

KZN DEPARTMENT OF EDUCATION
GREENBURY SECONDARY SCHOOL
FINAL EXAMINATION – 2017 -- GRADE 11
LIFE SCIENCES PAPER 3 -- PRACTICALS

EXAMINER: S.SINGH

DURATION: 1 HR

MODERATORS: K. GOVENDER; C. JUGDHAW

MARKS: 60

DATE: 28:09:2017

NAME: _____

GRADE: 11 _____

INSTRUCTIONS TO LEARNERS:

1. This paper consists of 6 pages
2. Answer all questions in the spaces provided on the question paper.
3. Write neatly.
4. Drawings must be done in pencil and labelled in ink.

QUESTION: 1 -- HANDLING EQUIPMENT, OBSERVING, DRAWING

1.1. PLANT STUDY

Observe the FOUR plant types (A, B, C, and D) in front of you, and answer the questions below.

1.1.1. Write ONLY the LETTER representing the plant in the appropriate space.

- a) The plant that bears naked seeds _____
- b) The plant with a rhizome. _____
- c) A gametophyte plant. _____
- d) A plant that bears fruit _____

(4)

1.2. You are provided with the following:

A specimen	Forceps
Microscope	Dissecting needle
Scalpel	A slide
Petri dish	Tape

You are required to: i) view the specimen under the microscope

ii) dissect and remove the male and female reproductive structures

1.2.1. Handling equipment:

1.2.2. Clarity of specimen:

(2)

PTO/ 1.2.3. Identify...

1.2.3. Identify the plant organ. _____ (1)

1.2.4. Separate the male and female reproductive structures and paste them in the appropriate space below:

<u>Male Reproductive Structure</u>	<u>Female Reproductive Structure</u>

(2)

1.2.5. Draw and label a neat diagram of the Male Reproductive Structure in the space below.

(4)

1.2.6. Name the pollinating agent of this flower.

(1)

1.2.7. Give ONE reason for your answer.

(1)

[15]

PTO/ Question 2

QUESTION 2: DESIGN / PLAN INVESTIGATIONS OR EXPERIMENTS

2.1. The apparatus for an investigation is set up in front of you. Study it and answer the questions below.

2.1.1. Write down the AIM of the investigation. (1)

2.1.2. Write down the steps you would follow to carry out this investigation, using the apparatus in front of you. (4)

2.1.3. State ONE precaution that must be observed when carrying out this investigation. (1)

2.1.4. Draw and label the leaf showing the results of the experiment. (4)

2.2. Smoking is one of the main causes of cancer in the lungs. As a voluntary worker at a Hospice you have been given a project to carry out. You have been asked to investigate the number of lung cancer patients that were once smokers.

Write down FIVE steps that you would follow when planning out your investigation. (5)

QUESTION 3: MAKE OBSERVATIONS/ ANALYSE/ RECOGNISE

3.1. Observe the specimen of the organ provided and answer the questions that follow.

3.1.1. Provide labels for the parts labelled:

A: _____ C: _____
B: _____ D: _____
(4)

3.1.2. Name the functional unit of this structure: (1) _____

3.1.3. State TWO functions of this organ: (2)

(7)

3.2. Two Grade 11 learners want to investigate which enzyme is responsible for chemical digestion of starch to glucose.

They are provided with two different enzymes (Enzymes A and B), starch, warm water at about 37⁰C and basic apparatus and chemicals to test for glucose.

