Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2012

LIFE SCIENCES P1 MEMORANDUM

MARKS: 150

This memorandum consists of 9 pages.

SECTION A

QUESTION 1

1.1	1.1.1	D √√		
	1.1.2	C √√		
	1.1.3	A √√		
	1.1.4	C √√		
	1.1.5	C √√		
	1.1.6	A √√		
	1.1.7	C √√		
	1.1.8	C √√		
	1.1.9	D √√		
	1.1.10	B √√	(10 x 2)	(20)
1.2	1.2.1	Osteocytes √		
	1.2.2	Synovial fluid √		
	1.2.3	Chondrin √		
	1.2.4	Tricuspid valve √		
	1.2.5	Hepatic portal vein √		
	1.2.6	Stroke √		
	1.2.7	Leukaemia √		
	1.2.8	Systolic pressure √		
	1.2.9	Guttation √	(9 x 1)	(9)
1.3	1.3.1	B only √√		
	1.3.2	B only √√		
	1.3.3	None √√		
	1.3.4	B only √√		
	1.3.5	A only √√		
	1.3.6	A only √√	(6 x 2)	(12)

1.4 1.4.1 Diagram 1 = Angioplasty √
Diagram 2 = Bypass surgery √
Diagram 3 = Dialysis √
Diagram 4 = Insertion of a pace-maker √ (4)

1.4.2 Diagram 1 = Coronary thrombosis/coronary embolism √
Diagram 2 = to by-pass the portion of coronary artery that is blocked √
Diagram 3 = to remove waste products from the bloodstream √ if the kidneys are failed to perform their function. (Kidney failure)
Diagram 4 = to rectify an irregular heartbeat √ caused by a faulty SA node in the right atrium. (4)

1.4.3 A kidney transplant √ (1)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 Xylem tissues are responsible for the upward transport of water in plants. √

OR

Xylem tissues are not responsible for the upward transport of water in plants. √ (1)

2.1.2
- Use a freshly picked leafy plant with the roots intact. √
- Always use a young plant with soft tissue. √
- A retort stand should be used to support the plant body. √
- Eosin or ink to be used as indicator. √
- Relevant apparatus such as a microscope, slide, cover slip, surgical blade etc. should be arranged in advance. √
- Apparatus should be placed in sunny position. √
- Any other relevant answers. √ (Any 2 x 1) (2)

2.1.3 The learner has used a dicotyledonous plant, √ because:
- the leaves shows net venation √
- the plant has a taproot system √ (3)

2.1.4 Eosin is used as a tracer stain √ (1)

2.1.5 Xylem tissue √ (1)

2.1.6 Diagram 1 = Part labelled B √
Diagram 2 = Part labelled A √ (2)

2.1.7

Dicotyledonous stem	Dicotyledonous root
1. The xylem and phloem are in vascular bundles √	1. Xylem and phloem occur in a central stele √
2. Xylem and phloem are arranged along the same radius√	2. The xylem alternates with the phloem √
3. The endodermis is absent or not clearly visible√	3. A clearly defined endodermis is present √
4. No root hairs visible√	4. Root hairs are present √

(Any 3 x 2) + 1 mark for the tabular column (7)

2.1.8 Xylem tissues √ are responsible for the upward movement of water in both roots and stems.√ (2)

2.2 2.2.1 Rhinoceros √ (1)
2.2.2 Illegal Poaching √ (1)
2.2.3 Horn (Rhino-horn) √ (1)
2.2.4 Elephants are poached for their tusks / Lions are killed illegally for their bones. √ (1)

2.2.5

Culling	Poaching
1. A legitimate activity √	1. Illegal activity √
2. Performed with the aim of controlling the size of population of a certain species √	2. Performed with the aim of making profit √
3. Performed under controlled environment √	3. Random indiscriminate killing √
4. Responsible for sustainable management of scarce resources for all species √	4. Can lead to extinction of species √

(Any 1 x 1) (1)

2.3 2.3.1 There is a steady increase in global air temperature. √ / Drastic upward temperature variation from the normal or standard global air temperature. √ (Any 1 x 1) (1)

