education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

AGRICULTURAL MANAGEMENT PRACTICES

NOVEMBER 2007

MEMORANDUM

This memorandum consists of 42 pages.

QUESTION 1: PIG PRODUCTION

1.1.1 D ✓
1.1.2 D ✓
1.1.3 B ✓
1.1.4 B ✓
1.1.5 C ✓
1.1.6 B ✓
1.1.7 D ✓
1.1.8 A ✓
1.1.9 D ✓
1.1.10 C ✓ **(10 x 1)** **(10)**

1.2 **Sow number. ✓**
Expected farrowing date. ✓
Litter size. ✓
Number of still-born pigs. ✓
Birth mass. ✓
Mass of 3 weeks of age. ✓
Mortality rate. ✓
Number of piglets weaned. ✓
Boar details. ✓
Average transfer rate. ✓
Average transfer mass. ✓ **Any five** **(5)**

1.3.1 **External. ✓** **(1)**
1.3.2 **Reduced growth rate. ✓**
Decreased feed efficiency. ✓
Downgrading at slaughter. ✓ **(2)**
Itching. ✓
Lesions appear. ✓
Affected area is dry and scaly. ✓ **Any two**
1.3.3 **Built pens with cement floors. ✓**
Wash pens daily with water and a hard broom. ✓
Treatment of the herd on regularly basis.✓ **Any two** **(2)**

1.4.1 **Individuals of different breeds are mated✓ and the performance of the resulting progeny regarding a particular trait is above the mean of the two parents. ✓** **(2)**
1.4.2 **Correct assessment of economically important traits. ✓**
Heritability of the traits. ✓
Number of traits which are simultaneously selected for. ✓
Genetic correlation between the economically important traits. ✓
Any two **(2)**

1.5.1 **Cutting of needle teeth. ✓**
Prevent injuries. ✓ **(2)**

1.5.2 **Tail docking. ✓**
Prevent cannibalism. ✓ **(2)**

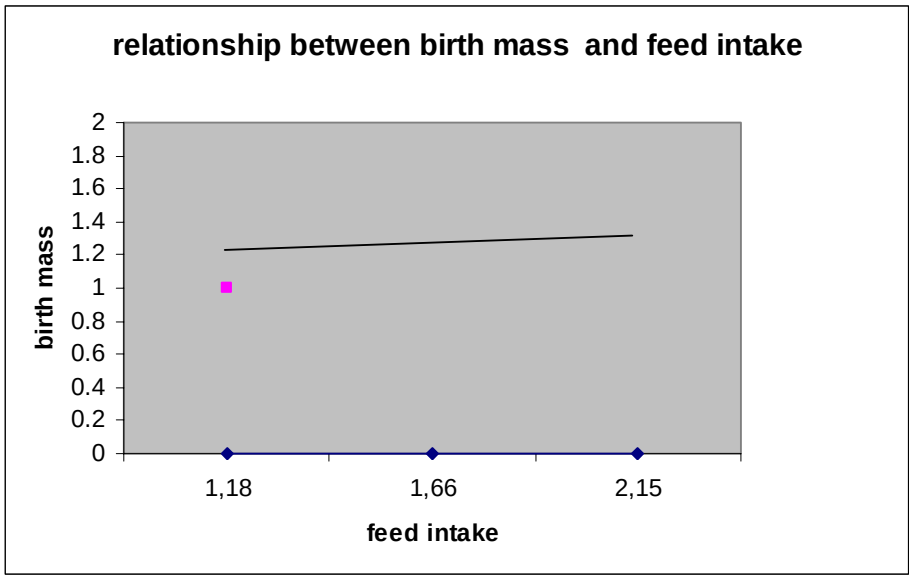
1.5.3 **Iron injections. ✓**
Prevent anaemia. ✓ **(2)**

1.6 **Furrowing pen be designed in such a way that the sow cannot lie on top of the piglets. ✓**
Furrowing area and creep area should be provided in such a manner to prevent or reduce deaths. ✓
Make sure the piglets' gets colostrums as possible. ✓
If a sow has to many piglets, piglets can be places with other sows
Or a milk surrogate. ✓ **[4]**

1.7 **Sandy soil for better drainage. ✓**
Wet soil can ruin the unit because of diseases. ✓ **(2)**

1.8.1 **Mass of gilt. ✓**
Feed intake per day. ✓
Protein value of feed. ✓ **(3)**

1.8.2



x-axes ✓
y-axes✓
graph✓ **(3)**

1.9.1 **Bring sow to inseminated area and apply back pressure to the lower back to bring about an immobile stance. ✓**
Clean vulva with paper. ✓
Lubricate the catheter with lubricant. ✓
Slowly insert catheter into vulva ✓
Keeping tip in upward angle. ✓
When catheter can't be pushed forward, turn catheter anticlockwise. ✓
Snip tip of A.I. bottle ✓
and insert into end of catheter ✓
And squeeze bottle.✓
Remove catheter by turning clockwise and pull out gently. ✓ **Any six** **(6)**

1.9.2 **10 – 12 hours before ovulation. ✓** **(1)**

1.9.3 **For the easy flow of semen. ✓** **(1)**

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QUESTION 2: BEEF PRODUCTION

2.1
2.1.1 I✓
2.1.2 C✓
2.1.3 H✓
2.1.4 D✓
2.1.5 F✓
2.1.6 E✓
2.1.7 J✓
2.1.8 A✓
2.1.9 K✓
2.1.10 G✓ **(10)**

2.2
-rest✓
-period of utilization
-numbers of stock ✓
-proportional utilization✓ **(4)**

2.3
Blackquarter✓
Anthrax✓
Mastitis✓
Tuberculosis✓
Contagious abortion/Brucellosis✓
Parthyphoid ✓
Any other correct answer **Any 3** **(3)**

2.4.1
At least two drovers must accompany cattle of less than a herd of fifty (50), ✓
three drovers when the herd is between fifty-one (51) and ninety-nine (99) ✓
and four (4) drovers when the herd is one hundred (100) or more ✓ **Any 2** **(2)**

2.4.2
Two flagmen must walk one in front and one behind the herd, ✓
Not closer than fifty (50) meters or further than one hundred and fifty (150) meters from the herd. ✓
By the day, each must carry a flag of bright red cloth measuring at least 60cm x 60cm. ✓
At night they must each carry a staff of not less than twenty-five (25) mm in diameter and two (2) meters in length, ✓
Coloured with alternative bands of at least 15 cm width, made out off reflective material. ✓ **Any 2** **(2)**

2.4.3
Flag or staff bearers must be positioned not less than fifty (50) and not more than one hundred and fifty (150) ✓ meters on either side of the crossing. ✓ **(2)**

2.5.1
Means that the gene for poll ness is attached to male sex chromosomes✓ it is what the bull is born with during birth. ✓ **(2)**

2.5.2 **Self-defence✓**
Protection of young against predators✓
In dominance encounters with other bulls✓
Tools to break branches of trees and shrubs✓
Radiators to dispose excess body heat✓
Aesthetic value✓
Valuable by-product. ✓ **Any 2** **(2)**

