



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**SENIOR CERTIFICATE EXAMINATION – 2008**

**BIOLOGY P2**

**STANDARD GRADE**

**MAY/JUNE 2008**

**MEMORANDUM**

**MARKS: 150**

**This memorandum consists of 11 pages.**

**PRINCIPLES RELATED TO MARKING HG & SG BIOLOGY 2008**

This document should be attached to all memoranda at the end of 2008 and made available to ALL Life Sciences teachers.

1. **If more information is given than marks allocated**  
Stop marking when maximum marks are reached and put a wavy line and 'max' in the right hand margin.
2. **If, for example, three reasons are required and five are given**  
Mark the first three irrespective of whether all or some are correct/incorrect.
3. **If whole process is given when only part of it is required**  
Read all and credit relevant part.
4. **If comparisons are asked for and descriptions are given**  
Accept if differences / similarities are clear.
5. **If tabulation is required but paragraphs are given**  
Candidates will lose marks for not tabulating.
6. **If diagrams are given with annotations when descriptions are required**  
Candidates will lose marks.
7. **If flow charts are given instead of descriptions**  
Candidates will lose marks.
8. **If sequence is muddled and links do not make sense**  
Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.
9. **Non-recognised abbreviations**  
Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of answer if correct.
10. **Wrong numbering**  
If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.
11. **If language used changes the intended meaning**  
Do not accept.
12. **Spelling errors**  
If recognisable accept provided the word does not mean something else in Biology or if it is out of context.
13. **If common names given in terminology**  
Accept provided it is accepted at *this* memo discussion.

14. **If letter only is asked for and name only is given (and vice versa)**  
No credit.
15. **If units are not given in measurements**  
Candidates will lose marks. Memorandum will allocate marks for units separately.
16. Be sensitive to the **sense of an answer, which may be stated in a different way.**
17. **Caption**  
All illustrations (diagrams, graphs, tables, etc.) must have a caption.
18. If you have doubts consult the other language memo. If you still have doubts ask the Provincial Internal Moderator to contact the National Internal Moderator or the External Moderators.
19. **Code-switching of official languages (terms and concepts)**  
A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.
20. No changes may be made to the marking memoranda without consulting the Provincial Internal Moderator, who in turn will consult with the External Moderator/s.
21. Only memoranda bearing the signatures of the UMALUSI moderators and distributed by the National Department of Education via the Provinces may be used.

**SECTION A**

**QUESTION 1**

**1.1**

1.1.1 C✓✓

1.1.2 C✓✓

1.1.3 A✓✓

1.1.4 A✓✓

1.1.5 C✓✓

1.1.6 B✓✓

1.1.7 B✓✓

**(7 x 2) (14)**

**1.2**

1.2.1 Phototropism✓

1.2.2 Conjunctiva✓

1.2.3 Cerumen / wax ✓

1.2.4 Tissue fluid✓

1.2.5 Auxins✓

1.2.6 Sensory neuron✓

**(6)**

**1.3**

1.3.1 C✓✓

1.3.2 H✓✓

1.3.3 E✓✓

1.3.4 A✓✓

1.3.5 F✓✓

**(5 x 2) (10)**

**1.4**

- 1.4.1 Which surface<sup>✓</sup> of the leaf has the most stomata / loses water the quickest<sup>✓</sup> (2)
- 1.4.2 
$$\frac{6 + 15 + 9 + 17 + 10 (57) \checkmark}{5 \checkmark}$$
  
= 11,4<sup>✓</sup> s<sup>✓</sup> (4)
- 1.4.3 - Lower surface of the leaf has more stomata / loses water more quickly<sup>✓</sup>  
- than the upper surface<sup>✓</sup> ( vice versa) (2)
- 1.4.4 - Do investigation under the same environmental conditions <sup>✓</sup>  
- at the same time of the day <sup>✓</sup> **Mark first 2 answers only** (2)
- 1.4.5 - Root pressure <sup>✓</sup>  
- Suction force of transpiration <sup>✓</sup>  
- Capillarity <sup>✓</sup> Any 2 (2)  
**Mark first 2 answers only**
- 1.4.6 - Thick cuticle / few stomata <sup>✓</sup>  
reduce the rate of water loss<sup>✓</sup>  
- Sunken stomata / presence of epidermal hairs <sup>✓</sup>  
to trap water vapour<sup>✓</sup>  
- Small stomata / small leaves <sup>✓</sup>  
reduce surface area for water loss <sup>✓</sup> Any (1 X 2) (2)  
**Mark first answer only (14)**

