



**MASIBAMBISANE HIGH SCHOOL**

**GRADE 11 TERM 2**

**LIFE SCIENCES ASSIGNMENT**

**PHOTOSYNTHESIS IN PLANTS**

**EXAMINER: MS.KAMBI**

**MODERATOR: MRS. MGUBANTO**

**MAY 2023**

**TOTAL: 50**

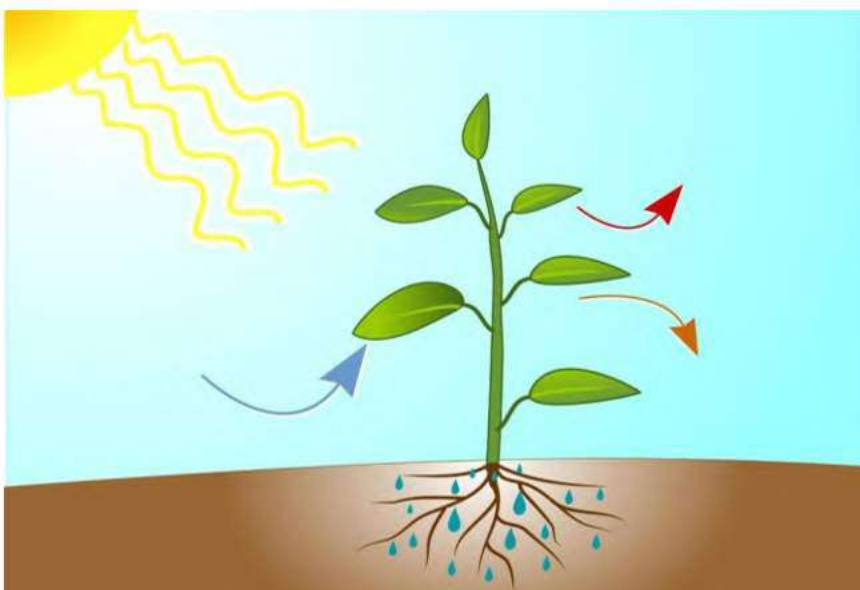
**TIME: 1 HOUR**

SURNAME..... NAME..... GRADE 11 .....

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**QUESTION 1**

The diagram below represents the process of photosynthesis in plants.

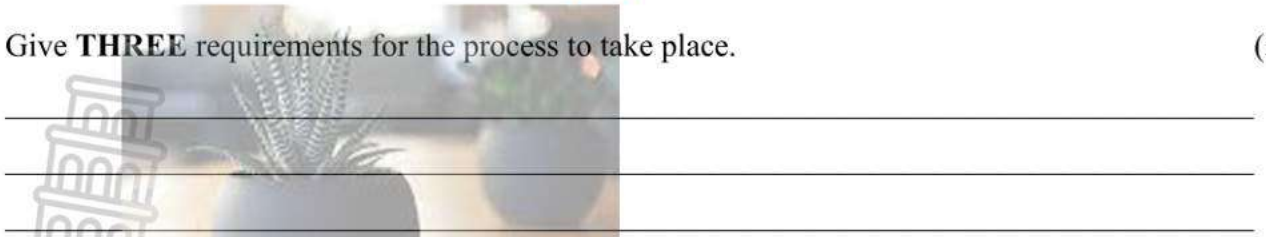


1.1 What type of energy is used in the process illustrated above?

(1)

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1.2 Give **THREE** requirements for the process to take place. (3)



1.3 Name and describe the TWO (2) phases of photosynthesis. (10)

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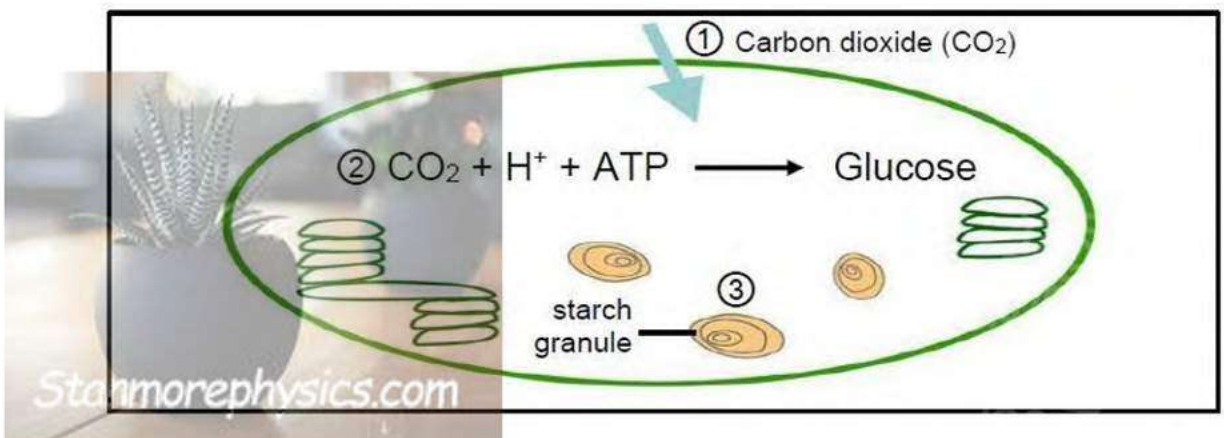
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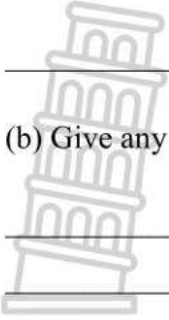
1.4. The diagram below is a cross section of an organelle found in leaves.