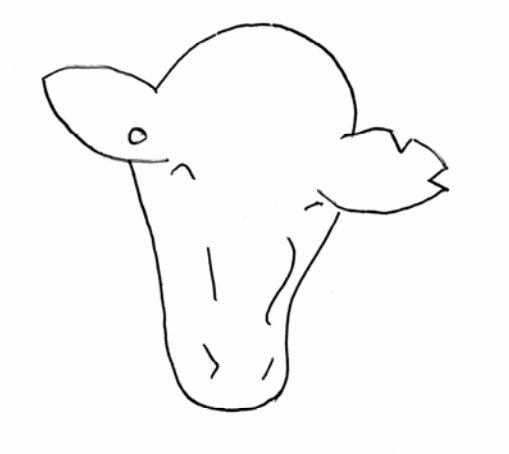
2.5.3 **To prevent animals from injuring one another✓**
To prevent animals from injuring and causing death to workers✓
For ease of handling animals✓
To prevent bruising of the carcass✓ **Any 2** **(2)**

2.6 **Adequate air, water and feed✓**
Safe housing and sufficient space✓
Freedom from fear and stress✓
Effective health care✓
Behavioural freedom✓ **Any 3** **(3)**

2.7 **Provincial veterinary identification✓**
Ownership identification✓
Management identification✓ **(3)**

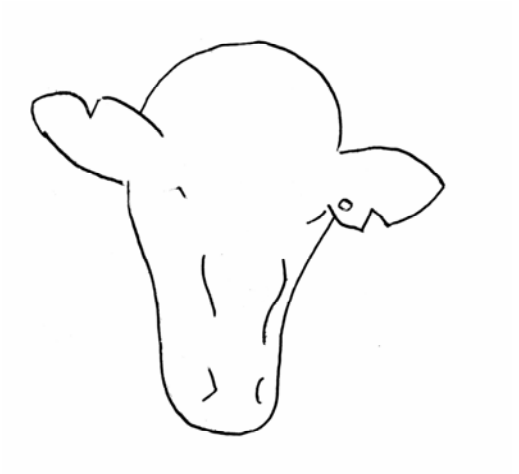
2.8.1 Ear-notching✓ **(2)**

2.8.2 A



(1)

2.8.2 B



(1)

2.9 Head of Cattle= 300x6.0m^2 =1800m^2✓✓
Calves =150x0.6=90m^2 ✓✓
Therefore total Area = 1800+90=1890m^2✓ **(5)**

2.10.1 Artificial Insemination/AI✓ (1)

2.10.2 -most effective measure against the spread of venereal diseases. ✓
- is an economical method because bulls are eliminated.
- Reliable method of improving the herd as selected bulls is used. ✓
-is a rapid method of improving the quality of the herd. ✓
- provides the breeder with the opportunity of obtaining semen from outstanding bulls. ✓
a ✓larger progeny is obtained as in a case of normal breeding✓
And the breeding value of bulls can be determined at a shorter space of time. ✓
Semen of outstanding bulls can be used even after death because of freezing of the semen. ✓
Semen can be imported ✓ Any 5 (5)

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QUESTION 3: DAIRY FARMING

3.1.1 T ✓
3.1.2 F ✓
3.1.3 T ✓
3.1.4 T ✓
3.1.5 T ✓
3.1.6 F ✓
3.1.7 F ✓
3.1.8 F ✓
3.1.9 F ✓
3.1.10 T ✓ **(10)**

3.2.1 Vacuum pump ✓

3.2.2 Vacuum meter ✓

3.2.3 Pulsator ✓

3.2.4 Claw piece ✓

3.2.5 Milk tank ✓ **(5)**

3.3 Cell division ✓
Cells increase 1 -2 - 4 – 8 – 16 – 32 ✓
4 days after fertilization in uterus horn ✓
End at blastocyte ✓
At day 4-7 it is known as the morula ✓
16 – 32 cell stage is known as the morula ✓
Zygote becomes spheroid form ✓
Know as blastocyte ✓
Zygote moves down into the fallopian tube ✓
Then it moves into the uterus ✓
At day 12 the process is completed. ✓
The Zona Pellucida breaks and the zygote attach it self to the uterus wall ✓ Any 6 **(6)**

3.4 Mastitis test ✓ ✓ **(2)**

3.5 Production records ✓
Fodder flow program ✓
Mating program ✓
Herd composition ✓
Heath records ✓
(any other records that are relevant) Any 5 **(5)**

3.6 **Bloodless castration ✓ with burdizzo ✓**
Put scrotum ✓ and one seed tube in between the jaws ✓
Close for a few seconds ✓
Bruce one seed tube at a time ✓
Do not over lap the cutting ✓
Be careful not to cut the s shape part of the penis ✓
The testis are damage and no blood flow takes place ✓
Testis dies off ✓
Skin is not damage ✓ **(6)**

3.7 **The graft explain the milk release process**
Working of oxytocin
Stimulation of cow
Oxytocin is released oxytocin
Intra-udder pressure rises
Milk is released
Up to five minutes 100% oxytocin action after stimulation
Decrease to 85% after 7 minutes
After 10 minutes the action of oxytocin is 0%
Do not milk cows longer than 10 minutes **(6)**

3.8.1 **Temperature of 4 °C. ✓**
Must be clean. ✓
Must be sanitary conditions. ✓
Free of odours.✓ **Any 3** **(3)**

3.8.2 **No contamination must be possible. ✓**
No open joints or seams. ✓
Products mustn't come in contact with the floor. ✓
Must be dust free. ✓
Container of non-absorbent material. ✓
Weatherproof ✓
Easy-to-clean. ✓
Inside is rust-free. ✓
No residue of cleaning agents or previous products. ✓
Products protect against damaging. ✓
If refrigerated, it must be refrigerated at the correct temperature.✓ **Any 5** **(5)**

3.9 **Fixation of undesirable characteristics. ✓**
Appearing of deformity. ✓
Lower production. ✓
Lower vitality. ✓ **Any 2** **(2)**

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QUESTION 4: SHEEP PRODUCTION (Mutton)

4.1
4.1.1 C✓
4.1.2 D✓
4.1.3 A✓
4.1.4 B✓
4.1.5 D✓
4.1.6 B✓
4.1.7 D✓
4.1.8 A✓
4.1.9 C✓
4.1.10 D✓ **(10X1)** **(10)**

4.2 **The correctness of the evaluation✓**
The grade of in hereditary of the characteristic✓
The amount of characteristics involved✓
The relationship between characteristics✓
Selection intensity✓
Breeding rate ✓ **(any 2)** **(2)**

4.3 **It is the repetition✓**
mating of purebred males✓
example
with inferior females✓ for a few generations✓
example **(4)**

4.4.1 **Stimulus the muscle contraction✓ and stimulate sperm mobility✓**
4.4.2 **Maintenance of corpus luteum✓**
4.4.3 **Prepare uterus✓ – for reception of fertilized egg cell✓**
4.4.4 **Stimulate muscle contraction✓ – Mucus secretion✓ – Relax cervix✓**
Any 6 **(4)**

