GREENBURY SECONDARY SCHOOL

DEPARTMENT OF MATHEMATICS AND SCIENCES

FINAL EXAMINATION -2014

LIFE SCIENCE P2 – GRADE 11

EXAMINER : C. JUGDHAW MAX MARKS : 150

MODERATOR : K. GOVENDER /S. SINGH TIME : 2.5 hrs

NAME OF LEARNER.....

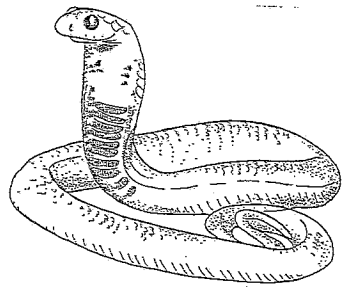
INSTRUCTIONS TO LEARNERS :

1. Answer all questions .
2. Write neatly and legibly
3. Draw diagrams in pencil and label in ink
4. This paper consists of ....11..... pages

SECTION A

QUESTION ONE

1.1 In each of the following questions, four possible answers are given. Choose the most appropriate answer and then write **only the letter** corresponding to it, next to the question number.



Question 1.1.1 and 1.1.2 are based on the picture above.

1.1.1 The symmetry of the animal shown is .....

A radial
B asymmetrical
C bilateral
D all of the above

1.1.2 The animal above belongs to the phylum.....

A Chordata
B Arthropoda
C Annelida
D Platyhelminthes

p.t.o...1.1.3

1.1.3 The most likely reason for an insect to moult is to .....

A enable the wings to grow
B enable the insect to grow
C renew the damaged exoskeleton
D allow for colour change

1.1.4 Plants from the bryophyte group have.....

A well- developed conducting and strengthening tissue , rhizoids and reproduce by means of spores .
B poorly developed conducting and strengthening tissue ,roots and reproduce by means of spores .
C poorly developed conducting and strengthening tissue , rhizoids and reproduce by means of spores.
D poorly developed conducting and strengthening tissue , rhizoids and reproduce by means of seeds.

1.1.5 When an infection was treated with a new drug , the inflammation decreased . In a few patients the inflammation returned after one week . The probable reason for this is that...

A the patients developed an allergic reaction to the drug.
B the decrease in inflammation allowed the pathogens to become resistant to the drug
C the white blood cell were not functioning properly and therefore the inflammation returned .
D a few pathogens resistant to the drug were present at the start of the treatment, the drug could not have killed them and so they reproduced.

1.1.6 Which of the following is due to global warming?

A Fair weather conditions
B A rise in sea levels causing flooding of low- lying areas
C An increase in the incidence of skin cancer and eye cataracts
D A change in vegetation type resulting in an increase in grazing for domestic and wild animals

1.1.7 A vaccine against TB normally given to children

A. DOTS
B. BCG
C. GCB
D. BBC

1.1.8 The success of fertilisation in the moss depends to a large extent on

A. wind
B. water
C. light
D. temperature

P.T.O 1.1.9...

1.1.9 A group of 11 learners decided to carry out a survey to see how many people in their community suffered from malaria . Below are the steps (not in order) which they followed during their survey.

1. They went to the clinic to get information on the number of people treated for malaria on a monthly basis .
2. They made some conclusions based on their results .
3. They drew up sheets to record their results.
4. They analysed the results and represented the information in graphs.
5. They planned how they were going to carry out the survey.

Write only the letter that indicates the correct sequence / order of the steps involved in conducting the survey .

