



# education

Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

## **NATIONAL SENIOR CERTIFICATE**

### **GRADE 11**

**LIFE SCIENCES P1**

**EXEMPLAR 2007**

**MEMORANDUM**

**This memorandum consist of 11 pages**

**SECTION A****1.1**

1.1.1 A✓✓

1.1.2 A✓✓

1.1.3 D✓✓

1.1.4 B✓✓

1.1.5 D✓✓

(5x2)

**(10)****1.2**

1.2.1 Joints✓

1.2.2 Antagonistic muscles✓

1.2.3 Excretion✓

1.2.4 Pathogen✓

1.2.5 Mycelium✓

1.2.6 Vector✓

(6x1)

**(6)****1.3**

1.3.1 F✓

1.3.2 G✓

1.3.3 K✓

1.3.4 C✓

1.3.5 I✓

1.3.6 J✓

(6x1)

**(6)****1.4**

1.4.1 accept up to 5.1 ✓million

(1)

1.4.2 The number of people infected with HIV increases✓ from 1998 to 2008✓,  
thereafter / from 2008 to 2010✓ the number of people infected with HIV  
remains constant✓

any 3

**(3)**

1.4.3 A vaccine✓ could have been produced to prevent any further infections✓/  
Infected people✓ are using condoms✓/ Very few people✓ indulge in risky  
sexual behaviour✓ any other logical reason

(2)

**(6)****1.5**

1.5.1 Brain✓

(1)

1.5.2 A medulla oblongata✓

C Cerebellum✓

(2)

1.5.3 Seat of judgement✓/reasoning✓/ intelligence✓  
/site for interpretation of sensations✓

**(Mark first TWO only)**

any 2 x 1

(2)

1.5.4 Skull/cranium✓

(1)

1.5.5 Loss ✓of coordination/ balance✓

(2)

1.5.6 No✓

(1)

- 1.5.7 She will be breaking the law✓because her blood alcohol is above the legal limit✓ OR She could cause an accident ✓because her senses have been dulled✓  
(Mark first reason only) any 1 x 2 (2)  
(11)

**1.6**

- 1.6.1 (a) 36.8 - 36.9✓ °C (1)  
(b) 3/three✓ (1)  
1.6.2 (a) 12<sup>th</sup> March 2006✓ (1)  
(b) Day 7✓ (1)  
1.6.3 (a) 35.7✓ °C ( accept range 35.6 to 35.8) (1)  
(b) 37.3✓ °C (accept range 37.2 to 37.4) (1)  
1.6.4 (a) This is the hot stage during which the released merozoites quickly enter new red blood corpuscles/blood✓ This causes rise in temperature and the patient feels hot. (1)  
(b) Shivering/ chattering of the teeth✓ (1)  
1.6.5
- Sleeping under mosquito nets✓
  - Spraying of insect repellent chemicals onto the skin✓
  - Wearing long sleeved clothes during the evening (time when most likely to be bitten) ✓
  - Spray insecticides e.g DDT onto mosquito resting places✓
  - Taking preventative drugs/medication✓ which limits the entry of the parasites to the liver and therefore reducing multiplication.
  - Spraying oil on the surface of standing water for e.g drains✓ to block the breathing tubes of the mosquito larvae
  - Do not leave stagnant water in buckets, old tyres etc. ✓
- (Mark first THREE only) any 3 x 1 (3)  
(11)

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

**QUESTION 2****2.1**

- 2.1.1 Sterile means no micro-organisms are present/  
micro – organisms have been killed✓ (1)
- 2.1.2 Microbes are found ✓on human hair✓ OR  
Microbes are not found ✓on human hair✓ (2)
- 2.1.3 30 ✓ °C (1)
- 2.1.4 This is closest to the optimum temperature ✓ for growth of bacteria✓ (2)
- 2.1.5 Use a sterile petri dish containing sterile nutrient agar✓  
but do not put in a strand of human hair✓ (2)
- 2.1.6 The control is needed to be able to compare✓ it with the experiment✓ (2)
- (10)**

**2.2**

- 2.2.1 Antibiotic B is more effective✓ in destroying bacteria than antibiotic F✓  
OR  
Antibiotic B has a larger area of no bacterial growth ✓compared  
to antibiotic F✓ (2)
- 2.2.2 (a) E✓ (1)
- (b) Antibiotic E is the next most effective antibiotic after antibiotic B✓  
as shown by the second largest zone of no bacterial growth✓ (2)
- 2.2.3 (a) A✓ and C✓ **(Mark first Two only)** (2)
- (b) Both antibiotics A and C do not destroy any bacteria✓  
as there is no clear area showing no bacterial growth✓ (2)
- 2.2.4 Many bacteria have the ability to mutate✓  
to forms which are resistant to drugs.✓  
If the antibiotic course is not completed,  
it could lead to a build up of a resistant population of bacteria.✓  
This drug resistance can be passed from harmless bacteria to pathogens✓  
any 3 (3)
- 2.2.5 (a) Fungal spores could act like an antibiotic ✓✓ (2)
- (b) Fungal spores could cause fungal diseases✓✓ (2)