4.5.1 **Gas Tail cutter✓** **(1)**

4.5.2 **Make sure all the apparatus are ready for use ✓**
Ignite tail cutter✓
Give enough time for blade to become hot✓
Cut tail at second joint✓
Make sure there is no bleeding✓
Treat with wound aerosol or remedy✓
Keep lambs still with mothers✓ **(7)**

4.6 **Keep sheep away from dangerous camps✓**
Only let animals graze when plants are not dangerous✓
Be careful during periods of draught✓
Pay attention to hay✓
Be careful when animals are move to another farm✓
Do not put to many animals in a camp✓
Make use of rotational gracing✓
Get rid of poisonous plants✓
Feed animals while being transported✓ **Any 4** **(4)**

4.7.1 **The aim of the Act is to promote meat safety ✓ by maintaining essential standards at abattoirs ✓ This will ensure that people are protected ✓that they buy healthy and good product, that is not a health risk to them✓** **(4)**

4.7.2 **The Act aims to provide for the control of animal diseases and parasites, ✓ and to promote animal health. ✓ Some diseases are also dangerous to people and can be transmitted to people. ✓ It makes sure people buy and slaughter healthy animals. ✓** **(4)**

4.8 **Part of the plant (leaves)✓**
Plant type✓
Area✓
Seasonal✓
Level (grazing height)✓ **Any four** **(4)**

4.9.1 $\frac{1200}{800} \times \frac{100}{1}$ ✓

= 150%✓✓ **(3)**

4.9.2 $\frac{1160}{1200} \times \frac{100}{1}$ ✓

= 96.6%✓✓ **(3)**

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QUESTION 5: POULTRY (BROILERS)

5.1
5.1.1 Conventional✓
5.1.2 Crossbreeding✓
5.1.3 Ovaries✓
5.1.4 Protein✓
5.1.5 Quantitative method✓
5.1.6 Humidity✓
5.1.7 Pathogens✓
5.1.8 Ammonia✓
5.1.9 Immune system✓
5.1.10 Mortalities✓ **(10x1)** **(10)**

5.2
Breed✓
The supplier✓
Amount of chickens delivered✓
Age of the flock✓
Vaccination done✓ **(5)**

5.3
The preparation should be done in advance
The building should be thoroughly cleaned and disinfected by means of washing and spraying✓ – Should be left empty for two weeks✓
The equipment should be thoroughly cleaned and disinfected with commercial agents✓ – Take equipment out into the sun. ✓
Heating equipment should be put on 24 hours in advance✓ – Give the house change to reach correct temperature✓
Freshly mixed ration and fresh water must be available✓ – Spread out food on strips of paper or cardboard. ✓ **Any six** **(6)**

5.4
Broilers have to take in the live vaccine as soon as possible✓
Redraw the water one to two hours ✓
Depending on the temperature before adding the vaccine✓
Mix approximately 5 grams of milk powder with 2 litres of water✓
Supply enough water for the chickens to drink for at least a half an hour✓
Mix the vaccine with a little bit of the mixture✓
Add this mixture to water✓ **(6)**

5.5
Remove any dead broilers and destroy in the correct way ✓
Remove any feed that are still usable. ✓
Manure can now be removed by means of labours or mechanical. ✓
If the manure are put directly into bag it and sealed it minimize the changes on infecting any other areas.✓
Clean floor properly with broom before the wash process can begin.✓ **(5)**

5.6 **Enzymes✓**
Medical drugs✓
Antibiotics✓
Organic acids✓
Absorbents✓
Antioxidants✓
Anti-mould agents✓
Pelleting agents✓ **any 4** **(4)**

5.7 **Reduce visitors✓**
Make use of shower and sterile clothing✓
Make houses bird proof✓
Wet bedding should be removed more than five kilometres✓
Delivery trucks must be clean and disinfected✓
Use a foot bath✓
Mortalities should be taken care of✓
Keep other poultry off the farm ✓
Poultry products used in feed should be sterilized✓ **any 5** **(5)**

5.8.1 **25 x 10 = 250m^2 ✓**
250 x 15✓= 3750 birds✓ **(3)**

5.8.2 **3750 – 200 = 3550✓**
3550 from 3750✓
200 / 3750 x 100 = 5.3%✓ **(3)**

5.9.1 **Salmonella Bacteria✓** **(1)**
5.9.2 **Heat treatment✓** **(1)**
5.9.3 **Vaccination✓** **(1)**

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QUESTION 6: GAME

6.1.1 W✓
6.1.2 V✓
6.1.3 W✓
6.1.4 W✓
6.1.5 V✓
6.1.6 V✓
6.1.7 W✓
6.1.8 W✓
6.1.9 W✓
6.1.10 V✓ **(10)**

6.2 Some diseases are transferable between game and cattle and the distribution must be prevented. ✓ Diseases like
Brucellosis. ✓
Foot-and-mouth disease. ✓
Tuberculoses. ✓
Malignant catarrhal fever. ✓
Hart water. ✓ **First sentence and any 3** **(4)**

6.3 Different animals eat different parts of plants. ✓
Area selection✓
Plant part selection✓
Plant species selection✓
Plane selection✓
Territory selection ✓ **Any 5** **(5)**

6.4 Cold fire:
Plant growth is moist or wet. ✓
Little heat is released per time unit. ✓
Soft winds generate less heat. ✓
Cold atmospheric air causes colder fires. ✓
Warm fires:
Long, dry grass generates a lot of heat. ✓
Strong winds generate more heat. ✓
Warm atmospheric air causes warmer and more intense fires. ✓
For regeneration of veldt, cold veldt fires are better. ✓ **(8)**

6.5 For use on animals only. ✓
Name and amount of the anaesthetic. ✓
Name and address of the person/institute which needs the anaesthetic. ✓
Name address and qualification of the person issuing the prescription. ✓ **(5)**
The date on which the prescription is issued. ✓

6.6 **Game viewing. ✓**
Selling of life game. ✓
Hunters. ✓
Eco-tourism. (Accommodation) ✓ **(3)**

6.7 **Teeth are more specialized to eat animals. ✓**
Teeth are long and strong to grab and tear animals apart. ✓
Teeth are strong enough to cut. ✓
Mostly strong jaws. ✓
Long slender muscled body. ✓
Colours that merge with the environment✓
Intelligent and awake. ✓
Good developed sense ✓ **Any 4** **(4)**

6.8 **Careful planning of the operation. ✓**
Hold a meeting with all the personal involved. ✓
Catching must take place during the coldest part of the day. ✓
Catching must take place the correct time of the year. (April – September). ✓
Plan catching during daylight. ✓
Don't catch game on warm, moist/rainy days. ✓
Don't catch leave eaters at the end of winter. ✓
Family animals must be caught as families. ✓
Anaesthetic is recommended. ✓
Prevent keeping animals for a long time. ✓
Prohibited excessive noise. ✓
Supply enough food and water. ✓
Supply enough shade. ✓
Supply enough space. ✓
If kept for long periods, the pens must be cleaned. ✓ **Any 6** **(6)**