A. 1-2-3-4-5
B. 4 -5-2-3-1
C. 5-3-1-4-2
D. 5-3-1-2-4

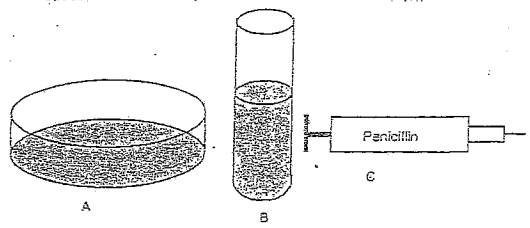
1.1.10 Antibiotics work by interfering with various stages of protein synthesis in a bacterial cell . A group of learners wanted to test the effect of the antibiotic penicillin on the bacterium *Staphylococcus aureus.*

They were provided with the following apparatus :

a) Petri dishes containing agar (agar supports bacterial growth) (A)

b) Culture of *Staphylococcus aureus* (B)

c) The antibiotic penicillin (C)



Apparatus used in the investigation

P.T.O. which...

Which of the following are the **steps** in sequence that these learners would follow to determine the effect of the antibiotic penicillin on bacterium *S. Aureus?*

1. Add the antibiotics in a specific area
2. Add *S.aureus* into the petri dish.
3. Observe the effect of the antibiotic after several hours
4. Allow a few hours for bacterial growth (incubation)

A . 2, 4 , 1 , 3 C . 3 , 1 , 4 , 2
B . 4 , 2 , 3 , 1 D . 1 , 3 , 4 , 2 10x2 (20)

1.2 Give the correct biological term for each of the descriptions . Write only the term next to the question number .

1.2.1 A disease caused by a bacterium living in water , which causes a person to suffer from severe diarrhoea, vomiting and feeling of weakness.
1.2.2 The layer in the atmosphere that protects us from harmful ultraviolet rays .
1.2.3 The name of the bacterium that cause tuberculosis .
1.2.4 Very small life forms that cannot be seen with the naked eye .
1.2.5 The accumulation of sense organs at one end that often leads to the development of a head.
1.2.6 A condition where a person gets better and then falls sick again , usually because he/ she has stopped taking medication.
1.2.7 Organisms without a distinct nucleus .
1.2.8 A simple digestive system having only one opening.
1.2.9 An organism which transmits diseases to other species, but is not affected by the disease .
1.2.10 Disease of green plants characterised by loss of its green colour

(10x1) 10

1.3 For each of the phrases in column I , state whether it applies to **A only , B only , A and B** or **none** of the items in column II . Write down **A only , B only , A and B** , or **none** next to the number .

COLUMN 1	COLUMN 11
1.3.1 gametophyte is dominant	A. Pteridophyta B . Bryophyta
1.3.2 have a thallus structure in its life cycle	A . moss B . fern
1.3.3 water is necessary for fertilisation	A . angiosperm B . gymnosperm
1.3.4 seed bearing plants	A . Spermetophyta B . Pteridophyta
1.3.5 prevent flood damage and act as natural filters	A . wetlands B . estuaries

5x2 (10)

P.T.O. 14...

1.4 Read the article below entitled 'Durban to Recycle Sewage water into Drinking Water'.

Durban to Recycle Sewage water into Drinking Water

Durban plans to become the first SA city to purify and recycle sewage water into drinking-quality tap water. The city is also carrying out a feasibility study on purifying sea water as an alternative.

Water is going astray in Durban because of leaks and theft. The city recently spent millions of rand replacing large sections of old, leaky pipes and reduced pressure levels in several areas to curb leaking. Although a large new dam, Spring Grove, was being built near Mooi River, this would not relieve the water supply risk to an acceptable level in the short term.

Windhoek had been partially reliant on recycled sewage-to-tap water since 1968. "Crucial to this public acceptance is Windhoek's 42-year record of no waterborne disease outbreaks and no negative health effects attributable to drinking reclaimed water."

According to eThekwini's water department, there would be at least three safety barriers to ensure the quality of treated effluent. The semi-treated clear water would be pumped at high pressure through ultra-filtration membranes that removed suspended and dissolved solids, and bacteria. This water would then be filtered through tiny pores. The final stage involved ultra-violet light disinfection.