1.4.1 Identify the above organelle (1)

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1.4.2 (a) Which phase of photosynthesis is shown by the diagram above? (1)



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1.4.2. (b) Give any observable reason for your answer. (2)

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1.4.3 What is the storable form of the product of photosynthesis, and why it is stored in this form? (2)

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1.5 Tabulate three differences between the phases of photosynthesis (7)

1.6 Suggest two uses of glucose in plants (2)

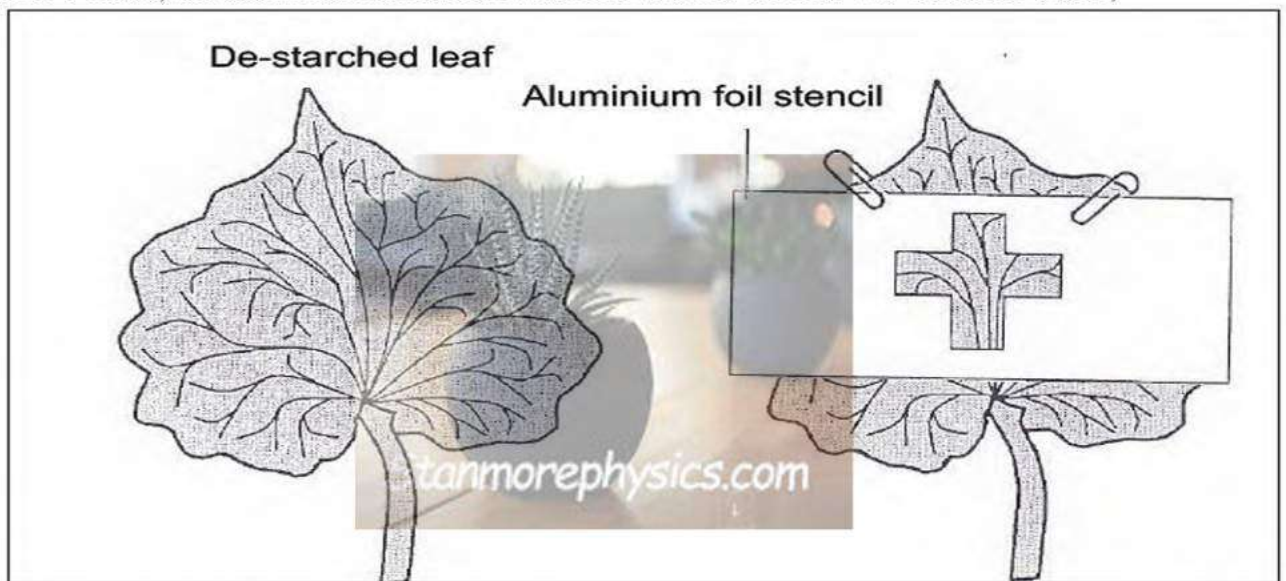
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### QUESTION 2

An investigation was conducted to find out whether light is necessary for photosynthesis or not. The procedure followed is given below:

- A geranium potted-plant was de-starched by placing it in a dark cupboard for 48 hours.
- A cross- shaped light-slit was cut out on aluminium foil.
- The aluminium foil stencil was then clipped onto one of the de-starched leaves, as shown in the diagram below.
- The potted plant was exposed to bright sunlight for 5 hours.
- After 5 hours, the aluminium foil stencil was removed and the leaf was tested for starch,



2.1 Explain why the leaf was de- starched (2)

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2.2 Describe the steps, in correct sequence, that were followed when testing leaf for starch (5)

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2.3 Draw the leaf showing the results of the investigation. Use a pencil and shade the parts that tested positive for starch (5)



2.4 Write a hypothesis for the investigation (2)

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2.5 Suggest a way that was used to ensure reliability of results (1)

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2.6 Name ONE precaution that should be observed when testing for starch (1)