**1.5**

- 1.5.1 - Ultra / Glomerular filtration <sup>✓</sup> (1)
- 1.5.2 - Podocytes <sup>✓</sup> (1)
- 1.5.3 (a) - Blood<sup>✓</sup> (1)  
(b) - Filtrate<sup>✓</sup> (1)
- 1.5.4 - Afferent arteriole wider <sup>✓</sup>  
- than efferent arteriole<sup>✓</sup>  
- Blood pumped by heart<sup>✓</sup> Any 2 (2)  
**(6)**

**TOTAL QUESTION 1: 50**  
**TOTAL SECTION A: 50**

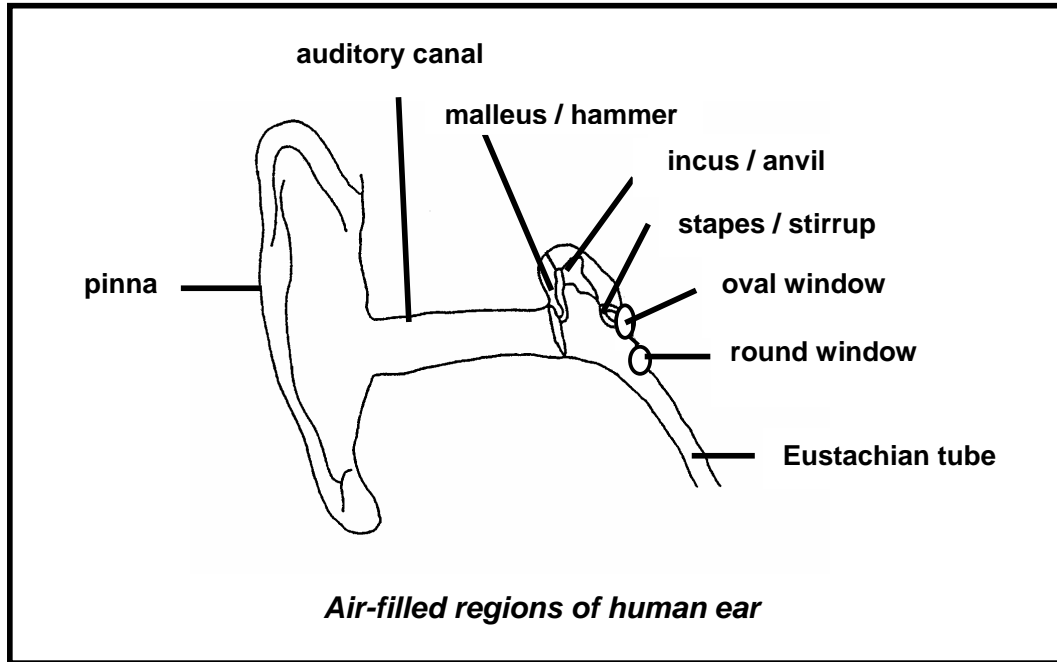
**SECTION B****QUESTION 2****2.1**

- 2.1.1 A: Sclera ✓  
B: Ciliary body / muscle ✓  
D: Cornea ✓ (3)
- 2.1.2 (a) - Dim/poor ✓  
- light ✓ conditions  
**OR**  
- Increased ✓  
adrenalin concentration ✓  
**OR**  
- Emergency ✓ ✓ (2)
- (b) - Viewing objects nearer ✓  
- than 6 metres ✓ (2)
- 2.1.3 - Radial muscles ✓  
- contract ✓  
- Circular muscles ✓  
- relax ✓ (4)
- 2.1.4 - Suspensory ligaments ✓  
- will not be able to change tension ✓  
- hence lens ✓  
- will not be able to change its convexity ✓  
- and light rays from objects nearer or further than 6 metres will  
not be focused on the retina ✓  
- leading to poor sight / blindness / blurred image ✓ Any 3 (3)
- 2.1.5 - By membranes/meninges ✓  
- the skull ✓  
- and cerebrospinal fluid ✓ Any 2 (2)

**Mark first 2 answers only (16)**

2.2

2.2.1



**Caption (1)**  
**Only air-filled regions drawn (1)**  
**Any Four correct labels (4)**

(6)

2.2.2 Air cannot get into the middle ear / Eustachian tube✓  
resulting in an unequal pressure on either side of tympanum✓  
resulting in inefficient conduction of vibrations✓  
and your being temporarily deaf ✓

Any 3

(3)

**(9)**

**TOTAL QUESTION 2: 25**

**QUESTION 3****3.1**

- 3.1.1 - Gaseous exchange ✓  
- Transpiration ✓
- Any 1 (1)  
**Mark first answer only**

Dialysis tubing	Guard cells
- Membranes have a uniform / equal thickness ✓ - Are not living membranes ✓ - Macroscopic ✓	- Unevenly thickened cell walls ✓ - Are living cells ✓ - Microscopic ✓ ✓ for table