6.9.1 **C✓** **(1)**
6.9.2 **E✓** **(1)**
6.9.3 **A✓** **(1)**
6.9.4 **D✓** **(1)**
6.9.5 **B✓** **(1)**

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QUESTION 7: LAYHENS

7.1

7.1.1 Conventional✓
7.1.2 Cross breeding✓
7.1.3 Ovaries✓
7.1.4 Protein✓
7.1.5 Quantities method✓
7.1.6 Humidity✓
7.1.7 Pathogens✓
7.1.8 Ammonia✓
7.1.9 Immune system✓
7.1.10 Mortalities✓ **(10)**

7.2

Flock or house number✓
Hatching date✓
Number of hens✓
Mortalities✓
Temperature✓
Feed consumption✓
Inoculation✓
Income✓
Expenditures✓
Breakages✓
Labour✓
Any other relevant records **(5)**

7.3

Clasped both legs with right hand and draw towards the opening of battery
Press the tail against the side of the battery
Left-hand apply pressure on both sides of the anus
Point of syringe is inserted into oviduct
Two drops of semen is deposited
Use second person to do insemination **Any four** **(4)**

7.4

Near a reliable market✓
Near sufficient clean water✓
Slight slope✓
A permanent light breeze is advantageous✓
Secure against theft✓
Slope of the roof should face north✓ **(6)**

7.5

Increased feed consumption✓
Increase the efficiency of the ratio✓
Less waste✓
Easier to feed✓
Certain fat soluble vitamins are oxidized less rapidly✓
Pelleting destroys some bacteria and viruses✓ **(6)**

7.6	**Grip the chickens head with thumb behind head✓** **Index finger is pressed against gullet✓** **Exerting slight pressure on throat✓** **Tongue is drawn back✓** **Lower beak are also drawn back rectangular with machine✓** **Hold beak in machine✓** **Cut a way one third of the lower beak✓**		**(4)**
7.7	**Weather conditions✓** **Crates✓** **Time✓** **Handling✓** **Vaccination✓** **Age✓** **Tranquillizers✓**	**Any 5**	**(4)**
7.8	**To many or to few roosters✓** **Roosters under fed✓** **External parasites✓** **Roosters to old✓** **Roosters infertile✓** **Preferential mating by roosters✓** **Eggs store to long in poor conditions✓**	**Any 5**	**(4)**
7.9.1	**Salmonella Bacteria✓**		**(1)**
7.9.2	**Heat treatment✓**		**(1)**
7.9.3	**Vaccination✓**		**(1)**
7.10	**Help with poverty by means of✓** **Producing eggs which is high in proteins, good for growth✓** **Utilizing the maize on the soil✓** **May slaughter or sell the hens when old✓**		**(4)**
			[50]

QUESTION 8: SHEEP PRODUCTION – WOOL

8.1	**8.1.1**	**C✓**		
	8.1.2	**D✓**		
	8.1.3	**A✓**		
	8.1.4	**B✓**		
	8.1.5	**D✓**		
	8.1.6	**B✓**		
	8.1.7	**D✓**		
	8.1.8	**A✓**		
	8.1.9	**C✓**		
	8.1.10	**D✓**	**(10X1)**	**(10)**

8.2	**Quality of wool.✓**		
	Wool oil.✓		
	Covering. ✓		
	Amount. ✓		
	Fullness. ✓	**Any 2**	**(2)**

8.3	**Performance testing. ✓**	
	Progeny testing.✓	
	Stud register. ✓	**(3)**

8.4.1	**Stimulus the muscle contraction✓ and stimulate sperm mobility✓**	
8.4.2	**Maintenance of corpus luteum✓**	
8.4.3	**Prepare uterus✓ – for reception of fertilized egg cell✓**	
8.4.4	**Stimulate muscle contraction✓ – Mucus secretion✓ – Relax cervix✓**	**(4)**

8.5.1	**Sheepshearer. ✓**	**(1)**

8.5.2	**To reduce the occurrence of external parasites. ✓**	
	Reduces manure clinging to the wool. ✓	**(2)**

8.5.3	**Catch the sheep turn on its back. (Sheering position)✓**	
	Keep legs apart. ✓	
	Cut wool in-between the legs. ✓	
	And close to rectum opening. ✓	**(4)**

8.6	**Keep sheep away from dangerous camps✓**		
	Only let animals graze when plants are not dangerous✓		
	Be careful during periods of draught✓		
	Pay attention to hay✓		
	Be careful when animals are move to another farm✓		
	Do not put to many animals in a camp✓		
	Make use of rotational gracing✓		
	Get rid of poisonous plants✓		
	Feed animals while being transported✓	**Any 4**	**(4)**

8.7. **The Act aims to provide for the control of animal diseases and parasites, ✓ and to promote animal health. ✓ Some diseases are also dangerous to people and can be transmitted to people. ✓ It makes sure people buy and slaughter healthy animals. ✓** **(4)**

8.8 **Feed prickle feeding 14 – 21 days before spring mating. ✓**
When ewe sexual behaviour is at its lowest. ✓
Ewe that is to lean will not come into heat. ✓
To fat ewes came on heat, but fertilization is low. ✓
Ideal that the ewe increase 3 kg in 3 weeks prior to mating. ✓
Prickle feeding causes more twins. ✓
Prickle feeding causes less pass over ewes. ✓
Prickle feeding consists of energy feeds. ✓ **Any four** **(4)**

8.9.1 $\frac{1200}{800} \times \frac{100}{1}$ ✓
= 150%✓ **(2)**

8.9.2 $\frac{1160}{1200} \times \frac{100}{1}$ ✓
= 96.6%✓ **(2)**

8.10 **One host tick. ✓ All three stages of the tick are on one animal. ✓**
Two host tick. ✓ Larva and nymph stay on one animal. ✓ Fully tick fall off, peel the skin✓ and mature tick finds second animal. ✓
Three host tick. ✓ Every stage is on a different animal. ✓ **(8)**

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QUESTION 9: LUCERNE PRODUCTION

9.1 **9.1.1 F✓**
9.1.2 T✓
9.1.3 T✓
9.1.4 F✓
9.1.5 T✓
9.1.6 T✓
9.1.7 T✓
9.1.8 F✓
9.1.9 T✓
9.1.10 T✓ **(10 x 1)** **(10)**

9.2 **- wide adaptability✓**
- high financial advantages✓
- outstanding advantages as a forage crop✓
- has a stabilizing influence on livestock farming. ✓
- Suitable for mechanization. ✓
- economical because it requires less labour✓
-high protein content✓
-rich in Calcium and vitamins A and D✓
-outstanding hay crop. ✓ **Any 4** **(4)**

9.3 **Upington✓**
Hartswater✓
Klerksdorp✓
Douglas✓
Leeudoringstad✓
Vredendal✓
Oudtshoorn✓
Ladysmith✓
Prieska✓
Lutzville✓ **Any 4** **(4)**

9.4 **Is when lucerne starts growing,✓ after cutting and at the beginning of a new season✓ because at this stage enough energy in the form of carbohydrates should have been stored in the roots ✓**
sufficient moisture should be available✓ **(4)**