3.2.1. Formulate a HYPOTHESIS for your investigation. (2)

3.2.2. Name the following:
Independent variable: _____
Dependent variable: _____
Controlled variable: _____
(3)

3.2.3. Explain why the water bath was kept at 37⁰C. (1)

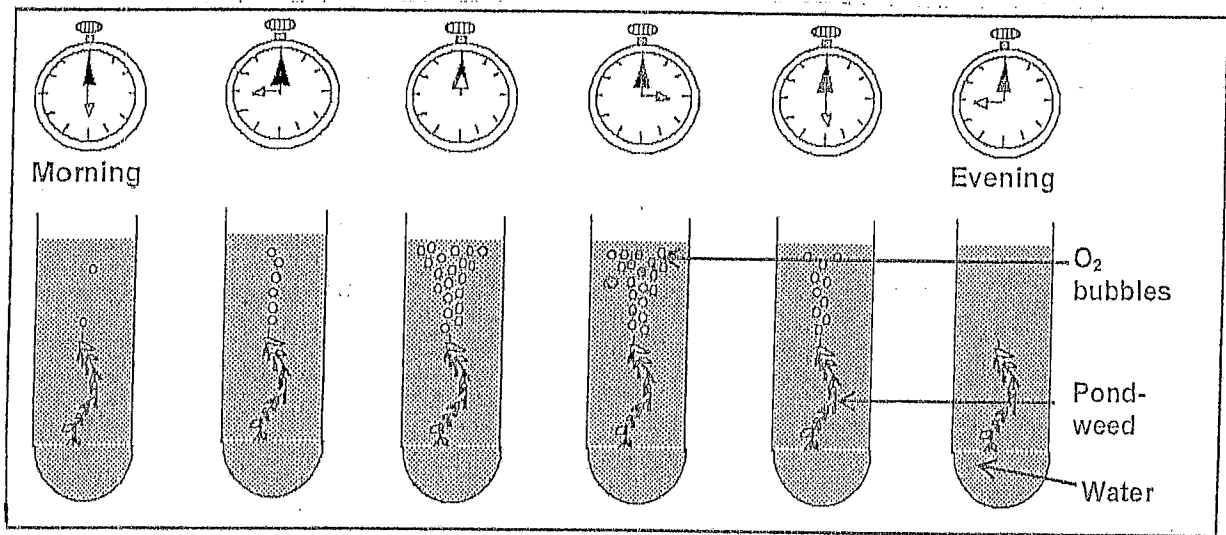
(6)

[13]

PTO / QUESTION 4

QUESTION 4 RECORDING DATA, DRAWING A GRAPH/ INTERPRETING DATA, MEASURING, CALCULATING

4.1. Study the set-up of the apparatus shown in the diagram below. The number of oxygen bubbles (O_2) released was counted at different times of the day as shown by the watch. Since photosynthesis releases oxygen, the amount of oxygen released was used as an indication of the rate of photosynthesis.



4.1.1. Draw a table to record the results of this investigation.

(4)

4.1.2. Use the information from the table you drew above, to draw a bar graph. (5)

PTO/ 4.1.3. What...

4.1.3. What general conclusion can be made from the results of the investigation on page 5. (1)

4.2. POPULATION ECOLOGY

4.2.1. A group of Grade 11 learners have been selected to assist a Flour Mill Company to determine the number of flour beetles in Bread Flour.

As practice a simulation has been set up for you. Each jar contains 250g flour. The spoon measures 10g. Carry out the investigation three times and calculate number of flour beetles present in the jar. Write down the formula and show ALL working. (6)

4.2.2. State ONE way how you can increase the reliability of your results. (1)

[17]

GREENBURY SECONDARY SCHOOL



DEPARTMENT OF MATHS & SCIENCES
H.O.D. MR L. PILLAY

[Handwritten Signature]
13/09/2017

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GREENBURY SECONDARY SCHOOL
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[Signature]
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QUESTION: 1 -- HANDLING EQUIPMENT, OBSERVING, DRAWING

1.1. PLANT STUDY

Observe the FOUR plant types (A, B, C, and D) in front of you, and answer the questions below.

1.1.1. Write ONLY the LETTER representing the plant in the appropriate space.

- | | | |
|-------------------------------------|------------------|-----|
| a) The plant that bears naked seeds | <u>B Pine</u> ✓ | |
| b) The plant with a rhizome. | <u>C Fern</u> ✓ | |
| c) A gametophyte plant. | <u>A Moss</u> ✓ | |
| d) A plant that bears fruit | <u>D Ficus</u> ✓ | (4) |

1.2. You are provided with the following:

A specimen	Forceps
Microscope	Dissecting needle
Scalpel	A slide
Petri dish	Tape

You are required to: i) view the specimen under the microscope
ii) dissect and remove the male and female reproductive structures

1.2.1. Handling equipment:

1.2.2. Clarity of specimen:

(2)

PTO/ 1.2.3. Identify...