As a further safeguard, all purified effluents from the two new Durban plants would be stored for at least 12 hours after treatment so that final samples could be taken for testing before the water was released into tap supplies.

The Mercury – 15 March 2012

1.4.1 List THREE different strategies referred to in the article intended to increase the availability of clean drinking water . (3)

1.4.2. Describe TWO arguments used in the article to convince the reader about the safety of recycled sewage water . (4)

1.4.3 List THREE processes that will be used to ensure that the recycled sewage water will be fit for human consumption. (3) (10)

TOTAL QUESTION 1: 50

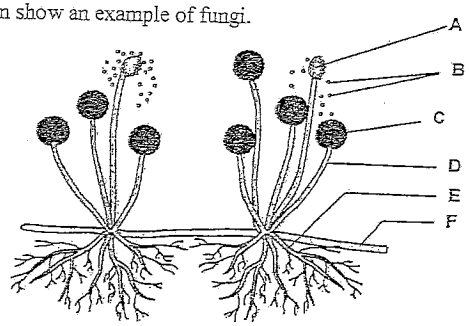
TOTAL SECTION A : 50

P.T.O. SECTION B.

SECTION B

QUESTION 2

2.1 The following diagram show an example of fungi.



2.1.1 Provide labels for part C and F. (2)

2.1.2 List TWO characteristics of fungi . (2)

2.1.3 Name TWO fungal infections that commonly occur in people . (2)

2.1.4 Describe ONE environmental condition that encourage fungal growth . (1) (7)

2.2 Read the passage below and then answer the questions based on it .

Sixty- five million affected by HIV

A new United Nations report revealed that since the first cases of HIV and Aids were detected 25 years ago ,sixty- five million people around the world have become infected with HIV and around 25 million have died.

The distribution of the number of people living with HIV in various parts of the world at the end of 2005 is indicated in the table below.

Region	Number living with HIV (million)
Sub-Saharan Africa	25,00
Asia	8,30
Eastern Europe and Central Asia	1,50
Latin America	1,60
Middle East	0,44
Other countries	1,76
Total	**38,60**

(Adapted from : Evelyn Leopold for Reuters in the Daily News, 31 May 2006)

P.T.O 2.2.1...

2.2.1 State ONE reason why the figures reported in this passage may not be accurate. (2)

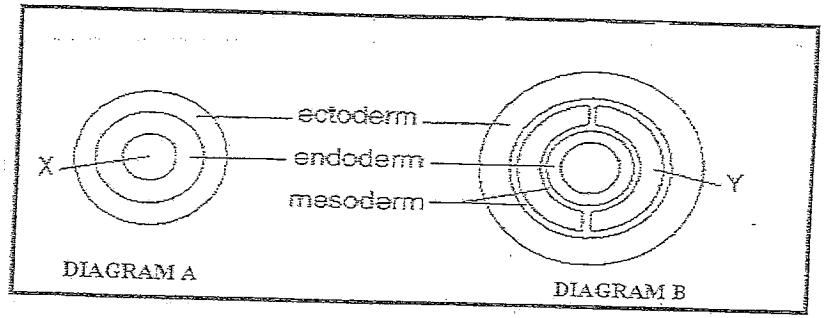
2.2.2 Using the information in the passage above calculate the percentage of HIV infected people in the Sub-Saharan Africa. (3)

2.2.3 Although the population of Africa is much lower than that of Asia , the 25 million people living with HIV in Africa is about three times the number of people living with HIV in Asia. Explain TWO possible reasons for this. (4)

2.2.4 The following proposal was made to control the spread of HIV:
' An HIV test should be compulsory before people get married.'
State and explain your view on this. (2) (11)

2.3 Scientists often use features of morphology (external and internal structural characteristics) as well as development to classify animals into various groups. The animal groups are defined, on the basis of their body symmetry and body plans.

Study the diagrams below and answer the questions that follow.



