**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2015

**LIFE SCIENCES P2
MEMORANDUM**

MARKS: 150

TIME: 2½ hours

This memorandum consists of 9 pages.

SECTION A

QUESTION 1

1.1   1.1.1   A ✓✓

        1.1.2   A ✓✓

        1.1.3   B ✓✓

        1.1.4   C ✓✓

        1.1.5   D ✓✓

        1.1.6   D ✓✓

        1.1.7   C ✓✓

        1.1.8   D ✓✓

        1.1.9   D ✓✓

        1.1.10   B ✓✓   (10 x 2)   (20)

1.2   1.2.1   Symmetrical ✓/bilaterally symmetrical / radially symmetrical

        1.2.2   Sporangia ✓/ sporangium

        1.2.3   Mesoglea ✓

        1.2.4   Deforestation ✓

        1.2.5   Ozone ✓

        1.2.6   Cephalisation ✓

        1.2.7   Binary fission ✓

        1.2.8   Mesoderm ✓

        1.2.9   Biodegradable ✓

        1.2.10   Erosion ✓   (10 x 1)   (10)

1.3   1.3.1   B only ✓✓

      1.3.2   Both A and B ✓✓

      1.3.3   B only ✓✓

      1.3.4   Both A and B ✓✓

      1.3.5   B only ✓✓

      1.3.6   A only ✓✓

      1.3.7   A only ✓✓

      1.3.8   A only ✓✓   (8 x 2)   (16)

1.4   1.4.1   (a)   2014 ✓   (1)

                (b)   1994 ✓   (1)

      1.4.2   (a)   9 – 10 ✓   (1)

                (b)   17 – 18 ✓   (1)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1   2.1.1   Wind ✓   (1)

        2.1.2   - Produces large amount of pollen ✓ to increase the chances of
                    pollination.
                  - Pollen grains are light, smooth ✓ and dry to allow them to float.
                  - Anthers are attached to their filaments in such a way that they
                    are easily moveable with wind. ✓
                  - Stigma is large, feathery and sticky to trap as much pollen as
                    possible.
                  - Large anther
                  - Small flowers without colourful petals.
                  - Absence of petals / calyx for better exposure of pollen to wind.
                  - Reduced scent and nectar.   (Any 3 x 1)   (3)

2.2   2.2.1   - It generates genetic variety. ✓   (1)

        2.2.2   - (120 – 90 = 30) ✓ (30/120 x 100 = 25%) ✓   (2)

        2.2.3   (a)   They survive unfavourable periods./Testa protects the
                          embryo. ✓

                  (b)   Provides food for the growing embryo ✓ until the plant starts
                          to make food by means of photosynthesis.   (2)

2.3   2.3.1   Algae ✓   (1)

        2.3.2   Angiosperms ✓   (1)

        2.3.3   Gymnosperm ✓
                  Angiosperm ✓   (2)

2.4   2.4.1   - In low income group it remained the same ✓
                  - Low middle income group it remained the same ✓
                  - Upper middle income group it increased by 10 per 1 000 000 ✓
                  - High income group it decreased by 3 per 1 000 000 ✓   (4)

        2.4.2   - Overcrowded living space ✓
                  - Poorly ventilated living space ✓
                  - Poor diet ✓/malnourished
                  - Poor health ✓/ more diseases like HIV / less immunity
                  - Homelessness ✓/ poverty
                  - Medical treatment more difficult to access. ✓
                  - Lack of awareness ✓/ Lack of education   (Any 3 x 1)   (3)

2.5   2.5.1   - Carbon dioxide ✓ and methane ✓   (2)

         2.5.2   - It traps sufficient heat to sustain life. ✓/ keeps temperature at
                      favourable range.
                    - Radiant energy is used for various life processes, such as
                      photosynthesis. ✓   (2)

         2.5.3   - Burning fossil fuels ✓
                    - Land clearing ✓/ deforestation
                      (Accept any sensible answer)   (Any 1 x 1)   (1)

         2.5.4   - Natural greenhouse effect releases more infrared rays ✓ into
                      the atmosphere than enhanced greenhouse effect. ✓
                                            OR
                    - Natural greenhouse effect has less greenhouse gases ✓
                      surrounding the atmosphere than enhanced greenhouse
                      effect. ✓   (2)

