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NATURAL SCIENCES.

PRACTICAL ACTIVITY

STRAND : LIFE AND LIVING.

GRADE : 8

NAME OF SCHOOL : _____

NAME OF LEARNER : _____

AREA OFFICE : _____

DISTRICT : _____

MARKS : _____

20

DATE : _____

Specific aims covered: **1, 2 & 3**

Process Skills:

- ✓ Planning investigation
- ✓ Doing investigations
- ✓ Recording information
- ✓ Observing.
- ✓ Hypothesizing
- ✓ Accessing and recalling information.
- ✓ Communicating

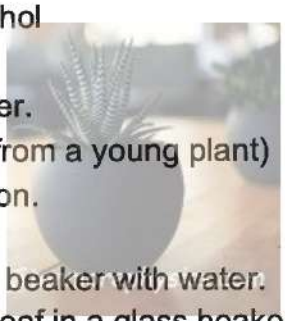
NB:

- ❖ When performing this experiment, learners should work in groups of not more than 5.
- ❖ All answers provided should be based on the practical activity carried out in the classroom.
- ❖ Individual work will not be allowed.
- ❖ Smelling and tasting of chemicals is not allowed.
- ❖ Playing and running around is strictly prohibited.
- ❖ No eating and smoking in the laboratory.

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1. Aim: To test for starch in a green leaf.

2. Apparatus
   - Glass beaker.
   - Test tube.
   - Petri dish
   - Dropper
   - Dissecting needles
   - Gauze wire.
   - Tripod
   - Bunsen burner
   - Methylated spirit.
   - Ethanol/alcohol
   - Match sticks
   - 1 litre of water.
   - Green leaf.(from a young plant)
   - Iodine solution.



3. Method.
   - Half fill glass beaker with water.
   - Put a green leaf in a glass beaker with water.
   - Add methylated spirit in a Bunsen burner to create a flame.
   - Use a tripod stand to position a glass beaker with water and a green leaf.
   - Put a gauze wire on a tripod before putting a glass beaker with a green leaf on it.
   - Cook the leaf in a glass beaker for few minutes and observe any changes in a glass beaker.
   - Remove the leaf from boiling water in a glass beaker and place it in a test tube with ethanol.
   - Immense a test tube with a leaf and ethanol in warm water and observe.
   - After few minutes, remove the leaf from ethanol; observe the color of the leaf.
   - Rinse the leaf in cold water.
   - Place the leaf on a Petri dish and spread it carefully.
   - Using a dropper, add a drop of iodine.
   - Note your observations.
   - NB: Feel the texture of the leaf before and after boiling it in alcohol.

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4.1. Why did you boil the leaf in water? (1)

4.2. Did you note any color change in a glass beaker as you were boiling the leaf in water? (1)

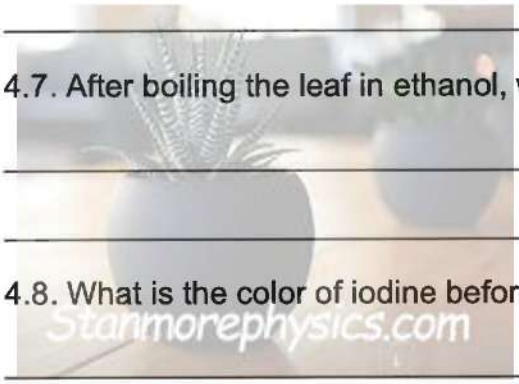
4.3. Why did you boil the leaf in ethanol? (1)

4.4. Feel the texture of the leaf before cooking it in ethanol. What is the texture? (1)



4.5. Note color change as the leaf is boiling in ethanol. What causes the color change? (2)

4.6. What is the texture of the leaf after boiling it in ethanol? (1)



4.7. After boiling the leaf in ethanol, why did you rinse the leaf in water? (1)

4.8. What is the color of iodine before adding it into a leaf boiled in ethanol? (1)

4.9. Why is it advisable not to heat ethanol directly over a flame? (1)

4.10. What happens to a leaf boiled in ethanol when iodine solution is added to it?(1)

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4.11. Give a reason for your observation as stated in 4.10. (1)

4.12. From what you have observed in this experiment, generate a hypothesis for this practical activity. (2)

4.13. Write down the conclusion for this experiment. (1)

4.14. Based on the conclusion you have written in 4.13, do you accept or reject your hypothesis? (1)

4.15. Write down two precautions that have to be observed in this practical activity to ensure the safety of the learners. (4)

GRAND TOTAL: 20

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NATURAL SCIENCES.