2.3.1 Identify diagrams A and B according to their body layers . (2)

2.3.2 Provide labels for X and Y. (2)

2.3.3 Name an animal that shows radial symmetry. (1)

2.3.4 Body plan B allows for the formation of a more specialised animal than the one shown in diagram A. Discuss the advantages of body plan B to the animal. (3)

P.T.O 2.3.5..

2.3.5 Scientists often use the body plans of animals to determine its level of complexity.

Re-arrange the following animal groups from the most primitive (simple) to the most complex (advanced) :

(a) A. Platyhelminthes
(b) B. Annelida
(c) C . Cnidaria

(3) (11)

2.4 Read the passage below and answer the questions that follow .

> Statistics on rhino poaching in South Africa show that rhino poaching is on the increase. In 2005, 13 rhinos were poached . This figure has steadily risen every year, and 448 rhinos were poached in 2011.
>
> The rhino horns are smuggled to some countries in the East, where they are sold illegally and at very high prices.
>
> These rhino horns are used to make aphrodisiacs (sexual stimulants) , as well as ornaments. They are also used to make medicines which are thought to cure cancer and other ailments .
>
> (Adapted from the *iol news* ,April 2012)

2.4.1 What is poaching ? (2)

2.4.2 Give ONE reason stated in the text above for the increase in rhino poaching in South Africa . (1)

2.4.3 State TWO ways in which Eastern countries uses rhino horns . (2)

2.4.4 Explain why we should be concerned about the increasing rhino poaching problem in South Africa. (2)

2.4.5 Explain TWO ways in which the South African government can prevent rhino poaching. (4) (11)

TOTAL QUESTION 2: 40

P.T.O Question 3

QUESTION 3

3.1. A scientist tested two sites along a river . Site A was situated upstream and site B downstream . She measured three factors at each site : oxygen content, water temperature and percentage of algae.

Site	Dissolved oxygen (arbitrary units)	Water temperature(°C)	Algae %
A	25	16	5
B	150	19	26

3.1.1 Formulate a hypothesis to explain the differences in water temperature and percentage algae at Site A and Site B by using the data from the table . (2)

3.1.2 Identify the dependent and independent variable . (2)

3.1.3 Name ONE human influence that could be causing the rise in water temperature . (2)

3.1.4 Which phenomenon could occur if the percentage of algae continues to increase at site B? (1)

3.1.5 Predict what will happen to the oxygen content of the water if the phenomenon mentioned in 3.1.4 occurs . Explain . (3) (10)

3.2 The Human Sciences Research Council (HSRC) conducted a survey on food security across the provinces. The results showed that the overall percentage of food secure households in South Africa is 45,6 as opposed to 48 in 2008.

The results showing the percentage of food insecure households in each province according to the latest survey are shown in the table below.

Province	Percentage of food insecure households
Eastern Cape	36
Limpopo	31
Mpumalanga	30
Free State	29
Kwa Zulu-Natal	28
Northern Cape	21
Gauteng	19
Western Cape	16

3.2.1 What is meant by food security ? (2)

3.2.2 Use the data in the table to draw a bar graph for the four provinces that have the highest percentage of food insecure household . (8)

P.T.O 3.2.3

3.2.3 State how the use of fertilisers by farmers can :

(a) Increase food security for a country (1)

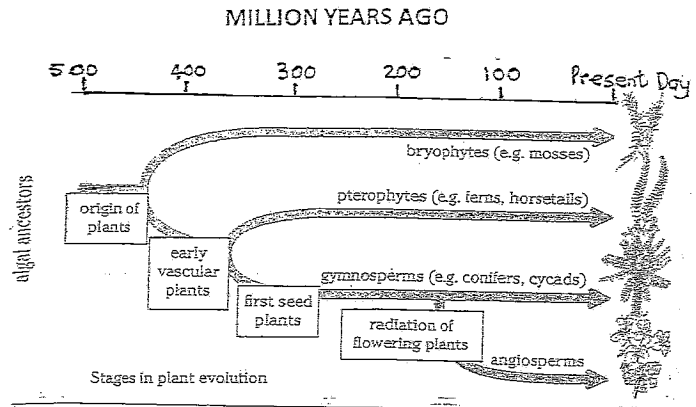
(b) Decrease food security for a country (1)

