education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES P1

NOVEMBER 2006

This memorandum consists of 12 pages

SECTION A

QUESTION 1

1.1

1.1.1 D✓✓
1.1.2 D✓✓
1.1.3 C✓✓
1.1.4 A✓✓
1.1.5 B✓✓
1.1.6 D✓✓

(6 x 2) (12)

1.2

1.2.1 Stroma✓
1.2.2 Endoplasmic reticulum✓
1.2.3 Stage✓
1.2.4 Diaphragm✓
1.2.5 Tissue✓
1.2.6 Pleura/pleural membrane✓
1.2.7 Chlorophyll✓
1.2.8 Diffusion/ Gaseous exchange✓

(8 x 1) (8)

1.3

1.3.1 E✓
1.3.2 D✓
1.3.3 A✓
1.3.4 I✓
1.3.5 F✓
1.3.6 G✓
1.3.7 K✓

(7 x 1) (7)

1.4

1.4.1

(a) Carries oxygen from the lungs to all cells of the body✓ (1)

(b)
- They move around tissues and destroy bacteria and foreign particles that have entered the body✓
- Produce antibodies which destroy bacterial toxins✓

any 1 (1)

1.4.2 Person C✓ (1)

1.4.3 Less haemoglobin✓ present therefore fewer red blood corpuscles✓ are found (2)

1.4.4 Person A✓ (1)

1.4.5 Smallest number✓ of white blood cells✓ (HIV destroys white blood cells) (2)

1.4.6
- Person C has very few platelets ✓and therefore blood will not clot easily✓
- Person C has the lowest number of red blood corpuscles✓ so he/she cannot afford to lose more blood✓

any 1 x 2 (2)

1.4.7 Person B✓ (1)

1.4.8 More oxygen is found at low altitudes✓ and therefore fewer red blood corpuscles needed✓ (2)
(13)

1.5

1.5.1 No✓
Carrying out life saving procedures when one is not sure, could lead to other complications✓✓ OR

Yes✓
The friend could have died✓✓ (3)

1.5.2 No✓
He did not intentionally cause the injury✓✓
OR
Yes✓
He should not have performed a procedure✓ he did not know how to✓ **(or any other logical point of argument)** (3)

1.5.3
- The school could enlist the services of paramedics/ emergency services✓ to provide proper first aid courses to learners✓
- First aid could be included✓ in the school's life skills programme✓
- Teachers and learners trained in giving first aid ✓should be available on grounds during break, sports etc✓
- The school should have an emergency drill✓ which should be taught to every learner✓

(Mark first TWO only) any 2 x 2 (4)
(10)

TOTAL QUESTION 1: 50
TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1

2.1.1 A - Cell wall✓
C - Cell membrane✓ (2)

2.1.2 Plant cell✓ (1)

2.1.3 Has one large vacuole✓
Has a cell wall✓
Has chloroplasts✓
Has a regular shape✓ ***(Mark first THREE only)*** (3)
(6)

2.2

2.2.1 4✓ (1)

2.2.2 4✓ (1)

2.2.3 The 2 daughter cells are identical in all respects to each other and to the parent cell✓ has 4 chromosomes each✓ (2)

2.2.4
- Responsible for growth of an organism✓
- Responsible for replacement of cells and repair of worn out and injured tissues✓
- Mitosis produces new individuals during asexual reproduction✓

(2)
(Mark first TWO only) any 2 **(6)**

2.3

2.3.1 Many people are dying of cancer✓because it is diagnosed when it is too late for treatment✓ (2)

2.3.2
- Nowadays there is more exposure to cancer causing agents✓example radiation, carcinogenic chemicals, etc. ✓
- Poor lifestyle choices✓example excessive drinking, smoking, drug taking. ✓

(Mark first TWO only) any 2 x 2 (4)

2.3.3
- Cancer patients should get free treatment at state hospitals✓✓
- Cancer patients should get subsidised treatment at state

(2)

hospitals✓✓ **Any other logical answer** any 1 x 2 **(8)**

2.4

2.4.1 Fifth week✓ (1)

2.4.2 Five weeks✓✓ (2)

2.4.3 At the time of the race, the athlete's haemoglobin level is higher than normal. ✓
The athlete's blood will be able to carry more oxygen. ✓
More oxygen will be taken to the athlete's muscle cells✓
More energy will be released during cellular respiration✓
This will improve the athlete's performance, compared to other competitors✓ any 2 (2)

2.4.4 The officials would not be able to detect any foreign substance in the athlete's blood ✓since he has returned his own blood into his body✓ (2)

2.4.5	2.4.6
Not acceptable ✓ (1)	All athletes should be allowed the same benefit / Nobody should be advantaged in any way in a competition. ✓✓ (2)
OR	
Acceptable✓ (1)	No foreign substances were used to enhance performance, person is using his own blood. ✓✓ (2)

(10)