PRACTICAL ACTIVITY

STRAND : LIFE AND LIVING.

GRADE : 8

Marks : 20

Marking Guidelines

Specific aims covered: **1, 2 & 3**

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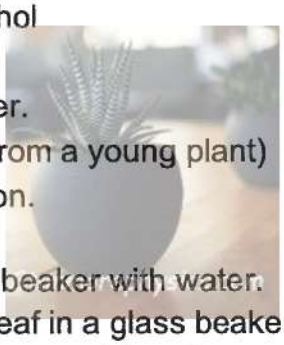
NB:

- ❖ When performing this experiment, learners should work in groups of not more than 5.
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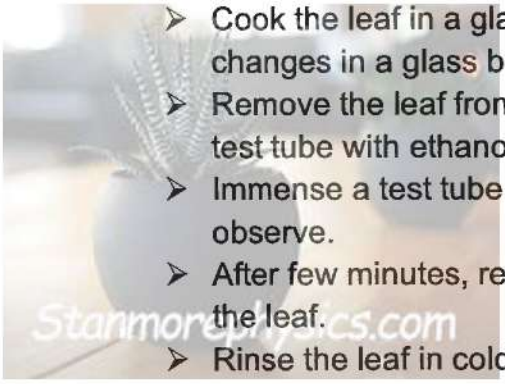
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4. Aim: To test for starch in a green leaf.

5. Apparatus
   - Glass beaker.
   - Test tube.
   - Petri dish
   - Dropper
   - Dissecting needles
   - Gauze wire.
   - Tripod
   - Bunsen burner
   - Methylated spirit.
   - Ethanol/alcohol
   - Match sticks
   - 1 litre of water.
   - Green leaf.(from a young plant)
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6. Method.
   - Half fill glass beaker with water.
   - Put a green leaf in a glass beaker with water.
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   - Immense a test tube with a leaf and ethanol in warm water and observe.
   - After few minutes, remove the leaf from ethanol; observe the color of the leaf.
   - Rinse the leaf in cold water.
   - Place the leaf on a Petri dish and spread it carefully.
   - Using a dropper, add a drop of iodine.
   - Note your observations.
   - NB: Feel the texture of the leaf before and after boiling it in alcohol.



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4.1. Why did you boil the leaf in water?

To kill the leaf/to break the cell wall√

4.2. Did you note any color change in a glass beaker as you were boiling the leaf in water?

No/yes: light green color√

4.3. Why did you boil the leaf in ethanol?

To remove chlorophyll√

4.4. Feel the texture of the leaf before cooking it in ethanol. What is the texture?

The leaf has a coarse texture√

4.5. Note color change as the leaf is boiling in ethanol. What causes the color change?

Ethanol becomes green in color. √**Chlorophyll dissolves in ethanol.** √

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4.6. What is the texture of the leaf after boiling it in ethanol?

The leaf has a smooth texture√

4.7. After boiling the leaf in ethanol, why did you rinse the leaf in water?

To remove ethanol/to soften the cells. √

4.8. What is the color of iodine before adding it into a leaf boiled in ethanol?

Brown√

4.9. Why is it advisable not to heat ethanol directly over a flame?

Ethanol is highly inflammable. It can catch fire. √

4.10. What happens to a leaf boiled in ethanol when iodine solution is added to it?(1)

The leaf turns blue black√

4.11. Give a reason for your observation as stated in 4.10. (1)

Starch in a leaf reacts with iodine and changes the color of iodine to blue black√

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4.12. From what you have observed in this experiment, generate a hypothesis for this practical activity.

Green leaves produce starch during photosynthesis/plants make glucose and store it as starch during photosynthesis(any relevant well phrased hypothesis should be credited) √√

4.13. Write down the conclusion for this experiment.

A green leaf contains starch (any relevant conclusion) √

4.14. Based on the conclusion you have written in 4.13, do you accept or reject your hypothesis?

Accept the hypothesis√ (any relevant response)

4.15. Write down two precautions that have to be observed in this practical activity to ensure the safety of the learners.

- ✓ **No tasting of chemicals√√**
- ✓ **No smelling of chemicals√√**
- ✓ **Laboratory used should be well ventilated.**
- ✓ **Do not heat ethanol directly over a flame.**
- ✓ **When boiling a leaf in ethanol, ensure that the mouth of the test tube used points to a direction where no learners are seated in case contents may squirt out.**
- ✓ **Keep bottle of ethanol/methylated spirit closed and away from open flame at all times. (mark first two only)**

GRAND TOTAL: 20