3.2.4 State how the use of pesticides by farmers can :

(a) Increase food security for a country (1)

(b) Decrease food security for a country (1) (14)

3.3. The diagram below shows the major stages in plant evolution . Study the diagram and the table and answer the table that follow .



Evolutionary development
Land plants evolve from aquatic algae. A cuticle reduces moisture loss. Sex organs have a protective coat to protect the gametes and embryos.
Land plants develop vascular tissue to conduct water and food, and give structural support.
Some plants develop seeds, which protect the embryo from drying out.
Flowering plants appear. Flowers attract pollinators. Ovaries (fruit) protect the developing seeds.

3.3.1 What type of organisms did modern day plants evolve from ? (2)

3.3.2 Approximately how long ago did the first land plants appear ? (2)

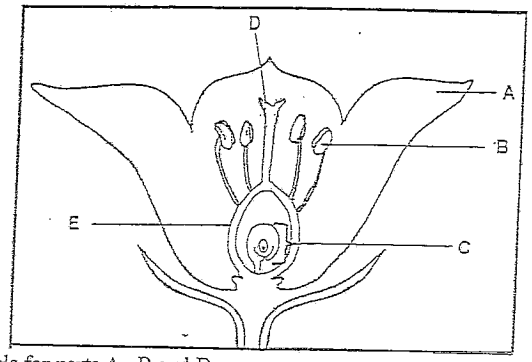
3.3.3 When did flowering plants first appear ? (2)

3.3.4 State one function of : a) seeds (1)

b) flowers (1) (8)

P.T.O 3.4

3.4 Study the diagram of a flower and answer the questions that follow .



3.4.1 Provide labels for parts A , B and D. (3)

3.4.2. Define the term pollination. (2)

3.4.3 Describe THREE ways in which a wind pollinated flower will differ in structure from the flower drawn above . (3) (8)

TOTAL QUESTION 3 : 40

TOTAL SECTION B : 80

SECTION C

QUESTION 4

In 2005, a detailed assessment of South African biodiversity was undertaken. The results were as follows :

- 34% of land ecosystems are threatened and 5% critically endangered.
- 82% of river ecosystem are threatened , 44% being critically endangered.
- 12% of marine bio-zones are under serious threat.
- 3 of the estuarine ecosystems are in critical danger.

4.1 Define the term biodiversity , and in an essay , **name** and **describe** how various human activities may lead to habitat loss . (20)

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DEPARTMENT OF MATHS & SCIENCES
H.O.D. MR L PILLAY
06/11/2014

TOTAL QUESTION 4 : 20

FINAL TOTAL : 150

QUESTION FOUR

4.1 BIODIVERSITY : The range of species and the number of organisms making up each species within communities. (2)
- Refers to the variety of plants and animal species on Earth ✓✓

Urbanisation – land is cleared for housing, industries and roads✓ leading to habitat fragmentation which eventually lead to a decrease in genetic diversity✓ causing populations to become extinct

Poor farming methods – monoculture allows only a few species of animals to survive✓, losing a large amount of plants and animals which would have been present if the crops were varied✓

Overgrazing of land leads to loss of topsoil/erosion✓ decreasing spoil fertility✓

Use of pesticides which kills secondary consumers ✓ and fertilisers which when washed to rivers disturbs the ecosystem✓ of the river leading to extinction of some populations

Golf estates require plenty of water and vast clearance of vegetation to make way for the lawn✓, in which only a few species will exist✓

Mining results in degradation of ground water as well as a change in the pH of the water around the area, emission of toxic gases into the atmosphere and also causes soil erosion✓. The environment is altered in such a way that organisms can no longer exist in the area✓

Deforestation – the demand for wood products cause many trees to be cleared✓, this destroys the ecosystems within the forest area✓ leading to extinction of some populations.