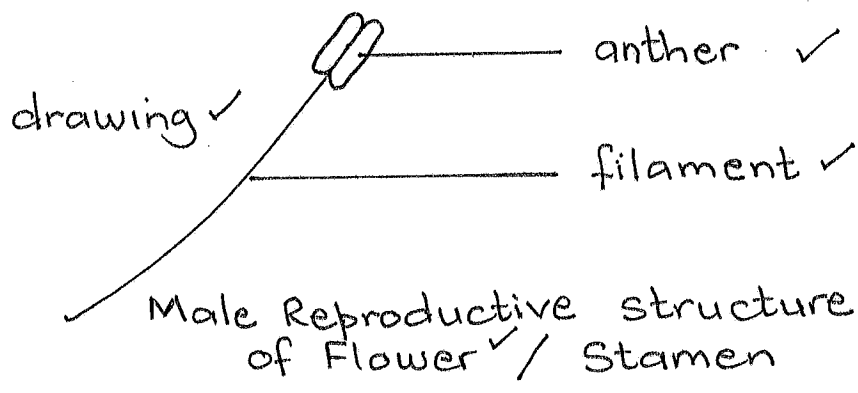
1.2.3. Identify the plant organ. Flower ✓ (1)

1.2.4. Separate the male and female reproductive structures and paste them in the appropriate space below:

<u>Male Reproductive Structure</u>	<u>Female Reproductive Structure</u>
Stick anther ✓	stick ovary ✓

(2)

1.2.5. Draw and label a neat diagram of the Male Reproductive Structure in the space below. (4)



1.2.6. Name the pollinating agent of this flower. (1)
Wind ✓

1.2.7. Give ONE reason for your answer. (1)
Large anthers present / Small petals present ✓

[15]

QUESTION 2: DESIGN / PLAN INVESTIGATIONS OR EXPERIMENTS

2.1. The apparatus for an investigation is set up in front of you. Study it and answer the questions below.

2.1.1. Write down the AIM of the investigation. (1)

To test for starch in green leaves. ✓
To test if chlorophyll is essential for photosynthesis

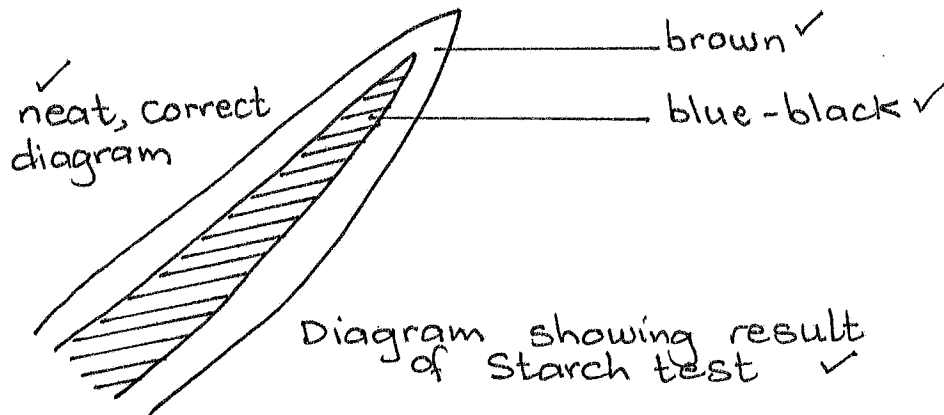
2.1.2. Write down the steps you would follow to carry out this investigation, using the apparatus in front of you. (4)

1. Boil the leaf in water. ✓
2. Boil the leaf in alcohol. ✓ Place leaf in a test-tube of alcohol and place the test-tube in boiling water
3. Rinse leaf in hot water ✓
4. Add iodine to decolourised leaf. ✓

2.1.3. State ONE precaution that must be observed when carrying out this investigation. (1)

Ensure that the burner is off ✓ when boiling the leaf in alcohol.

2.1.4. Draw and label the leaf showing the results of the experiment. (4)



2.2. Smoking is one of the main causes of cancer in the lungs. As a voluntary worker at a Hospice you have been given a project to carry out. You have been asked to investigate the number of lung cancer patients that were once smokers.