(Any 2 x 2) (5)

- 3.1.3 - Water moved from high  $\Psi$  in the dish ✓  
- through a semi permeable membrane ✓  
- to a low  $\Psi$  in the dialysis tubing ✓  
- As water fills up, the dialysis tubing expands ✓
- (4)

- 3.1.4 - Low water potential ✓ in guard cells  
- therefore water enters guard cells / endosmosis ✓  
- Turgor pressure of guard cells increases ✓  
- Thin outer walls stretch ✓  
- and followed by thick inner walls ✓  
- which move apart ✓
- Any 4 (4)  
**(14)**

**3.2**

- 3.2.1 Transpiration ✓ (1)

- 3.2.2  $(100 - 87) \checkmark = 13 \checkmark \text{ cm}^3 \checkmark$  (3)

- 3.2.3 - Put a layer of oil ✓ on the surface of the water (1)

- 3.2.4 - To maintain turgidity / support of the cells ✓  
- for photosynthesis ✓  
- as a cooling effect ✓  
- suction force caused by transpiration develops so that water and mineral salts can be moved upwards ✓ against gravity from the roots
- Any 3 (3)  
**Mark first 3 answers only**

- 3.2.5 Introduce:
- a light source ✓
  - high temperature ✓
  - low humidity ✓
  - strong wind ✓
- Use:
- a larger twig ✓
  - a twig with more leaves ✓
  - a twig with broader leaves ✓

Any 3  
**Mark first 3 answers only**

(3)  
**(11)**

**TOTAL QUESTION 3: 25**

**QUESTION 4****4.1**

- 4.1.1 Kidney ✓ (1)
- 4.1.2 A: Renal cortex ✓  
B: Pyramids ✓  
C: Renal medulla ✓  
D: Renal pelvis ✓ (4)
- 4.1.3 (a) Protects the kidney ✓ (1)  
(b) Transports urine to the bladder ✓ (1)
- 4.1.4 - Excretion ✓  
- Osmoregulation ✓  
- pH regulation ✓  
- Mineral salt regulation ✓

Any 3 (3)  
**Mark first 3 answers only (10)**

- 4.2.1  $100 \checkmark - (60+20+5) / 85 \checkmark = 15 \checkmark \%$  (3)
- 4.2.2 -More sweat formed on day 2 ✓  
-less water available to be excreted as urine / person drinks less water ✓ (2)  
**(5)**

**4.3**

- 4.3.1 B: Water ✓  
C: Sodium ions ✓ (2)
- 4.3.2 B: Osmosis ✓  
C: Diffusion ✓ (2)
- 4.3.3 - When the blood is too acidic ✓  
- more hydrogen ions ✓ are excreted / secreted  
- When the blood is too basic/alkaline ✓  
- more bicarbonate ions ✓ are excreted / secreted  
- from the blood into the distal convoluted tubule ✓ (5)
- 4.3.4 -Urine ✓ (1)  
**(10)**

**TOTAL QUESTION 4: 25**

**QUESTION 5****5.1**

- 5.1.1 B: Thyroid✓ gland  
C: Adrenal✓gland (2)
- 5.1.2 - Secretions must enter✓ blood vessels  
- to be transported✓ away (2)
- 5.1.3 A ✓ (1)
- 5.1.4 - Due to a greater demand for energy✓in this emergency  
- there is greater demand for thyroxine  
- Hypophysis is stimulated to secrete more TSH✓  
- Increased TSH stimulates the thyroid gland✓  
- into secreting more thyroxin✓  
- to increase the metabolic rate✓ Any 5 (5)
- 5.1.5 (a) Decreases ✓ (1)  
(b) Increases ✓ (1)  
(c) Contracts✓ (1)  
**(13)**

**5.2**

- 5.2.1 (a) Cooler ✓ at II ✓  
**OR**  
Warmer ✓ at III ✓ (2)
- (b) Warmer ✓ at II ✓  
**OR**  
Cooler ✓ at X ✓ (2)
- 5.2.2 - Blood vessels must lie close ✓ to each other  
- Blood must flow in opposite directions✓ in the two blood vessels  
- Blood in one blood vessel must be warmer/cooler ✓ than in the other one (3)
- 5.2.3 (a) - To prevent excessive heat loss / heat retention✓  
- when the environmental temperature is very low / high✓  
- thereby maintaining constant body temperature✓ Any 2 (2)
- (b) - Muscular activity✓  
- which releases lots of energy✓  
- to compensate for lost heat energy✓  
- thereby maintaining constant body temperature✓ Any 3 (3)  
**(12)**

**TOTAL QUESTION 3: 25**  
**TOTAL SECTION B: 100**  
**GRAND TOTAL: 150**