9.5.1 **It only develops when a virulent pathogen, ✓a susceptible host✓ and favourable environmental conditions✓ are present.** **(2)**

9.5.2 **All the three elements work as a unit.✓This means that if a pathogen and a susceptible host are present, ✓and the environmental conditions are favourable for infection; the disease will develop✓and vice versa.** **(3)**

9.6 **-bloating✓**
-selective grazing✓
-wasting of lucerne by trampling and contamination by urine and faeces✓
-soil decomposition harm Lucerne production✓ **(4)**

9.7 **the leaf problem is caused fungi✓ therefore he must prevent the conditions favouring the growth and development of fungi✓**
-must control the fungal diseases by spraying with a fungicide✓ **(3)**

9.8 **-requires deep well drained soils✓**
-requires sandy loam soils✓
-have good soil fertility high in potassium✓
-requires neutral to slightly alkaline soils✓
-requires even and not stony land because of the use of machinery. ✓ **(5)**

9.9 **It must be healthy, ✓ soft, ✓ leafy, ✓ green, ✓and free of grass and weeds, ✓ cut before Lucerne has flowered. ✓** **Any 4** **(4)**

9.10 **It is important for determining the fertility status✓ and pH of the soil,✓ taken once in two (2) to three (3) years.✓** **(3)**

9.11 **Planning will involve date to cut which must be on a sunny day,✓ organizing tractor and implements, labour and referring to records for harvesting.✓**
Machinery used is the Rotary Mower✓ or sickle bar mower,✓
Cutting must be at early flowering stage/10% flowering/400-600 mm height✓
Time for drying must be 2-4 days after it is left in the field to wilt for 2-4 hours.✓ **Any 4** **(4)**

[50]

QUESTION 10: CITRUS PRODUCTION

10.1.1 Scion.

10.1.2 Bulk density

10.1.3 Mulching

10.1.4 Inflorescence

10.1.5 Nitrogen

10.1.6 Broadcasting

10.1.7 Gibberellic acid

10.1.8 Pollination

10.1.9 Legumes

10.1.10 Irrigation scheduling

10.2.1 3-4 Years ✓ (1)

10.2.2 A rich flavour ✓
A firm, juicy flesh ✓
A good aroma and size ✓
A smooth, deep colour and blemishing fruit ✓ (3)

10.2.3 Produced on a lot of farms ✓
A big job creator in agricultural sector ✓
A lot of seasonal labours ✓
Big processing industry ✓
Big export opportunities ✓ (4)

10.3 To shape the tree ✓
To remove dead or diseased wood ✓
To open the heart of the tree ✓
To direct the plants energy to flowers and fruit production ✓ (4)

10.4 Applying irrigation and fertilizer practices ✓ – applicable to the specific climatic conditions ✓
Apply the right prevention, monitoring and ✓ control measures against pest ✓
Apply the right tree husbandry techniques ✓– to ensure optimum growth, flowering and fruit set ✓
Apply the right techniques for analysis of the ✓ – leaves, soil and pest infestation levels. ✓ (8)
Apply the right financial and ✓ economical planning in cultivating and marketing ✓

10.5.1 **Hedging is the cutting back at near vertical angle on both sides of the row so that the between row space is opened to a predetermined width ✓✓** **(2)**

10.5.2 **Topping is the removal of the tops, horizontal or at an angle of approximately 45 degrees of large trees, which help to channel light into the tree. ✓✓** **(2)**

10.6 **Not only chemicals are used ✓**
Environment will benefit ✓IMP firstly focus on the prevention rather than cure ✓Farmers intend to obey quarantine regulations ✓
Any new infestation is removed immediately ✓
Cultivars that are less susceptible to pest damage is selected ✓Tree stress is prevented as far as possible ✓
The whole system is aimed at protecting the health of farm labours ✓ **(6)**

10.7 **Phosphorus does not move readily in the soil, it is best applied early in the preparation of the site, ✓ preferably before ripping so that it will be mixed with the root zone ✓**
Nitrogen is readily soluble and move easily through the soil with rain or irrigation, ✓ so they should be applied when and where they are needed. ✓ **(4)**

10.9.1 **TRV (m^3)= Tree height (m^2) x Crown width (m) x 10 000m^2 / ha✓**

$$\frac{\text{Tree height } (m^2) \times \text{Crown width (m)} \times 10\,000 m^2 / ha}{\text{Row space}}$$ ✓

TRV (M^2) = 4 x 3 x 10 000 ✓

5
= 24000 (m^3) ✓ **(4)**

10.9.2 **VR = 100 l x 24000 (m^3)**
---------- ✓
1000m^3 **(2)**
= 2400 litre ✓

[50]

QUESTION 11: MAIZE PRODUCTION

11.1.1 T

11.1.2 T

11.1.3 F

11.1.4 F

11.1.5 T

11.1.6 F

11.1.7 F

11.1.8 F

11.1.9 T

11.1.10 F **(10)**

11.2.1 **Merely talking ✓**
Coughing ✓
Or sneezing✓ **Any two** **(2)**

11.2.2 **A humans natural resistance against diseases✓**
To identify foreign material in the body ✓
And to destroy it ✓ **Any two** **(2)**

11.2.3 **Commercial agricultural areas will depopulate ✓**
Deaths will be very high ✓
People will be ineffective ✓
Productivity will decrease ✓
Farm labourers will be come scares ✓
Families will suffer ✓
Live span of labourers will decrease ✓
Any other social-economical influence ✓ **Any four** **(4)**

11.3 **Nutrient deficiencies will restrict leaf growth ✓**
This will have influence on growth and reproduction ✓
Defoliation by hail my cause a yield loss ✓
Water logging may cause damping off of plants ✓
Frost may damage exposed leaves ✓
Tilling to close may damage roots and affect yield ✓ **Any five** **(5)**

11.4 **Maize is a warm weather crop ✓**
Will not grow in areas where the daily temperature is less than 19^0 C ✓
Or where the summer months is less than 13^0 C ✓
Minimum temperature for germination is 10^0 C ✓
Germination will be faster with higher temperatures ✓ Development in the early season increases with higher temperature ✓
High temperatures have an adverse effect on pollination and fertilization
Critical temperature affecting yield is 32^0 C ✓ **Any five** **(5)**

11.5.1 **Conventional or clean cultivation ✓** **(1)**

11.5.2 **Sandy soils – poor structural units that may exist ✓**
Can be destroyed and wind erosion can take place ✓ **(4)**
Leads to poor infiltration and aeration ✓
Large clods ✓
Makes seedbed preparation difficult ✓ **Any four**

11.5.3 **Weed and unwanted residues can be buried ✓** **(1)**

11.6 **Never replace reliable cultivars after one season. ✓**
A range o cultivars spread the risk ✓
Cultivars must be adapted to a specific yield potential ✓
Revise the choice of cultivars annually ✓
Consider all the characteristics of a cultivars ✓ **(5)**

11.7

Insects, diseases and weeds can become resistant to pesticides. ✓

Resurgence of the pest when the pesticide application kills a high proportion of its natural enemies. The pest population increases rapidly because natural enemies no longer provide control. ✓