2.3.2 Global warming √ (1)

2.3.3
- Deforestation √
- Excessive use of fossil fuel. √
- Green gas emissions from industries. √
- Release of methane gas from decomposition of organic matter. √
- Release of chloro-fluro carbons from industries √
- Release of carbon dioxide from burning forests, coal-based power stations, industries. etc. √ (Any 2 x 1) (2)

2.3.4
- Melting of polar ice caps √
- Coastal flooding √
- Climate change √
- Reduced crop production √
- Reduced biodiversity √ (Any 2 x 1) (2)

[30]

QUESTION 3

3.1 3.1.1 Indians √ (1)

3.1.2
- Heredity: √ People with a family history of heart disease.
- Age: √ Persons who are over 40 are more likely to suffer from heart disease than younger persons.
- Gender: √ Males are more likely to suffer form heart diseases than females.
- Smoking: √ Increases the chances of heart attacks.
- Cholesterol: √ High cholesterol likely to cause heart diseases.
- Lack of exercise: √ Increases the probability of heart diseases.
- Hypertension (High blood pressure): √ Stress, √ diabetics, √ obesity √ These factors increase the probability of heart diseases.

(Any 2 x1) (2)

3.1.3 African/black population √ (1)

3.1.4 Cardiac muscle. √ Damage is caused by the lack of oxygen and nutrient supply to the cardiac muscle. √ (2)

3.2 3.2.1 Algal bloom √ (1)

3.2.2 Eutrophication √ (1)

3.2.3 (a)
- Natural run-off of nutrients from the soil and weathering of rocks √
- Run-off of inorganic fertiliser (containing nitrates and phosphates). √
- Run-off manure from farms (containing nitrates, phosphates and ammonia. √
- Run-off from erosion (following mining, construction work or poor land use). √
- Discharge of detergents (containing phosphates) √
- Discharge of partially treated sewage (containing nitrates and phosphates). √ (Any 2 x 1) (2)

(b)
- Increase in plant and animal biomass. √
- Increase in growth of rooted plants, √ e.g. reeds.
- Increase in turbidity(cloudiness) of water √
- Decrease in species diversity √
- Change in dominant species √
- Increase in the frequency of algal bloom. √
- An over-abundance of algae can choke a body of water such as a river and clog irrigation pipes. √
- Lack of photosynthesis of water plants. √
- Lack of oxygen √ due to many bacteria in water that absorb oxygen for the decomposition of organic material. (Any 3 x 1) (3)

3.3 3.3.1 A – Ileum √
D – Ischium √ (2)

3.3.2 B – Immovable/fixed joint √
C – Ball and Socket joint / synovial joint √ (2)

3.3.3 The cavity/socket (acetabulum) at C is deeper √ than the cavity/socket (the glenoid cavity) in the scapula of the pectoral girdle. (1)

3.3.4 (a) Osteoporosis √ (1)
(b) Loss of calcium from the bones due to reduced calcium intake. √ (1)

3.4 3.4.1 *Pelargoium sidoides* (1)

3.4.2 Common coughs and colds, √ respiratory tract infections, √ TB, √ various bacterial and viral infections. √ (Any 2 x 1) (2)

3.4.3 Root √ (1)

3.4.4 The local custodians and beneficiaries are paid ridiculously low prices in return for the indigenous knowledge and resources. √ The company exploits the local resources with the aim of making maximum profits for themselves. √ (2)

3.4.5
- According to the official report, over an eight-year period, more than 330 million plants were uprooted. √
- In Grahamstown, some 14 000 hectares of land have been stripped of pelargonium through illegal or unsustainable wild harvesting. √ (2)