- 2.2.6 During a viral disease, the body's immune system is lowered✓.  
Opportunistic diseases caused by bacteria✓. (like pneumonia and TB)  
can then attack the person in this weakened state.  
Antibiotics are given to destroy✓ these bacteria before they cause  
the person to get more sick. ✓

any 2 (2)

- 2.2.7 Antiseptic is not taken orally or intra-venously✓  
It is used on the surface of the human body (cut/wound) ✓

**(Mark first TWO only)** (2)  
**(20)**

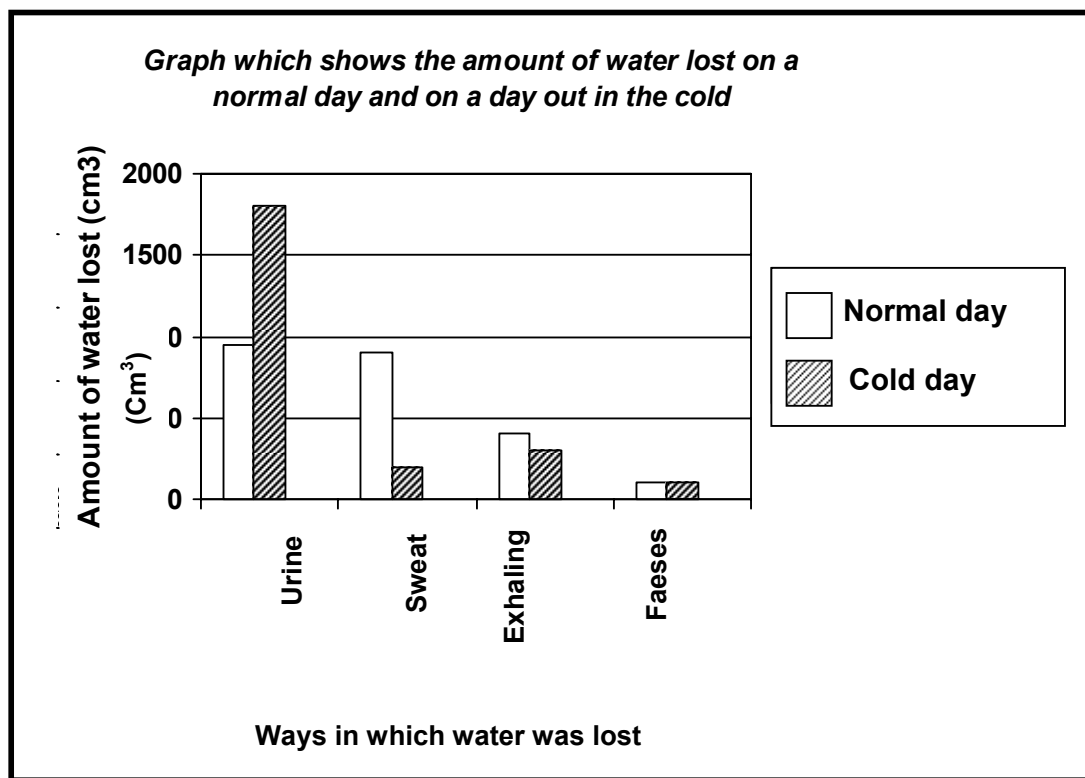
**TOTAL QUESTION 2: 30**

**QUESTION 3**

3.1.1  $3000 - 1000 \checkmark = 2000 \checkmark \text{ cm}^3 \checkmark$   
OR

$3000 - (800 + 200) \checkmark = 2000 \checkmark \text{ cm}^3 \checkmark$  (3)

3.1.2

**Rubric for the mark allocation of the graph**

Correct type of graph	1			
Title of graph	1			
Correct label for X-axis/ correct labels for bars	1			
Correct label for Y-axis	1			
Clear distinction between normal day and cold day/ Key	1			
correct width of bars	1			
Appropriate scale for Y-axis	1			
Plotting of the bars	4: draws 7 to 8 bars correctly	3: draws 5 to 6 bars correctly	2: draws 3 to 4 bars correctly	1: draws 1 to 2 bars correctly

Wrong type of graph drawn: marks lost for "correct type of graph" as well as for drawing of the bars.