Secondary pests are created when pesticides kill the natural enemies of a non-target pest. Without natural enemies, the pest population increases to where it becomes a problem. ✓

Possible environmental contamination (e.g. pesticides in well water). ✓

Input costs for growers. ✓

Potential health hazards. ✓

Negative public attitude towards pesticides ✓ **Any five** **(5)**

11.8 **Monoculture – The planting of the same crop every year on the same land with out bringing in different crops ✓**
Example ✓
Crop rotation – The planting of different crops in succession on the same piece of land ✓
Example ✓ **(4)**

11.9 **Flowering stage ✓**
Grain filling period ✓
Tassel and ear initiation ✓ **Any two** **(2)**
[50]

QUESTION 12: WHEAT PRODUCTION

12.1

4.1.1 B✓
4.1.2 A✓
4.1.3 D✓
4.1.4 A✓
4.1.5 A✓
4.1.6 D✓
4.1.7 B✓
4.1.8 C✓
4.1.9 C✓
4.1.10 D✓ **(10X1)** **(10)**

12.2.1
If container is empty fill with clean water and shake✓
Pour into sprayer and repeat action✓
Make sure no past or gel are left be hide✓
Make wholes in it✓
Burn or use for recycling✓
Do not use as a container✓ **Any two** **(2)**

12.2.2
Secure pesticide containers in transit. ✓

Modify driving style to cargo and road conditions. ✓

Heed requirements of Transportation of Dangerous Goods Act. ✓

Have a well-organized storage facility. That are save✓

Have suitable shelving, lighting and ventilation. ✓

Keep a list of pesticides stored on farm in two or more separate locations, such as the office or barn. ✓ **Any two** **(2)**

12.2.3
Should be protected with protected cloths. ✓
Mask, overall, gloves and proper shoes that are water tight✓ **(2)**

12.2.4
Protect yourself against pesticide contamination. ✓

Isolate the area and keep people and animals away. ✓

Remove contaminated clothing. Thoroughly wash skin with soap and water. Read product label for treatment. Get medical attention. ✓

Eliminate the source of the spill if possible ✓

Contain the spread of the pesticide to prevent further contamination of the environment. ✓

Clean up spill ✓

Decontaminate the areas. ✓

Dispose of contaminated material ✓ **Any two** **(2)**

13.3.1 **A Tensiometer✓**
B Evaporation pan ✓ **(2)**

12.3.2 **E_t = E X F✓**
= 18 X 0.7✓
= 12.6mm✓ **(3)**

12.3.3 **Temperature ✓& Humidity, ✓ Solar radiation, ✓ Crop growth stage ✓and Presence of Mulch ✓** **Any two** **(2)**

12.4.1 **Mulch cultivation✓** **(1)**

12.4.2 **Fuel saving relative to ploughing. ✓**
Good control of wind and water erosion. ✓
Better management of soil compaction. ✓
Better management of weed control. ✓
accumulations of nutrients not a problem. ✓ **Any three** **(3)**

12.5 **22% van 50 Kg✓**
50/100 X 22 = 11 Kg✓

N: 3/6 of 11✓
11/ 6 X 3 = 5.49 Kg✓

P: 2/6 of 11✓
11/ 6 X 2 = 3.66 Kg✓ **(6)**

12.6 **Plant different cultivars to spread the risk. ✓**
Do not replaced a successful and tested cultivars in this area with a new and unknown one✓
Cultivars should be chosen to adapt a specific yield potential in your area for the climatic conditions✓
Revise cultivars choice annually to adapt to changing conditions✓ **(4)**

12.7 **Straw strength✓**
Straw length✓
Threshing ability✓
Kernel attachment✓
Ear type✓
Day length regiments✓
Yield potential✓ **Any four** **(4)**

12.8.1 **Precision farming is seen as the practice where a field is not manage as a homogeneous unit. ✓ It is manage, as different zones each with it own potential. ✓ Each zone is practically managed to it potential irrespective of the size of it. ✓ By using advance technological equipment. ✓** **(3)**

12.8.2 **Satellite✓**
Tractor or equipment✓
Tractor network✓
Information centres✓ **Any two** **(2)**

12.8.3 **The yield increased to 5.1 and 4.5 tons✓**
Although the average rainfall where lower✓
This means better management of all the recourses✓ **Any two** **(2)**

[50]

QUESTION 13: SUNFLOWER PRODUCTION

13.1.1 B✓
13.1.2 D✓
13.1.3 A✓
13.1.4 C✓
13.1.5 C✓
13.1.6 C✓
13.1.7 B✓
13.1.8 C✓
13.1.9 C✓
13.1.10 A✓ **(10)**

13.2 Avoid cultivation on light-textured soils susceptible to wind erosion✓ unless wind erosion is being combated.✓ Avoid water-logged land, ✓soils high in aluminium levels✓ and with a pH lower than 4.6 (KCL). ✓ **(4)**

13.3.1 It increases✓ from 1 300 kg/ha to 1 900 kg/ha✓ **(2)**
13.3.2 He should consider the following aspects soil depth,✓ rainfall,✓ cultivar, ✓plant density✓and fertilizer.✓ **(5)**

13.4 The risk of diseases✓ and weeds✓ increases with monoculture. A yield and quality advantage is often measurable in a follow-up maize or sorghum crop.✓Weed✓ and pest✓problems lessen with crop rotation. Plant disease✓and pest resistant crop.✓ Any 5 **(5)**

13.5 Create jobs,✓ provide protein from the chickens in their diet,✓ and provide food from money earned,✓ provide them with farm skills✓ and brings them their self worth.✓ **(4)**

13.6 The first and last days of frost, ✓soil moisture, ✓moisture of crop, ✓rainfall pattern, ✓and other crops being cultivated✓risk of bird damage✓. Any 5 **(5)**

13.7 It supplies the manufacturing industry producing margarine,✓ source for cooking oil,✓ used by animal feed industries to manufacture concentrates as a source of proteins✓and produced for export market. ✓ **(4)**

13.8.1 The total number of plants plant and growing in the field✓and is determined by plant spacing/moisture content.✓ **(2)**

13.8.2.1 At low plant densities heads are too large, ✓dry out unevenly,✓ eventually impair the harvesting process✓and seed setting problems.✓ **(4)**

13.8.2.2 At high plant densities there is a high occurrence of lodging,✓ high rate of water use✓, which often causes water stress, leading to poor yield✓ or even crop failure.✓ **(4)**

(50)

QUESTION 14: VEGETABLE PRODUCTION

14.1.1 L ✓
14.1.2 H ✓
14.1.3 M ✓
14.1.4 K ✓
14.1.5 I ✓
14.1.6 R ✓
14.1.7 B ✓
14.1.8 C ✓
14.1.9 Q ✓
14.1.10 A ✓

(1X10) (10)

14.2.1 Soil type. ✓ (1)
14.2.2 Using moist soil. ✓
Roll a sausage between you hands. ✓
Try to form a circle. ✓ (3)
14.2.3 B = sandy loam ✓
C = clayey soil ✓
D = sandy soil ✓ (3)
14.2.4 Sandy loam ✓ (1)

