



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES P3 (PRACTICAL)

EXEMPLAR 2012

MEMORANDUM

MARKS: 60

This memorandum consists of 5 pages.

QUESTION 1

1.1 Use the following checklist to assess the manipulation of apparatus:

CRITERIA	DESCRIPTION	MARK
Set up a water bath	Use the tripod, wire gauze, beaker and Bunsen burner/hot water ✓	1
Place a green leaf in the water bath	Remove a green leaf from the plant and place for 10 to 20 seconds in hot water ✓ using a forceps ✓	1 1
Test tube with alcohol/methylated spirits	Fill test tube/small beaker $\frac{3}{4}$ full ✓ with alcohol/methylated spirits and place it in the water bath ✓	1 1
Remove leaf from water bath	Use the forceps to remove leaf from water ✓ bath and place in test tube ✓ /small beaker with alcohol/methylated spirits	1 1
Remove the leaf from test tube/ small beaker	Use the forceps to remove the leaf from the test tube/small beaker and place into the water bath ✓	1
Leaf in water bath	Wash ✓ /rinse the leaf in the water bath	1
Remove leaf from water bath	Use the forceps and remove the leaf from the water bath ✓ and spread ✓ the leaf out onto a watch glass ✓ /saucer/petri dish	1 1 1
Iodine solution	Use a pipette ✓ /dropper to add iodine solution ✓ onto the leaf	1 1
Clean up	Wash and dry apparatus and place back for next person	1
TOTAL		15

QUESTION 2

- 2.1 Enzyme A ✓ will digest starch ✓ into glucose ✓
Enzyme B ✓ will digest starch ✓ into glucose ✓ (3)
- 2.2 (a) Enzyme ✓ (1)
- (b) Conversion of starch into glucose ✓ (1)
- (c) Same temperature ✓ /Same amount of starch/Same amount of enzyme/
identical test-tube or beaker (1)

- 2.3
1. Make two solutions ✓
of the same amount of starch ✓, and warm water ✓ in two test tubes (test tube 1 and 2).
 2. Place 5 ml of enzyme A ✓ in test tube 1, and
 3. 5 ml of enzyme B ✓ in the test tube 2
 4. Allow apparatus to stand ✓ for an hour
 5. Test the solutions in the test tubes for glucose ✓,
by adding Benedict's solution/Fehlings A+B ✓
 6. Place the test tubes in a hot water bath ✓
 7. If the contents change from light blue to green/yellow/orange in the test tube ✓ then the enzyme has digested starch to glucose ✓ and the hypothesis must be accepted for the chosen enzyme
 8. If the contents remain blue in the test tube ✓ then the enzyme has not digested starch to glucose ✓ and the hypothesis must be rejected for the chosen enzyme