Write down FIVE steps that you would follow when planning out your investigation. (5)

1. Decide on sample size / Identify size of the group to be tested.
2. Prepare a questionnaire
3. Decide how and when questionnaires will be distributed and collected.
4. Identify the groups of people to be investigated eg. clinics, hospitals, senior citizen groups, houses.
5. How will data be recorded

QUESTION 3: MAKE OBSERVATIONS/ ANALYSE/ RECOGNISE

3.1. Observe the specimen of the organ provided and answer the questions that follow.

3.1.1. Provide labels for the parts labelled:

A: Cortex C: Calyx
B: Pelvis D: medulla
(4)

3.1.2. Name the functional unit of this structure: (1) Nephron

3.1.3. State TWO functions of this organ: (2)
Osmoregulation, Regulation of pH, Salt regulation
Removal of metabolic wastes / excretion.
(7)

3.2. Two Grade 11 learners want to investigate which enzyme is responsible for chemical digestion of starch to glucose.

They are provided with two different enzymes (Enzymes A and B), starch, warm water at about 37°C and basic apparatus and chemicals to test for glucose.

3.2.1. Formulate a HYPOTHESIS for your investigation. (2)
Enzyme A will digest starch into glucose ✓✓ /
Enzyme B will digest starch into glucose

3.2.2. Name the following:

Independent variable: Enzyme ✓
Dependent variable: Conversion of starch into glucose / digestion of starch / presence of glucose
Controlled variable: Same T° / same amt of starch / same amt of enzyme / identical beaker or test tube
(3)

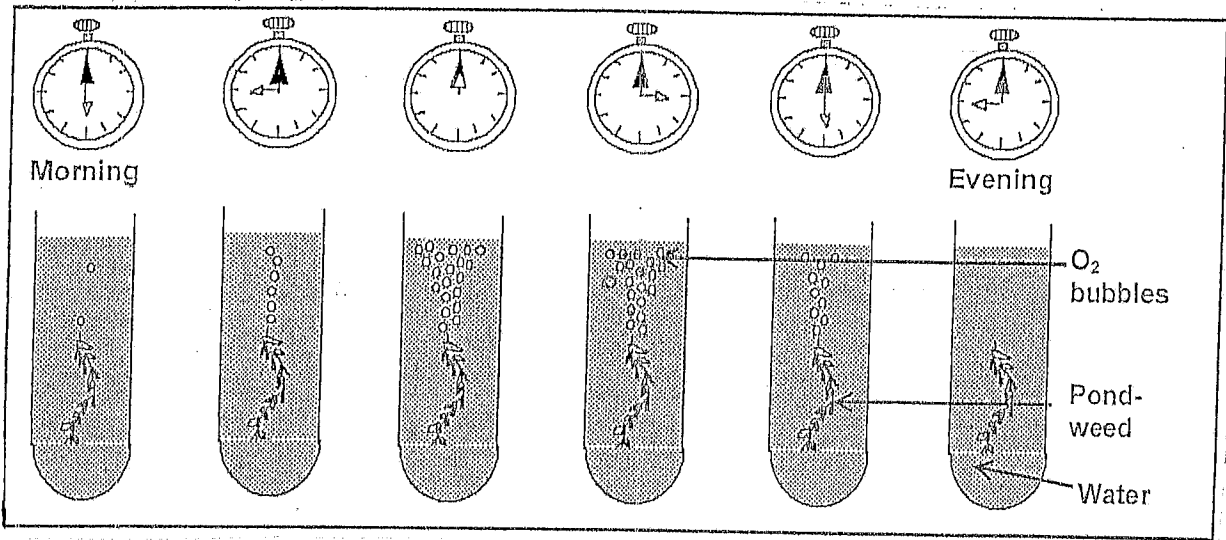
3.2.3. Explain why the water bath was kept at 37°C. (1)
Optimum T° for enzyme activity / Body T°
(6)

[13]

PTO / QUESTION 4

QUESTION 4 RECORDING DATA, DRAWING A GRAPH/ INTERPRETING DATA, MEASURING, CALCULATING

4.1. Study the set-up of the apparatus shown in the diagram below. The number of oxygen bubbles (O_2) released was counted at different times of the day as shown by the watch. Since photosynthesis releases oxygen, the amount of oxygen released was used as an indication of the rate of photosynthesis.