14.3 Prevent evaporating of water. ✓
Protects the soil against erosion. ✓
Weed growth is suppressed. ✓
Keep soil temperature more constant and favourable. ✓
If manure or compost is used, the nutrients will wash into the soil. ✓
Lessen greening of roots and bulbs. ✓
Soil doesn't spatter on leaves when watering. ✓ (4)

14.4.1 Rotating of crops. ✓ (1)
14.4.2 Legumes produce nitrate through bacteria. ✓
Leave crops will utilize nitrate the best. ✓
Nitrogen gives the green colour to leave crops. ✓ (3)
14.4.3 Better pest control. ✓
Better disease control. ✓
Different nutrients taken on different levels in soil. ✓
Some plants will form nutrients (legumes). ✓ (3)
14.4.4 Beans. ✓
Peas. ✓ (2)

14.5 **Sprinkler irrigation can easily being used on root vegetables and legumes. ✓**
It is easier and results in no damage. ✓
It is not desirable to use it on fruit and leave vegetables. ✓
The water can damage the leaves and fruit by leaving sunburn marks. ✓
Flood irrigation can be utilised on any of the vegetable groups. ✓
When it is applied correctly, no damage will appear. ✓
Drip irrigation is the most effective in producing fruit vegetables and legumes. ✓
It can easily be damaged when it is used in root vegetables. ✓ **(8)**

14.6.1 **Evenly distribution of fertilizer ✓**
On the hole area ✓
With predetermined quantities. ✓ **(3)**

14.6.2 **Distributing great amounts of fertilizer. ✓**
Adding of agricultural lime. ✓
Adding of phosphorous to soil. ✓
Easier method in root vegetable production ✓ **(3)**

14.7.1 **Biological insecticide. ✓** **(1)**

14.7.2 **Viral ✓**
Bacterial ✓
Fungal ✓
Protozoan ✓
Nematode ✓ **(2)**

14.7.3 **Organism that causes illness and death in another organism. ✓** **(2)**

[50]

QUESTION 15: PEACH PRODUCTION

15.1.1 Stone fruit✓
15.1.2 Ripper✓
15.1.3 Organic ✓
15.1.4 Tensiometer✓
15.1.5 Sitokinien✓
15.1.6 Dolomyte✓
15.1.7 Band placing✓
15.1.8 Incubation period✓
15.1.9 Inoculate✓
15.1.10 Inter cropping✓

15.2 Colour of flesh✓
Meat attachment✓
Hairiness✓
Using characteristics✓ **(4)**

15.4 Sample at fruit set (usually the last week in November, but the timing may differ according to cultivars/region). ✓

Sample leaves from positions opposite to the developing bunch. ✓

It is usually sufficient to analyze the petiole only. The leaf blade must be separated from the petiole immediately after sampling in order to minimize translocation of nutrients. ✓

The ideal is to analyze both the blades and the petioles, but these will double the analytical cost. ✓

The total sample should consist of at least 40 petioles and/or leaves. ✓ **(6)**

15.5 Dig a hole big enough. ✓
Put well rotten farm manure or compost in the hole✓
Put 1-2 kg of phosphate in the hole✓
Throw a few spades of soil in the hole and mix with the fertilizer✓
Fill the hole so that there are only enough space for the three✓
There should be at least 30 cm between the roots of the three and the fertilizer✓ **Any 5** **(5)**

15.6 **Climatic or natural risk: drought, floods, rain at the wrong time, hail, wind, heat, fire, frost; ✓**

Market risk: changes in consumer preferences, price fluctuations, transport costs, over-supply; ✓

Policy risk: changes in tariff regime, marketing arrangements, fiscal policy, trade policy; ✓

Social risk: labour action, personal circumstances; and✓

Macro-economic environmental risk: changes in technology, farming practices, demography. ✓ **(6)**

15.7 **Increasing of fruit size. ✓**
To get the correct ratio between fruit and growth✓
To get a better quality fruit✓
To get uniform fruit✓
To increase production lifespan✓
Constant crop✓
To remove abnormal fruit✓
To prevent the braking of branches✓
To prevent bruising of branches✓ **(6)**

15.8.1 **Have to wear face mask, overall, cloves and protected shoes✓✓** **(2)**

15.8.2 **If spray accidentally lands on your skin, immediately wash the area with soap and water. ✓**

Never eat or drink while working with sprays. ✓

Never take off your overalls while you are spraying. Put them on before you mix the spraying agents, and do not take them off until you have cleaned and put away the machine. ✓

Wash your overalls after✓ you have finished spraying. Do not take them to the house.

Never put or store any toxic agent in a cool drink bottle. This can cause somebody's death. ✓

Never eat fruit that has been sprayed. It can make you very ill or even lead to death. Good advice is to wait until the harvest because then it is safe to eat the fruit. ✓ **Any three** **(3)**

15.8.3 **Always keep an eye on the pressure gauge to be sure that the pressure is correct. ✓**

Never race with a full spraying machine. ✓

Never spray when a strong wind is blowing. ✓

Try to drive the tractor at a steady speed. ✓

No other person may be allowed on the spraying machine. ✓

Do not empty the spraying machine by spraying out the spray on the way to the shed. If it is not empty, empty it at a suitable and predetermined dump yard. ✓ **Any two** **(2)**

[50]

QUESTION 16: HYDROPONICS

16.1.1 T✓
16.1.2 T✓
16.1.3 F✓
16.1.4 F✓
16.1.5 F✓
16.1.6 T✓
16.1.7 F✓
16.1.8 T✓
16.1.9 F✓
16.1.10 T✓ **(10 x 1)** **(10)**

16.2 **Hybrids.** ✓
Market requirements.✓
Diseases and pest resistance.✓
Adaptability.✓
Yield.✓ **(5)**

16.3 **Irrigation and fertilization.** ✓
Plant production. ✓
Marketing. ✓
Requirements for export. ✓
Pests and diseases. ✓
Labour laws.✓
Safety aspects.✓
Handling of poisons.✓
Plant health.✓ **Any 5** **(6)**

16.4 **Manager is responsible for safety.**✓
Regularly training in handling of poisons.✓
Some toxins need extra safety.✓
Poison must be locked separately.✓
Shower facilities for workers working with poisons.✓
Get rid of empty containers in the correct manner. ✓
Regularly blood tests of workers working with poison. ✓
Keep telephone number of poison centre at hand.✓
Handle poison according to regulations.✓
Do not store poison in unmarked containers.✓
Service equipment used on a regularly basis.✓
No eating or drinking when handling poison. ✓
Put warning signs where poison is used.✓ **any 7** **(7)**

16.5 **Gravel. ✓**
Sawdust.✓
Sand.✓
Polystyrene.✓
Pine bark.✓
Coir.✓
Vermiculite.✓
Perlite.✓
Rockwool. ✓ **(5)**