Destruction of wetlands and grasslands – these areas have been cleared for human inhabitation ✓reducing the biodiversity of organisms surviving entirely on wetlands or grasslands✓ (Any 5) (17)

R – no irrelevant information in essay

L – all aspects logically explained

C – 5 activities mentioned and discussed

P6

MEMORANDUM : GRADE 11 -2014 / LIFE SCIENCE PAPER 2

SECTION A :

QUESTION 1

1.1.1	C ✓✓
1.1.2	A ✓✓
1.1.3	B ✓✓
1.1.4	C ✓✓
1.1.5	D ✓✓
1.1.6	B ✓✓
1.1.7	B ✓✓
1.1.8	B ✓✓
1.1.9	C ✓✓
1.1.10	A ✓✓ 20

1.2.1	cholera ✓
1.2.2	ozone ✓
1.2.3	mycobacterium TB ✓
1.2.4	micro-organism/microbes ✓
1.2.5	cephalisation ✓
1.2.6	relapse ✓
1.2.7	prokaryotes ✓
1.2.8	blind gut ✓
1.2.9	vector ✓
1.2.10	Aids ✓ **10**

1.3.1	B
1.3.2	both ✓✓
1.3.3	none ✓✓
1.3.4	A ✓✓
1.3.5	A ✓✓ 10

1.4.1 - Recycling sewage water ✓
- Purifying sea water ✓
- Replacing old, leaking pipes ✓
- reducing water pressure
- building new dams (3)

1.4.2 - No outbreak of water –borne disease ✓ in Windhoek for 42 years. ✓
- 3 safety barriers ✓ to ensure the quality ✓ of treated effluent
- stored for at least 12 hours ✓ allowing sufficient time for repeating testing (2x2) 4

1.4.3 - Pumped at high pressure through ultra filtration membranes to remove suspended and dissolved solids and bacteria .
- reverse osmosis technology used .
- ultra – violet disinfection any 3

QUESTION TWO

2.1.1 C - Sporangium ✓

D - stolon ✓

2.1.2 - Eukaryotic , body consist of hyphae. ✓

- hyphae walls made of fungal chitin ✓

- lack chlorophyll and are heterotropic

- most are saprophytic any 2

2.1.3 ringworm ,✓ candidiasis,/ trush,✓ athlete's foot (2)

2.1.4 dark / damp✓ / moist condition (1)

2.2.1 Many cases are not officially recorded ✓✓

- many people don't know yet whether they are HIVpositive. ✓ reason (2)

2.2.2 - 25 / 38.6 ✓ x 100 ✓ = 64,77 %✓

2.2.3 - Greater level of poverty ✓and lack of knowledge of the disease in Africa. ✓

- women have little power ✓over sexual relationships in Africa.✓ (2x2) 4
(any other logical answer)

2.2.4 Agree✓ - you should know the status of the person you are marrying. ✓

Disagree✓ - It is private information .✓

2.3.1 A - diploblastic ✓

B - triploblastic ✓ (2)

2.3.2 X - gut✓ / enteron / lumen (2)

2.3.3 sea anemone✓, hydra, jelly fish, starfish (1)

2.3.4 - It provides space for the development of the internal organs. ✓

- It separates the gut wall from the body wall enabling them to function ✓ independently of each other.