2.6   2.6.1   - Faecal coliforms, ✓ nitrates ✓ phosphates ✓   (3)

         2.6.2   - Not functioning properly, ✓ because the level of faecal coliforms
                      increased greatly from sample A to sample B, ✓ indicating that
                      untreated wastewater is being released into the river. ✓   (3)

         2.6.3   - Cholera, ✓ typhoid, ✓ hepatitis, ✓ gastroenteritis, ✓dysentery ✓
                      / diarrhoea ect.   (Any 2 x 1)   (2)

         2.6.4   - More acidic. ✓   (1)

         2.6.5   - Drainage of highly acidic water ✓ from old mine shafts to the
                      surface of the land. ✓   (2)

         2.6.6   - Toxic levels of salts (sodium and chloride) ✓
                    - Reduced oxygen levels ✓ caused by the decomposition of
                      water plants that grew rapidly due to eutrophication.
                    - pH level dropping ✓/ water too acidic for fish to survive.
                                                                          (Any 2 x 1)   (2)
                                                                                          [40]

QUESTION 3

3.1   3.1.1   - To find out which method of drying is better – air blowing or towel drying. ✓

<div align="center">

OR

</div>

              - To investigate the effect of two different methods of drying hands, after washing, on the number of bacteria on the skin of the hands. ✓   (1)

       3.1.2   - The atmospheric temperature / humidity in the testing venue. ✓
                 - The time of wiping and exposure to the hot air. ✓
                 - Using the same people for both methods. ✓
                 - Using the same conditions for washing (e.g. amount of soap, amount of water, time rinsing, etc.) ✓   (Any 3 x 1)   (3)

       3.1.3   - Air-dried skin samples have a far greater number of bacteria compared to towel-dried skin samples. ✓

<div align="center">

OR

</div>

              - Towel drying is better than air blow drying. ✓   (1)

       3.1.4
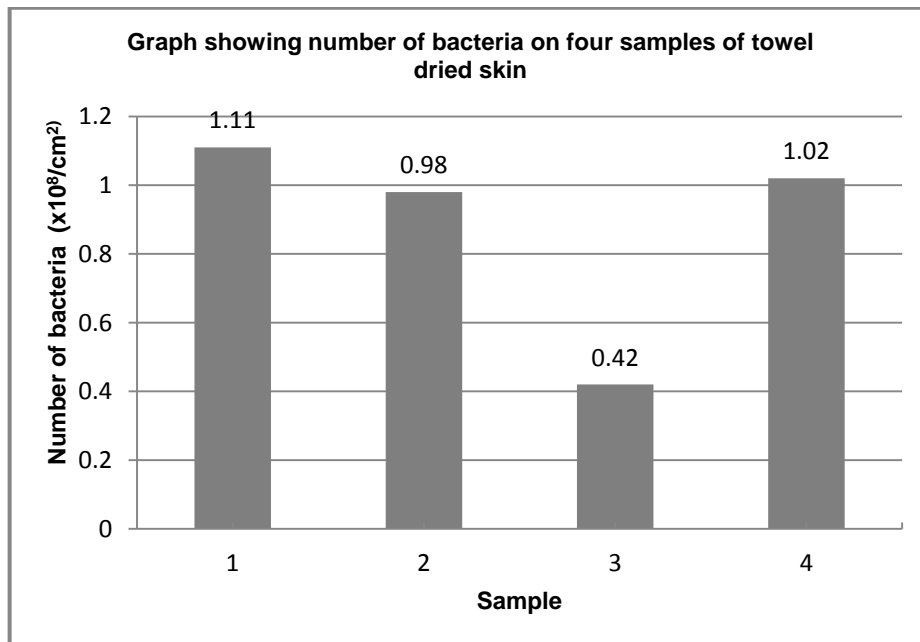
Guideline for the assessing of the graph

Correct type of graph	1
Title of graph	1
Correct label and scale of x-axis	1
Correct label and scale of y-axis	1
Plotting of bars	1 : 1 to 3 bars plotted correctly
	2 : all 4 bars plotted correctly

            (6)

       NOTE: If axes are transposed, marks will be lost for labelling X-axis and Y-axis.