3.4.6
- The medicinal plants should be cultivated and sold to users to take pressure off wild stocks. √
- Traditional healers should be encouraged to grow their own plants. √
- Research on the sustainable harvesting of medicinal plants will help both conservationists and resource users develop proper management guidelines for the collection of these species. √
- Conduct awareness campaigns to educate the general public regarding the sustainable use of medicinal plants. √
- Attention should be given to develop skills in various fields and create job opportunities for gatherers to reduce over-dependency on medicinal plants as a source of income. √
- Traditional practitioners should be given training on the sustainable use of the plants. √
- Some of the pharmaceutical medicines are made from traditional medicinal plants. Therefore, those pharmaceutical medicines should be given the same name as the medicinal plant from which the ingredients are taken to manufacture them. This will enable people to identify them and this might take the pressure of wild supplies. √
- Only the parts of the plants that are required should be harvested rather than removing the whole plant. This enables the plants to re-grow and to flower before they are again harvested. √
- Craft legislation that regulates, monitors and set limits on the wild harvest of medicinal plants from a given area. √
- Fruits or seeds of these plants should be collected and distributed to increase the number of plants in the harvesting area. √ (Any 2 x 1) (2)

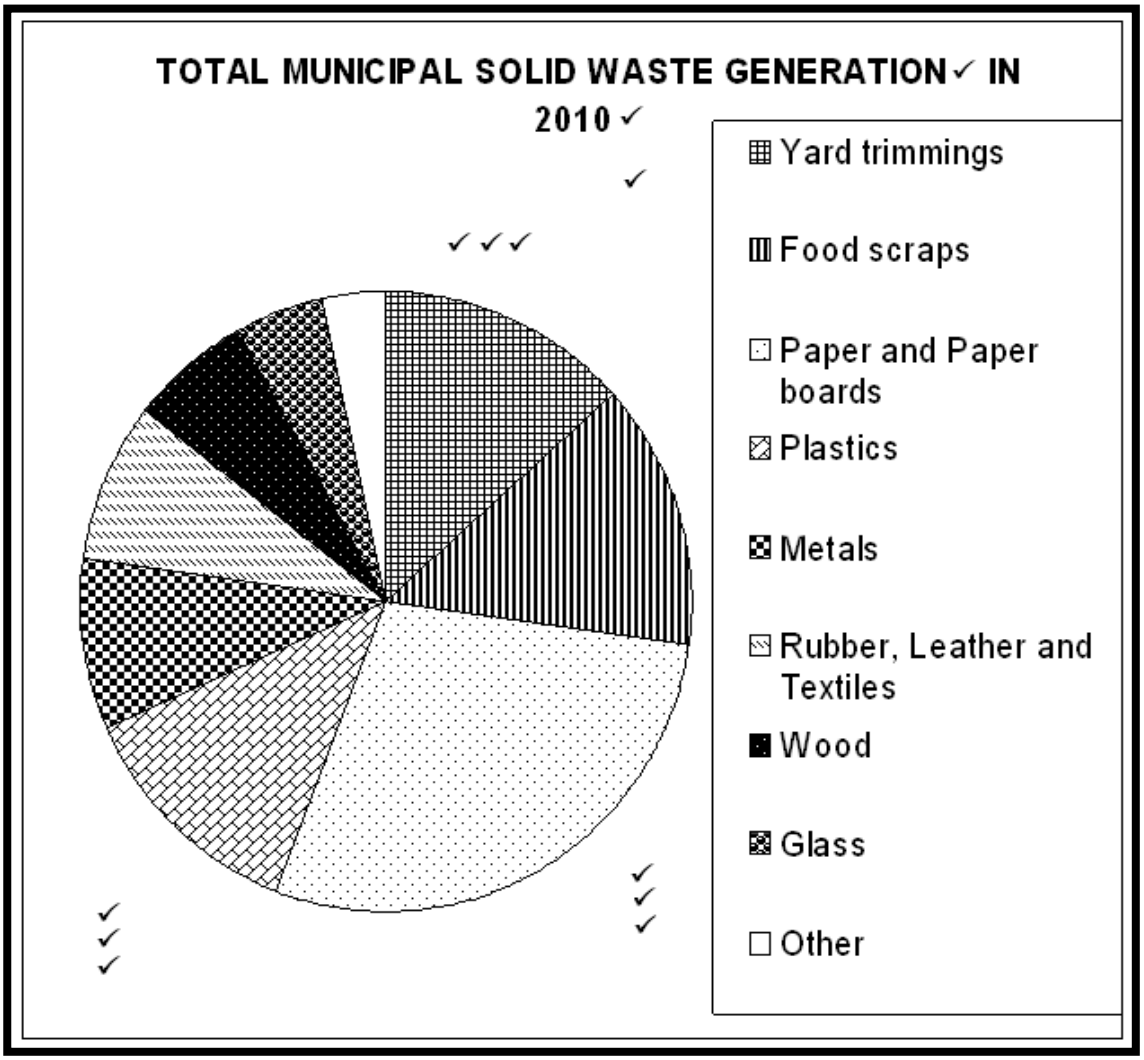
[30]