any

(9)
[15]**QUESTION 3**

3.1 To determine how the rate of photosynthesis ✓ changes over time ✓. (2)

3.2 Size of pond weed ✓ the amount of water ✓ and the size of the test tube ✓
any (2)

3.3

Time of day	06:00	09:00	12:00	15:00	18:00	21:00
Number of bubbles	2	6	20	20	10	0

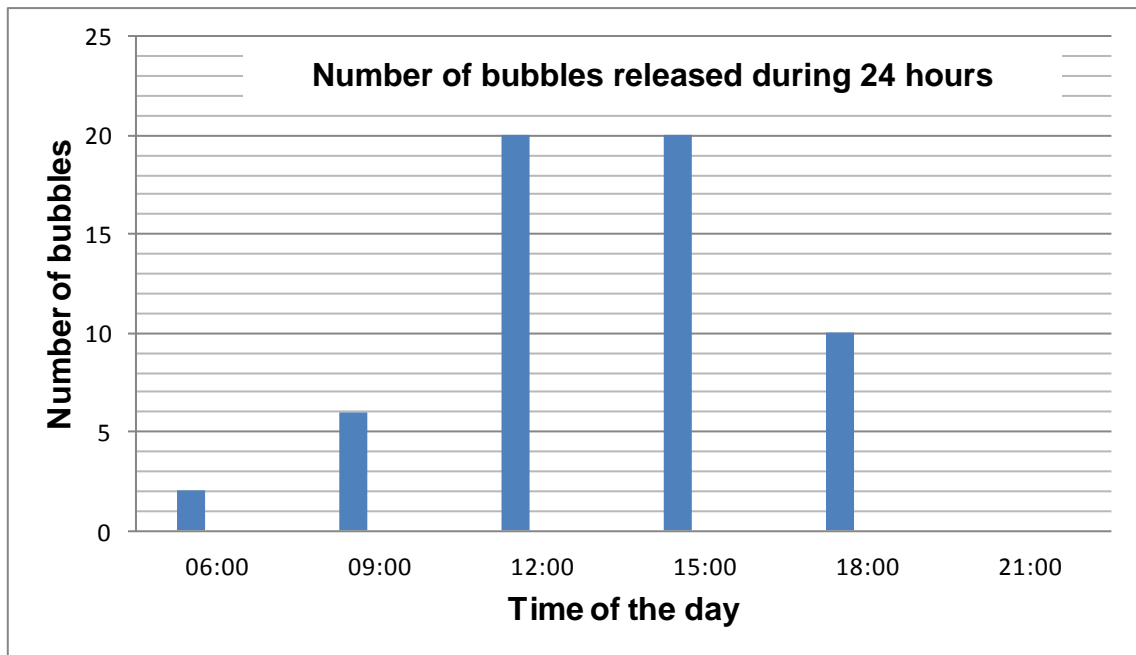
Marking checklist for drawing the table

CRITERIA	DESCRIPTION	MARKS
Labels	Both labels correct	1
	One/two label(s) incorrect	0
Time of day	All six readings correct	1
	1–5 readings incorrect	0
Number of bubbles	All six readings correct	1
	1–5 readings incorrect	0

3 + 1 for drawing of table

(4)

3.4



Allocation of marks for plotting the bar graph:

Correct type of graph/ bar graph	1		
Title of graph	1		
Correct labels for X-axis and Y-axis	1		
Plotting of bars	2: Plotted all 6 bars correctly	1: Plotted 4 to 5 bars correctly	0: Plotted 0 to 3 bars correctly

If the wrong type of graph is drawn, marks will be lost for correct type of graph and plotting of bars.

(5)

3.5 The rate of photosynthesis increases from 06:00 to 12:00√, remains stable to 15:00√ and then decreases thereafter until it stops √ any

(2)
[15]

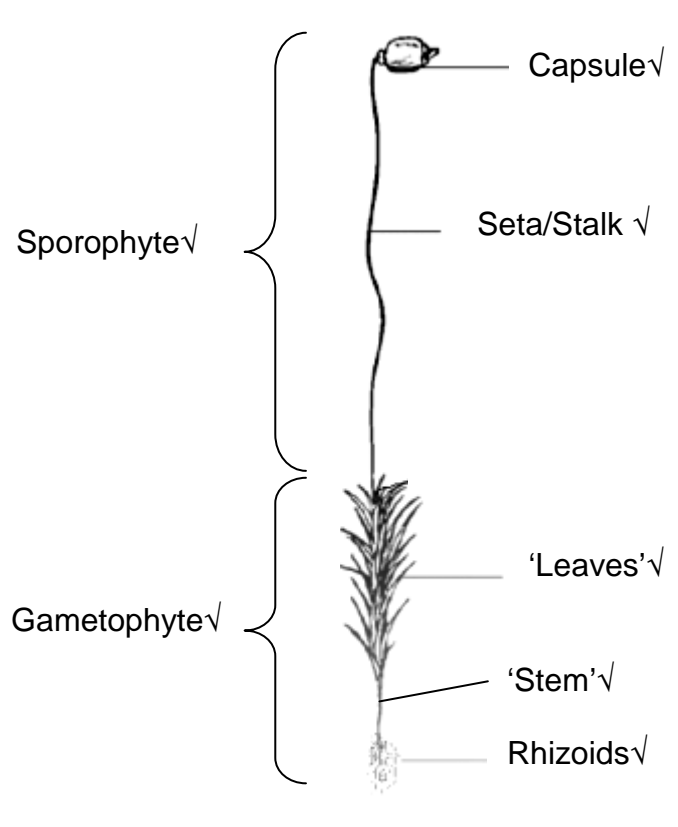
QUESTION 4

4.1.1 A – Pelvis ✓
 B – Urether ✓
 C – Medulla ✓
 E – Cortex ✓
 F – Renal pyramid ✓ (5)

4.1.2 D – Renal capsule ✓ to protect the kidney ✓ (2)

4.1.3 Insulates the kidneys ✓/keeps them in position/prevents injury any (1)
(8)

4.2 Drawing of a moss plant ✓ illustrating the gametophyte and sporophyte



Allocation of marks:

Caption: 1 mark

Drawing: 1 mark for including the sporophyte and gametophyte in the drawing

Labels: 5 marks for any 5 labels

(7)
[15]

TOTAL: 60