(11)

3.1.3 Drink more water/ increase fluid intake✓

(1)

## 3.1.4

- Due to dehydration as a result of excessive water loss from sweating etc✓
- there is an increase in osmotic concentration of blood / shortage of water in the blood✓
- which stimulates the osmoreceptors in the hypothalamus✓
- Impulses are generated which stimulate the hypophysis✓
- to release more ADH✓
- causing the walls of the distal and collecting ducts✓
- to be more permeable to water✓
- This allows more water than usual to be reabsorbed✓
- from the filtrate back into the blood✓
- returning the volume and composition of the blood to normal. ✓
- More concentrated urine is formed✓
- Less urine is formed✓

any 5 (5)  
**(20)**

- 3.2.1 (a) F✓ (1)  
(b) B✓ C✓ and E ✓ (3)

- 3.2.2 (a) D✓ (1)  
(b) A✓ (1)

- 3.2.3 (a) Ligaments are connective tissue that joins bones to bones✓ (1)

(b) Yes✓	(b) No✓ (1)
(c) The injury may not be due to the athlete's fault/unintentional✓ OR Just like paid sick leave✓	(c) Not taking part in the competition may make their team to lose✓ Or It prevents athletes from willingly pulling out of competitions under the pretext of injury✓ Or Any other logical answer (1)

- (d) He will have an unfair advantage ✓ over other competitors with normal knees (1)  
**(10)**

**TOTAL QUESTION 3: 30**

**SECTION C****QUESTION 4****4.1**

4.1.1 Diagram 1✓ (1)

4.1.2 Ciliary muscles contract✓  
 the ciliary body moves closer to the lens ✓  
 tension on suspensory ligaments✓ decreases✓  
 tension on lens✓ is released✓  
 elastic lens bulges/lens becomes more convex✓  
 increasing its refractive power✓ any 6 x 1 (6)

4.1.3 A✓ (1)

4.1.4 The person will not be able to accommodate for distant and near vision✓  
 The person will not be able to see clearly✓ (2)  
**(10)**

**4.2**

4.2.1 Contractions of the ventricle✓ increase pressure✓ and relaxing of heart  
 muscles✓reduce pressure✓/ OR  
 diastole✓✓ and systole✓✓ (4)

4.2.2 Capillaries have thin walls/ endothelium✓  
 These would rupture✓ under high pressure✓  
 A lower pressure slows down movement of blood✓  
 allowing more time for diffusion✓ any 4 (4)

4.2.3 lack of exercise✓  
 more people smoking✓  
 rich fatty diets✓  
 obesity ✓ **(Mark first THREE only)** (3)

4.2.4 Education✓of people on the dangers of high blood pressure/smoking/  
 obesity/ poor diets✓ **(Mark first ONE only)** (2)

4.2.5 C✓✓ (2)  
**(15)**



**4.3 Suggested/ Possible answer****Procurement**

There could be marketing drive to encourage potential organ donors.  
There could be an organ donor foundation / department set up to educate potential donors starting at schools/tertiary level.  
A list/ data bank of potential donors should be drawn up nationally / provincially.  
Consent forms from the potential donors should be sought while they are still alive.  
Positive publicity in the media could be given to potential donors and past donors so that people could see that they can save lives by being donors.  
Families of the donor could be compensated for donating organs.

**Fair distribution**

A priority list could be drawn up/ those who need it most should be given preference irrespective of social status.  
The social worth of the recipient should be taken into account in the priority list e.g a doctor could get a new organ before a prisoner.  
The lifestyle of a person could be taken into account e.g an alcoholic/smoker should not be in contention for a liver/lung transplant.  
Those who can afford to pay for their own costs may /may not be given preference.

**Own view/ donor/non donor**

Support or does not support organ donation

**Support**

Give somebody a new lease of life  
A dead person will have no use for these organs  
You or a family member may be a potential recipient of an organ  
Some religion/cultural views support organ donation

**Does not support**

Religious objections  
Cultural objections  
Personal choice stated as objections  
Some people may abuse the system

**Rubric to mark essay**

<b>CRITERIA</b>	<b>marks</b>		
	<b>1</b>	<b>2</b>	<b>3</b>
Strategies for procurement	One appropriate strategy given	Two appropriate strategies given	Three or more appropriate strategies given
Strategies to ensure fair distribution	One appropriate strategy given	Two appropriate strategies given	Three or more appropriate strategies given
Own view on organ transplant	Support/ No support without appropriate reasons	Support/ No support with one appropriate reason	Support/ No support with two appropriate reasons
Donor/ non donor with reasons	Yes/ No with no appropriate reason	Yes/ No with one appropriate reason	Yes/ No with two/more appropriate reasons
Synthesis	Significant gaps in the logic and flow of the answer	Minor gaps in the logic and flow of the answer	Well structured-demonstrates insight and understanding of the question

**(15)**

**TOTAL QUESTION 4: 40**  
**TOTAL SECTION C: 40**  
**GRAND TOTAL: 150**