4.1.1. Draw a table to record the results of this investigation.

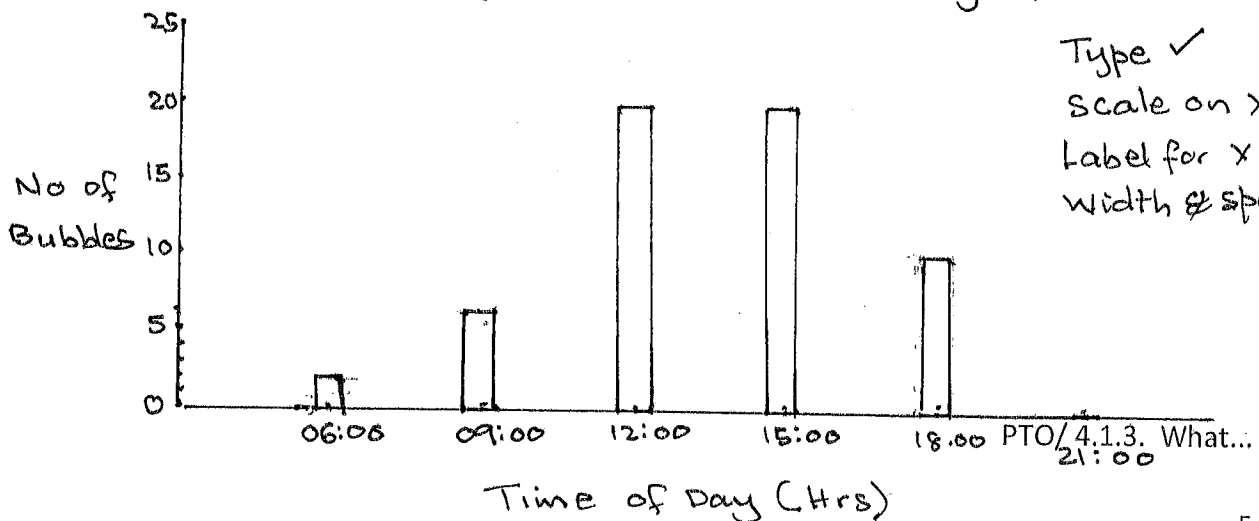
(4)

Time ✓	06:00	09:00	12:00	15:00	18:00	21:00
No. of Bubbles ✓	2	6	20	20	10	0

✓ All 6 correct
✓ All 6 correct

4.1.2. Use the information from the table you drew above, to draw a bar graph. (5)

Number of Bubbles released during 24 hours ✓



4.1.3. What general conclusion can be made from the results of the investigation on page 5.

(1)

Photosynthesis is highest from 12-3pm ✓ /
The rate of photosynthesis increases from 6.00 to 12.00,
remains stable at 15.00 and decreases thereafter until it stops ✓

4.2. POPULATION ECOLOGY

4.2.1. A group of Grade 11 learners have been selected to assist a Flour Mill Company to determine the number of flour beetles in Bread Flour.

As practice a simulation has been set up for you. Each jar contains 250g flour. The spoon measures 10g. Carry out the investigation three times and calculate number of flour beetles present in the jar. Write down the formula and show ALL working. (6)

$N = \frac{\text{Total Mass of Flour + Beans}}{\text{Sample Size}} \times \text{No. of Beans in Sample} \checkmark$

<u>$= \textcircled{1} \frac{450g}{10g} \times (?) \checkmark \textcircled{2} \text{ ---}, \textcircled{3} \text{ ---}$</u>	<u>OR</u>
<u>$= \text{answer A} \checkmark ; \text{Ans B}; \text{ans C}$</u>	<u>$= \text{sample size 1} + \text{sample size 2} +$</u>
<u>$= \frac{\text{answer A} + \text{answer B} + \text{Answer C}}{3} \checkmark$</u>	<u>$\text{sample size 3} \div 3$</u>
<u>$= \text{ --- } \checkmark$</u>	<u>eg $\frac{5+7+4}{3} \times \frac{250g}{10g} \checkmark$</u>
	<u>$= \frac{16}{3} \times \frac{250g}{10g} \checkmark$</u>
	<u>$= \frac{400}{3} = 133.33 \text{ flour beetles}$</u>

4.2.2. State ONE way how you can increase the reliability of your results. (1)

Take more samples and find the average ✓ /
Choose samples randomly.