TOTAL QUESTION 2: 30

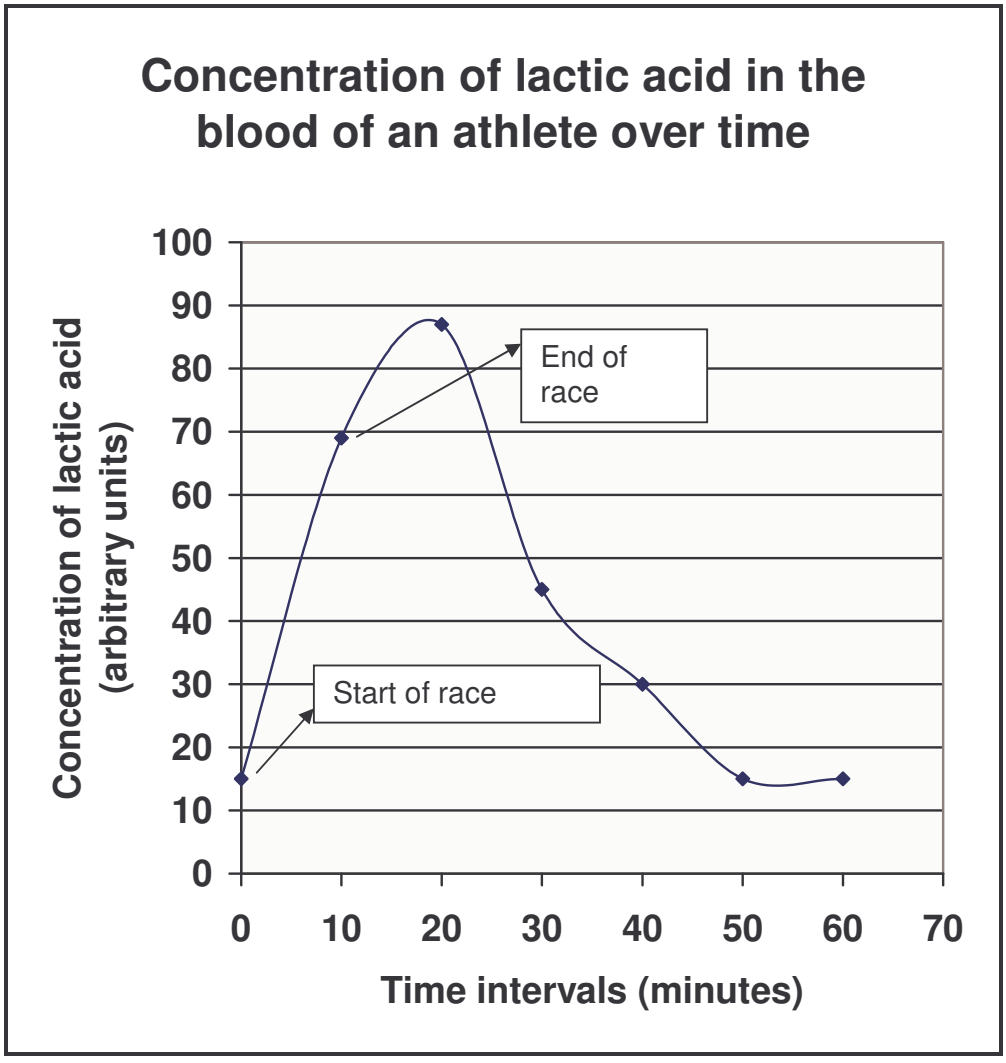
QUESTION 3

3.1

3.1.1 Anaerobic respiration✓ (1)

3.1.2 By breathing faster✓ and deeper✓
Abdominal muscles ✓push the diaphragm up faster✓
(Mark first TWO only) any 1 x 2 (2)

3.1.3



Correct type of graph	1
Title of graph	1
Correct choice and label for x - axis	1
Correct choice and label for y – axis	1
Correct unit for time	1
Correct unit for lactic acid	1
Appropriate scale for x- axis (constant intervals)	1
Appropriate scale for y- axis (constant intervals)	1
Plotting of points	2: plotted 6 to 7 points; 1: plotted 3 to 5 points; 0: plotted less than 3 points correctly
All plotted points joined	1
Start of race indicated	1
End of race indicated	1

(13)

3.1.4 50 – 10✓ = 40✓mins✓ (3)
(19)

3.2

3.2.1 A - Bronchiole✓
C – Blood capillaries/arteriole✓ (2)

3.2.2
- Numerous alveoli✓
- large surface area/ alveoli lobed✓
- Blood capillaries✓

(Mark first TWO only) any 2 x 1 (2)

3.2.3
- Blood in D is deoxygenated ✓while blood in E is oxygenated✓

OR

- Blood in D contains less oxygen/more CO2✓while blood in E contains more oxygen/less CO2✓

(***Mark first difference only)*** (2)

3.2.4 (a) Stating his/her opinion(YES/ NO) ✓ (1)

(b) Any valid/ logical reason
example(factory should be closed ✓ as it is a health risk to the community) ✓