3.2	3.2.1	(a) photosynthesis ✓	(1)
		(b) respiration ✓	(1)
	3.2.2	- Leads to an increase in the temperature of the atmosphere ✓	(1)
	3.2.3	- Global warming ✓	(1)
	3.2.4	- Something that absorbs carbon dioxide from the atmosphere. ✓	(1)

3.2.5
- Green plants ✓
- Trees ✓/ timber
- Forests ✓   (Any 1 x 1)   (1)

3.2.6   - Levels of carbon dioxide in the atmosphere would rise. ✓   (1)

3.3   3.3.1   - Harvesting from a different section of the harvest area each time. ✓   (1)

3.3.2   - Gives the plant a chance to grow ✓   (1)

3.3.3
- Rotational harvesting is a more sustainable ✓method of harvesting Devil's Claw. ✓

OR

- Regular harvesting is more sustainable ✓ method of harvesting Devil's Claw ✓/ both are equally ✓ sustainable. ✓   (2)

3.3.4

	Rotational harvesting	Regular harvesting
2007	8	9
2008	9	4

*Correct heading of columns = 1
*Correct heading of rows = 1
*Correct entering of data = 2   (4)

3.3.5   - Rotational harvesting is sustainable ✓ regular harvesting is not. ✓/ rotational harvesting is more sustainable. ✓✓   (2)

3.4   3.4.1   - Cnidaria ✓   (1)

3.4.2   - Radial ✓symmetry   (1)

3.4.3   - It can catch prey ✓/ sense danger from all directions, because they are sedentary ✓/ sessile.   (2)

3.4.4   - Chordata; ✓ Arthropoda; ✓ Annelida ✓   (3)

3.5   3.5.1   - Antibodies ✓   (1)

3.5.2 - Antibodies remain in the body ✓/ are not weakened / last for a long time or are not destroyed / body continues to make antibodies / cause an increase in the number of antibodies / person has made own antibodies. (Any 1 x 1) (1)

3.5.3 - Antibodies are weakened after a short time ✓/ antibodies are made in an animal body / they are not human antibodies / person has not made own antibodies. (Any 1 x 1) (1)

3.5.4 - So that more antibodies are made ✓/ to keep antibody count high / so body keeps making antibodies for a long time.
(Any 1 x 1) (1)

3.5.5 - Injection of ready-made antibodies ✓/ does not have to wait for antibody formation / has large amount of antibody quickly available / antibodies start working straight away. (Any 1 x 1) (1)
[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

4.1 **Food security**.
- The state of having reliable access ✓ to a sufficient quantity of affordable, nutritious food. ✓ (2)

Poor crop farming practices
- monoculture ✓ planting the same crop over and over ✓
- because it is cost effective ✓, but
- it attracts more pests ✓ and it
- reduces quantity of crop produced ✓
- this makes food more expensive to buy ✓/ less affordable
- pest reduce the quality of crop ✓ making
- it necessary to use more pesticides, ✓ more money spent
- pesticides / insecticides kill useful crops also ✓
- pesticides are bad for human health ✓/ affects nerves
- they also cause pollution ✓ and it
- also reduces biodiversity ✓
- monoculture causes top soil erosion, ✓ leading to
- more fertilisers to be used ✓
- over fertilisation causes oxygen deprived soil ✓
- leads to less production of crops ✓ in future
- and also produces greenhouse gases ✓
- poor irrigation ✓/ poor infrastructure used due to
- lack of awerness ✓/ education / experience / motivation   Max. (10)

Genetically modified food
- genes for desired traits are removed ✓ from one plant and
- introduced into another plant ✓ to make better crop
- examples of desired traits – resistance to diseases ✓
- short maturity ✓
- higher yield ✓
- cheaper food ✓
- increases nutritional value ✓
- longer shelf life ✓
- bigger and more attractive food, ✓etc.
- helps poor / starving / famine people ✓
- to make food accessible and available ✓   Max. (5)   (17)

Relevance (R)	Logical Sequence (L)	Comprehensive (C)
All information provided are relevant to the essay i.e only the 3 points are discussed.	Ideas are arranged in a logical manner i.e starting with food security followed by poor crop farming practices followed by genetically modified food.	In the body of the essay, minimum 6 relevant points out of the 10 for poor farming practices and a minimum of 3 points for genetically modified food are obtained.

Synthesis   (3)

TOTAL SECTION C: 20
GRAND TOTAL: 150