PHOENIX NORTH LIFE SCIENCES CLUSTER

NOVEMBER EXAMINATION 2019

LIFE SCIENCES PAPER 2

GRADE : 11

MARKING MEMORANDIUM :

SECTION : A

QUESTION : 1.

1.1.1. D√√
1.1.2. C√√
1.1.3. C√√
1.1.4. C√√
1.1.5. B√√
1.1.6. C√√
1.1.7. A√√
1.1.8. A√√
1.1.9. B√√
1.1.10.C √√ (20)

1.2.1. prokaryotic √
1.2.2. through-gut√
1.2.3. binary fission√
1.2.4.antigens/ vaccines√
1.2.5. fermentation√
1.2.6. eutrophication√
1.2.7. decomposers/ saprophytes√
1.2.8. monoculture√
1.2.9. bacteriophages√
1.2.10.cephalization √ (10)

1.3.1. A only√√
1.3.2. B only√√
1.3.3. B only √√ (6)

1.4 1.4.1 **A** – Bryophytes ✓
B – Pteridophytes ✓ / Pteridophyta
C – Gymnosperms ✓
D – Angiosperms ✓ (4)

1.4.2 (a) Vascular ✓/ Water conducting tissue / conducting tissues (1)

(b) Flowers ✓/ Seeds enclosed in fruit (1)

1.4.3 Spermatophytes ✓ (1)

1.5 1.5.1 (a) 2014 ✓ (1)

(b) 1994 ✓ (1)

1.5.2 (a) 9 – 10 ✓ (1)

(b) 17 – 18 ✓ (1)

1.5.3
- Monitoring the elimination of CFC's as a propellant in aerosols. ✓
- Increasing public awareness of ozone depletion. ✓
- Investigating new ozone-friendly propellants. ✓
- International agreements e.g. the Montreal Protocol to reduce CFC production . (Any other correct solutions)

(Mark first THREE only) (3)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 **A** Arthropoda ✓
B Porifera ✓
C Platyhelminthes ✓ (3)

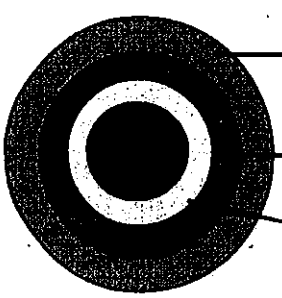
2.1.2 Bilateral ✓ symmetry (1)

2.1.3
- The animal is able to move through the environment ✓ in a consistent direction,
- with a definite front and rear end and a left and right side. ✓
- This helps with feeding or escaping from predators. (Any 1) (1)

2.1.4 (a) A ✓ and C ✓
(b) C ✓
(c) A ✓ and C ✓
(d) A ✓ (6)

2.1.5 Animals don't need any special means to circulate nutrients/gasses to different parts of body, ✓ it takes place through diffusion. (1)

2.1.6



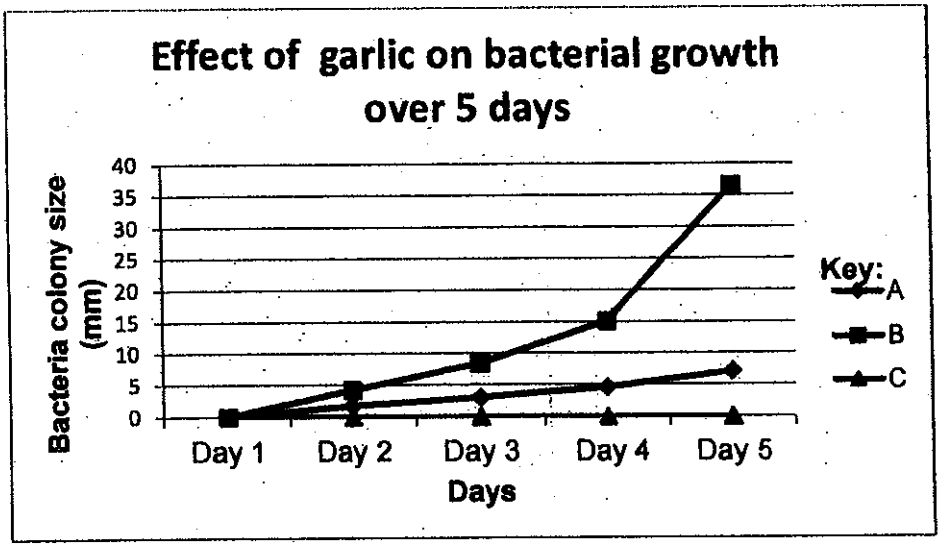
Ectoderm ✓ - gives rise to epidermis and nervous system ✓

