks)

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3. You are provided with a portion of raw banana. Make a transverse section of the specimen.
(a) (i) Which part of a plant is the banana?
(1 mark)

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(ii) Give **two** reasons for your answer in (a) (i) above.
(2 marks)

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(b) (i) Draw and label the section.
(4 marks)

(ii) Work out the magnification of your diagram.
(2 marks)

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(iii) Name the type of placentation in the banana.
(1 mark)

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(c) (i) What type of a fruit is the banana?
(1 mark)

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(ii) Give a reason for your answer in (b) (i) above.
(1 mark)

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(d) (i) Identify the mode of dispersal for the banana.
(1 mark)

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(ii) Give a reason for your answer in (d) (i) above.
(1 mark)

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(e) Slice off about 2cm thick disc from the banana and peel it. Place the peeled piece on a white tile and macerate it (cut into tiny pieces). Tie one end of the visking tubing provided. Put the tiny pieces into the visking tubing and tie the other end tightly.
Ensure there is no leakage at both ends of the tubing.
Rinse the outside of the tubing with water.
Immerse the tubing with its contents in a 100ml beaker containing iodine solution. Allow to stand for 10 minutes.

(i) Record your observations in the table below.
(4 marks)

	Extract inside visking tubing	Iodine solution outside the visking tubing
Before the Experiment		
After the Experiment		

(ii) Account for the results in (c) (i) above.
(5 marks)

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(f) (i) Name the physiological process being investigated above.
(1 mark)

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(ii) State the roles of the process above in plants and animals.
Plants

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Animals

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(iii) State the factors affecting the process above.

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BIOLOGY WORKSHEET 2

1. You are provided with a specimen labelled **K** (maize grain). Examine it carefully.
   (a) With a reason state the class of the plant from which the specimen was obtained. (2 marks)

   Class
   .....

   Reason
   .....

   (b) (i) Name the part of a plant represented by specimen **K**.
   (1 mark)

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   (ii) Give a reason for your answer in (b) above.
   (1 mark)

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   (c) (i) Name the type of fruit specimen **K** is.
   (1 mark)

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   (ii) Give a reason for your answer in (c) (i) above.
   (1 mark)

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   (d) Identify the part of the flower from which **K** developed.
   (1 mark)

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   (e) Make a longitudinal cut through specimen **K.** Add 2 drops of iodine solution on the exposed surface of **K**.
   (i) Draw and label the parts seen.
   (3 marks)

   (ii) State two reasons of adding iodine solution on the cut surface.
   (2 marks)

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   (iii) What conclusion can you make from the observation made on the cut surface after adding iodine solution?
   (1 mark)

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(iv) Describe giving reasons the distribution of colour on the cut surface after adding iodine solution.

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(v) State the functions of any three structures observed on the maize grain.

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(f) State observable differences between the maize grain and a banana.

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(g) The Photograph below is of specimen **K** after germination for four days

(i) Name the type of germination shown in the photograph **K**. (1mark)

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(ii) Give reason for your answer in d(i) above.
(1mark)

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(iii) Account for the difference in dry weight of the part marked **P** in the photograph after the fourth day of germination and specimen **K**.
(4marks) ……

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BIOLOGY WORKSHEET 3

1. You are provided with a grass plant. Examine it.
   (a) Using observable features only classify the plant into the following taxonomic units and give reasons in each case.

   Division……(1 mark)

   Reasons
   (2 marks)

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   Sub division……(1 mark)

   Reason
   (1 mark)

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   Class……(1 mark)

   Reasons
   (3 marks)

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(b) State how the following parts of the plant are adapted to their function.

(i) Leaves
(3 marks)

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(ii) Stem
(2 marks)

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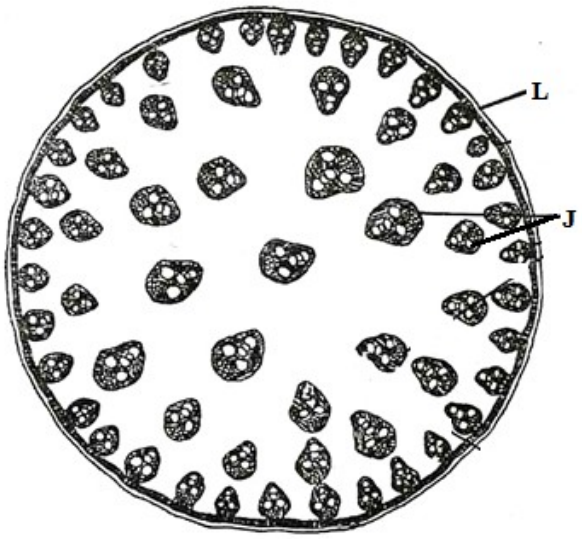
(c) The photograph below shows the structure observed in a cross-section of part of the grass plant as seen under a light microscope.



(i) With a reason, name the part of the plant from which the cross-section above was obtained.

Part of plant.....(1 mark)

Reason .....(1 mark)

(ii) Name the parts labelled **J** and **L** on the photograph.
(2 marks)

J.....

L.....

(d) How is support attained in the stem of a grass plant?
(2 marks)

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