16.6 **Fill one third with water.✓**
Stir the water continuously.✓
Control pH of water.✓
Mix fertilizer apart in 20 l container.✓
First apply potassium sulphate. ✓
Fill tank two thirds with potassium nitrate.✓
Check pH✓
Fill tank ¾ full and add magnesium ✓
Add potassium nitrate✓
Add micro-elements✓
Test pH✓
Add iron and fill tank.✓
Test pH en correct it to 5.8 – 6.4✓ **any 6** **(6)**

16.7 **Test the quality of the water.✓**
Use the correct filtration system. ✓
Flush filters and irrigation lines regularly. ✓
Check emitters for blockages. ✓
Check the emission rate from time to time. ✓
Checks pump pressure. ✓
Check and repair leakages. ✓
Flush irrigation system before and after each season. ✓ **any 4** **(4)**

16.8.1 **No. ✓**
Income = 2 9231 x R11 = 321 541,00✓
Income – Expenditure = R 321 541,00 – R 500 379,00
= R – 178 838✓ **(3)**

16.8.2 **Profit/season = 321 541, 00 – 255 275, 00 = 66 266. ✓**
Construction costs = 245 122
Capital redemption = 245 122 ÷ 66 266 = 3, 7✓
Thus profitable after 4 years. ✓ **(3)**

16.9.1 **Yes. ✓** **(1)**

16.9.2 **Pesticides will have an effect on the biological control caused by this organism. ✓** **(1)**

[50]

QUESTION 17: VINICULTURE

17.1.1 T
17.1.2 F
17.1.3 T
17.1.4 F
17.1.5 F
17.1.6 F
17.1.7 T
17.1.8 T
17.1.9 T
17.1.10 F **(10)**

17.2 Stabilizing the soil structure.✓
Canals are formed when roots die. ✓
Compact layers become porous
Soil surface are protected against erosion
The structure of the top layer is protected against breaking up
Higher infiltration rate and less run down of water
Conservation of water on the surface
Control weeds✓
Organic content of soil increasing✓ **Any six** **(6)**

17.3 Sub soiling: This is applied on soils with layers that have to be mixed. ✓
It involves the turning of the soil with a single ploughshare at a depth of o.8m✓

Ripping: The braking of layers in the soil that is not impenetrable at a depth of 0.7m✓ It is applied on soils where the natural succession of layers need to be left undisturbed. ✓ **(4)**

17.4.1 Tensiometer✓
Diviner✓ **(1)**

17.4.2 Effective✓
Economical and ✓
Responsible utilization of water. ✓ **(3)**

17.4.3 Poorer quality fruit✓
Reduced life-span of the orchard or vineyard✓
Development of a weak or diseased root system✓
Fruit with a short shelf-life✓
Soil salination, and ✓
The absence of subsoil microbe populations. ✓ **Any three** **(3)**

17.5 **Samples must be representative of the whole area✓**
May be taken with soil auger or spade✓
The depth must represent the working depth and the root zone✓
If the soil is not homogeneous samples should be taken of each area✓
Soil samples are put into plastic bags✓
Clods must be broken✓
Mix soil thoroughly✓
Wholes must be made on different places (zigzag)✓
Don't take samples near roads, fertilized areas, furrows or any area where there are a lot of organic material. ✓
Put in clean bags, mark and send away✓
Supply also the necessary information on the cultivars✓ Any six (6)

17.6 **Counselling:✓ get the right information about having the test and what to do after it. ✓**

Consent:✓ no one can give you an HIV test unless you agree to it. ✓

Confidentiality:✓ no one may tell anyone the result of your test without your permission. ✓

Any other relevant right answer.✓ any 4 (4)

17.7.1 **Selectivity of herbicides**
Non-selective remedies are plant killers that affect any plant with which they come into contact✓
Selective remedies are those that kill weeds without affecting the crop✓
Contact and systemic action of herbicides
Contact herbicides affect plant tissue with which it comes into contact. ✓
Systemic herbicides are transported within the plant and, may even kill tough perennial roots. ✓ Any 4 (4)

17.7.2 **Adjuvant**
Adjutants are a group of chemicals that are added to spray mixtures with the specific purpose of improving herbicide action. ✓

Wetting agents reduce surface tension of water✓
Adhesive agents cause spray droplets to adhere to the plant. ✓
Penetrators enhance absorption of the active ingredients ✓
Suspension agents are added to spray mixtures to prevent changes in the spray mixture✓
Buffers maintain the desirable pH of the spray mixtures ✓
Droplet control agents control the size of the spray in various ways✓ Any 2 (2)

17.8.1 **Second year ✓** **(1)**

17.8.2 **To shorten the arms of the pergola✓** **(1)**

17.8.3 **Water sprouts do not bear fruit✓** **(1)**

17.8.4 **Cut back like in A or leave ✓for forming of new wood✓** **(2)**

17.8.5 **Summer sprouts are cut back at two buds✓for new growth during summer✓** **(2)**

[50]

QUESTION 18: POTATO PRODUCTION

18.1.1 I ✓
18.1.2 N ✓
18.1.3 A ✓
18.1.4 P ✓
18.1.5 T ✓
18.1.6 G ✓
18.1.7 E ✓
18.1.8 S ✓
18.1.9 Q ✓
18.1.10 M ✓

(1x10) (10)

18.2.1 Using moist soil. ✓
Roll a sausage between you hands. ✓
Try to form a circle. ✓ (3)

18.2.2 B = sandy soil ✓
C = clayey soil ✓
D = sandy loam ✓ (3)

18.3.1 Tuber decay in storage. ✓
Soft rot in the field. ✓
Blackleg / wilt complex in potatoes. ✓ (2)

18.3.2 Dry rot. ✓
Stem-end rots of potatoes. ✓ (2)

18.3.3 Developing new cultivars and evaluation of current seed tuber-testing guidelines. ✓
Socio-economic impact of the disease on local industry. ✓ (2)

18.4.1 Very important. ✓
Most of the potatoes in South Africa are being marketed at the informal sector. ✓
It comprises of more than half of the potatoes marketed at markets. ✓ (3)

18.4.2 Processed direct. ✓
Trade direct. ✓
Rural area direct. ✓ (3)

18.5.1 **A – Sprouting. ✓**
B – Vegetative growth. ✓
C – Tuber initiation. ✓
D – Tuber bulking. ✓
E – Maturity. ✓ **(5)**

18.5.2 **B and D ✓** **(2)**

18.5.3 **Nitrogen. ✓** **(1)**

18.5.4 **D ✓** **(1)**

18.6 **Purpose of planting. ✓**
Planting date. ✓
Temperature. ✓
Occurrence of diseases. ✓
Soil type. ✓
Possibility of irrigation. ✓
Availability of seed potatoes. ✓ **Any 4** **(4)**

18.7 **Registration of the unit. ✓**
Field inspections. ✓
Laboratory tests. ✓
Tuber inspections. ✓ **(4)**

Seed treatment - pre plant and post harvesting ✓
Nematicides - pre plant and planting. ✓
Herbicides – From planting until tuber enlargement. ✓
Fungicides – vegetative grow until tuber enlargement. ✓
Insecticides – vegetative grow until tuber ripening. ✓ **(5)**

[50]