TOTAL SECTION B: 60

SECTION C

QUESTION 4

4.1



4.1.1 Yard trimmings = $\frac{13,4}{100} \times 360 = 48^0$

Food scraps = $\frac{13,9}{100} \times 360 = 50^0$

Paper and Paper board = $\frac{28,5}{100} \times 360 = 103^0$

Plastics = $\frac{12,4}{100} \times 360 = 45^0$

Metals = $\frac{9}{100} \times 360 = 32^0$

Rubber, Leather, Textile = $\frac{8,4}{100} \times 360 = 30^0$

Wood = $\frac{6,4}{100} \times 360 = 23^0$

Glass = $\frac{4,6}{100} \times 360 = 17^0$

Other = $\frac{3,4}{100} \times 360 = 12^0$

RUBRIC

ITEM	MARKS
TITLE	2
TYPE OF GRAPH	1
CORRECT PROPORTION	
1 – 3	1
4 – 6	2
7 – 9	3
LABELS/KEY	
1 – 3	1
4 – 6	2
7 – 9	3
CALCULATIONS	
1 – 3	1
4 – 6	2
7 – 9	3

If wrong type of graph drawn: marks will be lost for drawing the slice in correct proportion and calculations. (12)

4.1.2 Plastics, √ Rubber, √ Glass √ (3)

4.1.3 Compost making √ (1)

4.1.4
- Solid wastes may be dumped in drainage channels and gutters causing flooding. √
- Solid wastes affect soil drainage which hinders the growth of crops. √
- Some waste materials may be toxic and if consumed by animals can be very dangerous to them. √
- If poisonous solid wastes reach the water sources, it can be dangerous to both aquatic organisms and terrestrial organisms that depend on the water source for water needs. √
- Poor domestic waste management can also destroy the appearance and aesthetic appeal of the environment and negatively affect the tourism industry. √
- When waste like broken bottles are dumped every where, they collect water in them during rainy season and become a breeding ground for mosquitoes, which in turn spread diseases. √
- Unsightly, smelly and dirty. √
- Attracts vermin and flies. √
- Lowers value of property. √ (Any 4 x 1) (4)

4.2
- When the water content of the body drops below normal √
- the osmotic potential of the blood increases √
- which stimulates the osmoreceptors in the hypothalamus √ which produces ADH
- to transmit impulses to the pituitary gland (hypophysis) √ to release more ADH √ in to the blood
- ADH is transported by bloodstream to the kidney √
- where this hormone increases the permeability √ of the walls of the
- distal convoluted tubule and collecting duct √
- more water √ is re-absorbed from the filtrate √
- and small amount of concentrated urine √ is excreted
- the adrenal gland √ secrete aldosterone √
- which cause sodium ions √ to be actively √ pumped out of the filtrate √
- in the ascending limb of loop of Henle √
- in to the tissue fluid of the kidney medulla √
- this creates a low water potential √ and
- water moves by passive osmosis √ from the collecting tubule √ in to the tissue fluid of the medulla √
- from where it is absorbed in to the blood capillaries √ (Max: 17) (17)

Synthesis (3)

No flow chart will be credited as an essay.

Marks	Descriptions
3	Well structured – demonstrates insight and understanding of question.
2	Minor gaps in the answer.
1	Attempted but with significant gaps in the answer.
0	Not attempted/ nothing written other than question number.

TOTAL SECTION C: 40

GRAND TOTAL: 150