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2.7 State THREE limiting factors for photosynthesis (3)



2.8 Give TWO products of photosynthesis (2)

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[21]

**TOTAL: 50 MARKS**

**MA SIBAMBSANE HIGH SCHOOL**  
**GRADE 11 - LIFE SCIENCES**  
**ASSIGNMENT**  
**TERM 2**  
**2023**  
**MARKS: 50**  
**MEMORANDUM**



**QUESTION 1**

1.1 Light energy or radiant energy✓ (1)

1.2 Carbon dioxide✓, Water✓, Light✓, Enzyme✓ (ANY THREE) (3)

1.3 **Light phase or Light dependent phase** ✓

- Occurs in the grana✓
- Chlorophyll absorbs light or radiant energy✓
- Some of this energy is used to split water into hydrogen + oxygen✓
- This is called photolysis✓
- Oxygen is released into the atmosphere through stomata✓
- Energized hydrogen will be taken up or used in the dark phase✓

**Dark phase or Light independent phase** ✓

- Occurs in the stroma✓
- Carbon dioxide from the atmosphere combines with energized hydrogen to form glucose✓ (10)

1.4.1 Chloroplast✓ (1)

1.4.2 (a) Dark phase✓

(b)  $CO_2 + H^+ + ATP \rightarrow Glucose$ ✓✓

1.4.3 Starch✓ because starch is insoluble in water and will be used as a source of energy✓ (2)

1.5 (5)

Light phase	Dark phase
Happens in the presence of light✓	Light is not needed✓
Occurs in the grana✓	Occurs in the stroma✓
Photolysis occurs✓	No photolysis✓

1 mark: Table

4 marks: ANY 2x2 differences

1.6 Use of chemical energy during cellular respiration

Formation of starch and cellulose ✓

(2)

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## QUESTION 2

2.1 - To ensure that any starch is present in the leaf ✓

- was produced during the investigation in the 5 hours ✓

(2)

2.2 Collect a leaf that has been recently exposed to sunlight ✓

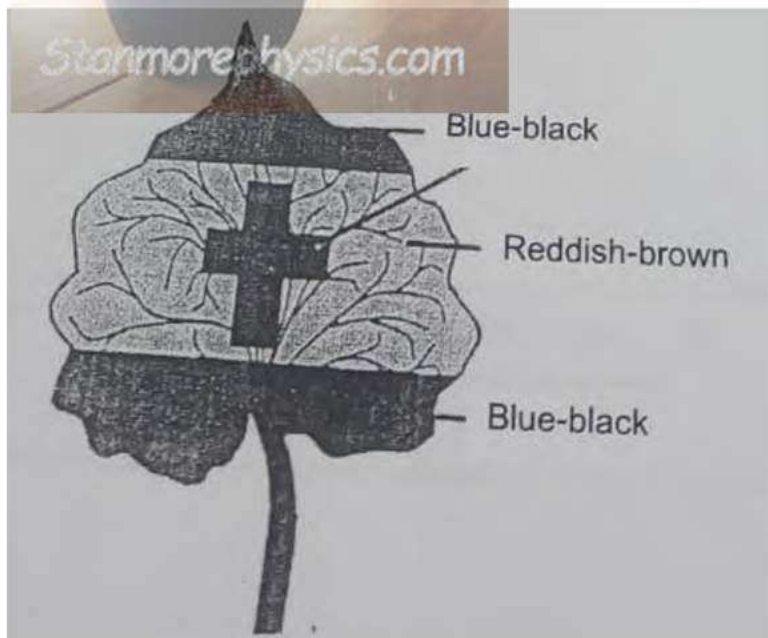
Boil leaf in water for 3-4 minutes ✓

Boil leaf in alcohol for about 2 minutes ✓

Rinse the leaf in cold water ✓

Add a few drops of iodine solution to the leaf ✓

(5)



2.3

**Leaf after starch test**

Criteria	Mark
Correct caption	1
Correct drawing/shape	1
Correct drawing of shadow	1
Correct 2 labels	2



2.4 When the leaf is exposed into the iodine solution the colour change will happen in the plant ✓✓ (2)

OR

When the leaf is exposed into the iodine solution the will be a colour change ✓✓

2.5 Repeat the investigation ✓ (1)

Increase sample size ✓

De starch the plant ✓ (ANY ONE)

2.6 Handle alcohol carefully so its inflammable ✓ or switch off the burner when using alcohol ✓ (1)  
(ANY ONE)

2.7 Carbon dioxide concentration ✓

Light intensity ✓

Temperature ✓ (3)

2.8 Glucose ✓ and Oxygen ✓ (2)

[21]

**GRAND TOTAL:50**