- The fluid within the body cavity acts as a **hydrostatic skeleton** ✓ i.e. the muscles act against it to bring about locomotion. (3)

2.3.5 a) C ✓
b) A ✓
c) B ✓ (3)

2.4.1 illegal killing ✓ / stealing of protected animals ✓ (2)

2.4.2 They are sold at very high prices ✓ (1)

2.4.3 - medicine purpose ✓

- making ornaments ✓

- making aphrodisiac (2)

2.4.4 - rhino species could become extinct thus reducing biodiversity ✓

- upsetting the balance in community / structure / food web. ✓ any 2 (2)

2.4.5 - legalise ✓rhino poaching to regulate the selling and exporting of rhino horns

- strict penalties ✓/ imprisonment to discourage illegal poaching .

- develop new technology ✓to improve monitoring

- educating ✓people about the importance of conservation ✓of rhino species (2x2)

QUESTION 3

3.1.1. - Higher water temperature stimulate algal growth

- algal grow more rapidly when water temperatures are high (no other answer - must be based on data) (2)

3.1.2 dependent variable - percentage of algae / dissolved oxygen

Independent variable - water, temperature (2)

3.1.3 pollution from industry (2)

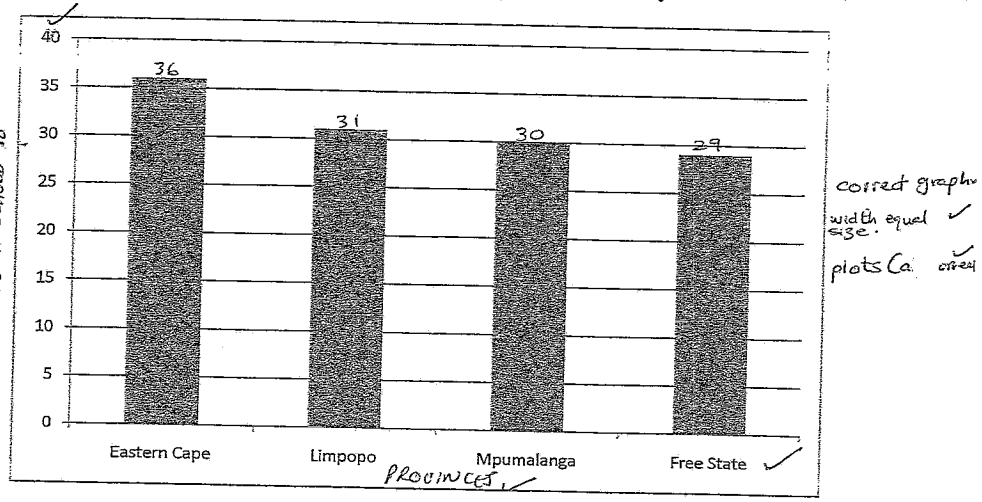
3.1.4 eutophication (1)

3.1.5 - the oxygen level will drop -increase in algae

- increase in bacteria / decomposers will reduce oxygen level. (3)

3.2.1 -Having access to enough food on a daily basis, so as to ensure healthy living (2)

3.2.2 % of food –insecure households in 4 Provinces in South Africa



(8)

3.2.3 (a) - Fertilizers provide nutrients that increase crop growth. (1)

(b) - Fertilisers are expensive , cause food prices to increase

- over use of fertilisers can cause oxygen deprivation in soil which will eventually reduce crop production .
- Eutrophication. (1)

3.2.4 (a) - Pesticides ensure that pests do not cause large scale damage to crops .

(b) - pesticides could kill pests as well as their predators .

- hence more pesticides would have to be used , raising the cost of food .(1)

3.3.1 - algae (2)

3.3.2 - 440 mya (450 mya) (2)

3.3.3 - 150 mya (2)

3.3.4 a) seeds - protects the embryo from drying out / propagate species .(1)

b) flowers - attract pollination agents / sexual reproduction in plants . (1)

3.4.1 A - petal /corolla

B - anther

C - stigma (3)

3.4.2 - the transfer of pollen grains from the anther to the stigma of a flower (2)

3.4.3 - lack petals / reduced petals

- anthers and stigma hang out of flower

- not bright coloured / pollen light and dry (3)