OR

(factory should not be closed ✓ as it will result in job losses✓) (2)

(c)
- The destruction of the alveoli causes its surface area to decrease ✓therefore less oxygen can diffuse into the blood✓resulting in shortness of breath/ difficulty in breathing
- Since part of the blood supply is damaged ✓ transport of gases/ oxygen and carbon dioxide is compromised✓ (2)

(Mark first ONE only) *a*ny 1 x 2 **(11)**

TOTAL QUESTION 3: 30

TOTAL SECTION B: 60

SECTION C

QUESTION 4

4.1

4.1.1 The higher the carbon dioxide concentration in the air✓ the higher the food production/the lower the food production✓
OR
The lower the carbon dioxide concentration in the air✓ the lower the food production/✓the higher the food production✓ (2)

4.1.2 (a) Dry mass of the seedlings/food production✓ (1)

(b) Amount of carbon dioxide in the air in the greenhouse✓ (1)

4.1.3 0,12✓%✓ (2)

4.1.4 Dry mass excludes water ✓so it shows the actual amount of food produced by the plant✓/ it is more accurate (2)

4.1.5 As the amount of carbon dioxide increases✓ the dry mass/ food production also increases ✓but up to a certain point✓
after which further increase in the carbon dioxide concentration no longer increase the food production✓ any 3 (3)

4.1.6 Such information is useful in large scale crop production✓ to improve yield✓ (2)

4.1.7
- Donated to poorer nations✓that cannot afford to feed their populations✓
- Used to make other non - perishable products✓ that can last longer✓ any 1 x 2 (2)

(15)

4.2

4.2.1 List should include a carbohydrate (energy source)
A protein (for growth/ repair of cell)
A vegetable and a fruit (sources of vitamins and mineral salts)

Example
Rice✓ Meat✓ Spinach✓ orange✓
OR
Maize✓ Beans✓ cabbage✓ Peach✓
or any other suitable example (4)

4.2.2 Rice is a carbohydrate/ gives energy✓
Meat is a protein/ growth and repair of body cells✓
Spinach is a vegetable/ for vitamins/ minerals / maintaining body processes✓
Orange is a fruit/for vitamins/ maintaining body processes✓
(Specific functions of food types not necessary but learners should be credited if they give specific functions) (4)

4.2.3
- The type of food people eat✓ depends on factors like individual preferences/ availability of the food/ cost/ culture✓
- The amount of food they should eat✓ will also depend on their body size/ age/ activity✓

any 1X 2 (2)
(10)

4.3

OBESE PEOPLE WEIGH SURGERY OPTIONS

Increase in obesity

Obesity could be a lifestyle disease or one associated with a medical problem (thyroid malfunction/metabolic rate malfunction)

In the past

- eating habits were better – not much junk food/refined foods.
- People generally ate plenty of fresh fruit and vegetables.
- There were not many food additives to cause addiction/cravings.
- People (especially children) generally had a more active lifestyle – walking, running, jumping etc.
- People generally led a less stressful existence.

Nowadays

- lifestyle is the most important cause of obesity.
- Poor eating habits – eating junk food/refined food.
- Children confined to watching TV and playing computer games, sedentary existence, do not expend excess energy, not much exercise.
- Food additives cause addiction and cravings e.g. caffeine etc.
- Also stressful lifestyle and rushed eating causes obesity.

Use of Surgery (opinion with reason)

Agree

- For some people, this is the only way to lose weight, otherwise they could die of diseases related to obesity e.g. heart attacks, high blood pressure causing a stroke, diabetes etc.

OR

Disagree

- Try hard to lose weight by eating properly, exercising etc. Surgery is expensive and risky.

Strategies to prevent obesity

Personal Strategy

- Eating a healthy/balanced diet.
- Employ a regular exercise routine.
- Have regular medical checks.
- Monitor weight closely.

School Strategy

- Tuck-shop to sell fruit, milk fruit juices etc. and NOT junk food/refined food like chocolates ,crisps and carbonated drinks.
- Exercise regime at school.
- Mass-based participation in sport (not selected few).
- Education about nutrition/good eating habits to be included in the curriculum
- Check BMI of pupils and inform/monitor those that are at risk of being obese
- Bring in doctors/nurses/nutritionists to school to educate learners about nutrition and especially obesity
- Any other acceptable strategy

Rubric to mark essay:

Marks	**1**	**2**	**3**
Comparison of obesity in the past and present	Comparison with 1 difference only	Comparison with 2 differences	Comparison with 3 or more differences
Use of surgery (opinion with reason)	Opinion only – no reason	Opinion with flimsy/unconvincing reason	Opinion with well thought-out and convincing reason
Personal strategy to prevent obesity	1 strategy described	2 strategies described	3 strategies described
School strategy to prevent obesity	1 - 2 strategies described	3 strategies described	4 strategies described
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 5: 40
TOTAL SECTION C:40
GRAND TOTAL:150