Mesoderm ✓- gives rise to body systems and organs ✓ and nervous system ✓

Endoderm ✓ - forms lining of the alimentary canal and digestive glands ✓ (6)

2.2 2.2.1 (a) Composition of the test specimen ✓ / Garlic extract or no garlic extract
(b) Growth of the bacteria colony ✓ (1)
(c) Same amount of milk ✓
Same period/ time ✓ to do investigation
Same environmental conditions ✓/temperature ✓ (Any 2) (2)

2.2.2



Guidelines for assessing the graph:

Three line graphs on the same set of axes	1
Title of graph	1
Correct label and scale for X-axis	1
Correct label, unit and scale for Y-axis	1
Drawing of line graphs	1: 1 to 2 lines plotted correctly 2: All 3 lines plotted correctly

(6)

2.2.3 To avoid growth of bacteria ✓ before the start of the experiment as most bacteria do not grow in cold conditions ✓ (2)

2.2.4
- Petri dish **C** with milk, the *E.coli* specimen and garlic extract did not show any signs of bacterial growth. ✓
- The *allicin* ✓/antimicrobial substance in the garlic extract destroyed the bacteria ✓ hence there was no growth in Petri dish **C**. (3)

2.3.1. D- anther√ E – stigma√ F- corolla/ petals√

2.3.2. B√√

2.3.3. B√√

(7)

(40)

QUESTION: 3

3.1.1. Cutting down of trees decreases the amount of carbon dioxide √ taken up by the plants during photosynthesis. √ (2)

3.1.2. Burning of fossil fuels √ (1)

3.1.3. 395,5 √ ppm √ (2)

3.1.4. Carbon dioxide concentration in ppm√ (1)

3.1.5. Carbon dioxide is a greenhouse gas√

which absorbs long wave radiation emitted from the earth√

and prevents it from escaping back into the atmosphere.√

An increase in the concentration of carbon dioxide leads to an increase in the greenhouse effect. √

which may result in global warming.√

Reduce the need for heating by insulating the walls√

Building energy efficient homes√ any (4)√

3.1.6. Drive less √/ use public transport/ walking/ bicycle more

Reuse and recule √ (Any suitable answer) any (1)√

(11)

3.2.1. Poaching ✓ (1)

3.2.2. Increase in urban demand ✓/ big cities and towns are growing.
Easy access to wild animals due to road networks expanding to forests. ✓ (2)

3.2.3.
- Disturbs the ecosystem ✓
- because food chains are affected ✓
- leading to the extinction of some species ✓ in the ecosystem
- and will eventually lead to the loss of biodiversity. ✓

(Any 3 x 1) (3)

3.2.4. (a)
- Regulating hunting ✓
- working with local communities to manage and protect their resources from outsiders. ✓
- Promoting sustainable sources of food ✓ (Any 2 x 1) (2)

(b) Better management of the numbers of people visiting protected areas. ✓
Better management of the activities of people visiting the protected areas. ✓ (2)

(10)

3.3 3.3.1 100 ✓ - (69 + 15 + 3 + 2) ✓ = 11 ✓ (3)

3.3.2. Methane ✓ (1)

3.3.3. It is burnt to:
- provide heat ✓/cook food
- generate electricity ✓

(2)

3.3.4.
- Nuclear power ✓
- Hydroelectric power ✓
- Solar power ✓
- Wind power ✓

(Any 2) (2)

3.3.5 Biodiversity is decreased ✓ as mines destroy habitats ✓ and the animals that live there die ✓/move away.

OR

Biodiversity decreases ✓ as mines release chemicals ✓/pollutants into the environment which poisons plants and animals. ✓ (3)

3.4. 3.4.1. Alien plants are plants that do not naturally live/originate in a particular habitat/country. ✓
Indigenous plants are plants that are naturally found in a particular habitat/country. ✓ (2)

3.4.2.
- Blocked waterways. ✓
- Light is not able to enter. ✓
- Photosynthesis cannot occur. ✓
- Plants die and decompose. ✓
- Bacteria deplete oxygen supply in water. ✓
- Aquatic animals die. ✓

(Any 4 × 1) (4)

3.4.3.
- Biological control is controlling alien plants through use of natural pests. ✓
- It is a more environmentally friendly and safe ✓ way of controlling alien plants.
- Chemical control is the use of chemicals ✓ to prevent the spread of alien plants.
- It can kill desirable plant and animal species. ✓

(2)

[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