MARKS: 150

These marking guidelines consist of 10 pages.
SECTION A

QUESTION 1

1.1
1.1.1 C ☑☑
1.1.2 D ☑☑
1.1.3 C ☑☑
1.1.4 D ☑☑
1.1.5 B ☑☑
1.1.6 A ☑☑
1.1.7 A ☑☑
1.1.8 B ☑☑
1.1.9 C ☑☑
1.1.10 B ☑☑

(10 x 2) (20)

1.2
1.2.1 H ☑☑
1.2.2 E ☑☑
1.2.3 D ☑☑
1.2.4 A ☑☑
1.2.5 C ☑☑

(5 x 2) (10)

1.3
1.3.1 Niche marketing ☑☑
1.3.2 Planning ☑☑
1.3.3 Biometrics/biostatistics ☑☑
1.3.4 Multiple alleles ☑☑
1.3.5 Transgenic/GMO ☑☑

(5 x 2) (10)

1.4
1.4.1 Entrepreneur/agripreneur ☑
1.4.2 Undercapitalisation ☑
1.4.3 Gene gun ☑
1.4.4 Epistasis ☑
1.4.5 Heritability ☑

(5 x 1) (5)

TOTAL SECTION A: 45
SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.1 Business plan

2.1.1 TWO reasons for drawing a business plan

- Test the feasibility/economic viability of the enterprise ✓
- Determine the financial needs of the enterprise ✓
- To secure funding/attract investors ✓
- To ensure effective business management ✓
- To foresee problems ✓
- Gain knowledge of marketing opportunities/competitors ✓
- Repositioning of the enterprise/analysis of the business ✓
- Guide daily operations/outlines roles and responsibilities ✓
- Mapping out the objectives/goals of the enterprise ✓
- Provide information on internal/external business environment ✓
- Provide guidelines for decision making ✓

(Any 2) (2)

2.1.2 TWO factors to be considered when developing a market

- Consumers/customers ✓
- Competitors ✓
- Market requirements/conditions ✓
- Target markets ✓
- Number of products ✓
- Investors’ wants ✓
- Price ✓
- Promotion ✓
- Placement/distribution ✓

(Any 2) (2)

2.2 A subsistence farmer producing watermelons and spinach

2.2.1 TWO factors the farmer needs to consider when setting prices

- Costs ✓
- Demand ✓
- Supply ✓
- Competition/going rate ✓
- Profit margins ✓
- Quality/grading ✓
- Specific market ✓

(Any 2) (2)

2.2.2 TWO ways to promote produce

- Advertisement/branding ✓
- In-store promotion/specials/discounts ✓
- Direct mailing ✓
- Trade fares and exhibition ✓
- Personal selling ✓
- Online/internet/social media marketing ✓
- Sponsorships ✓
- Posters/flyers/brochures/billboards ✓

(Any 2) (2)
2.3  **Bar graph on the supply and demand of sugar cane**

2.3.1  **Bar graph on the supply and demand of sugar cane**

![Bar graph on the supply and demand of sugar cane from 2015 - 2018](image)

**CRITERIA/RUBRIC/MARKING GUIDELINES**

- Correct heading ✓
- X axis: Correctly calibrated with label (Time/years) ✓
- Y axis: Correctly calibrated with label (Quantity/supply and demand) ✓
- Correct units (Million ton) ✓
- Bar graph ✓
- Accuracy ✓

(6)

2.3.2  **Relationship between the supply and demand of sugar cane from 2015 to 2018**

- From 2015 to 2018 sugar cane supply increased ✓
- while the demand thereof decreased ✓

(2)

2.4  **The entrepreneurial process**

**Phases of the entrepreneurial processes**

A - Identify an opportunity/generate a business idea ✓
B - Plan the business/developing a business plan ✓
C - Establish/start the business ✓

(1)

(1)

(1)

2.5  **Marketing concepts**

2.5.1  **Marketing functions**

(a) Packaging ✓
(b) Storage ✓
(c) Processing/value adding ✓

(1)

(1)

(1)
2.5.2 **Advantages of processing agricultural products**
- Prevents spoilage/increases shelf-life of products ✓
- The product is available throughout the year ✓
- Improves food safety by heating to sufficient temperatures ✓
- Easy to transport ✓
- Convenience ✓
- Adds value to farm products/increases the value of products ✓
- It provides job opportunities ✓
- Reduces wastage of excess produce ✓
- It allows for easier packaging and handling of products ✓
- It is a way of overcoming over-supply of products ✓
- Expanding/extend the market ✓

(Any 2) (2)

2.6 **Marketing channels**

2.6.1 **Marketing channels**
(a) Farm gate marketing ✓ (1)
(b) Stock sales ✓ (1)
(c) Internet marketing ✓ (1)

2.6.2 **TWO disadvantages of a free marketing system**
- Prices fluctuate ✓
- Market costs are high/takes place on small scale ✓
- Producer is responsible for marketing/nobody to produce ✓
- Limited bargaining power ✓
- High risk as many things can go wrong ✓
- Cartels formed and consumers are exploited/price fixing ✓
- Agents lead to smaller profits ✓
- Competition ✓
- Over production can lead to big surpluses ✓
- Foreign countries dump over produced produce ✓

(Any 2) (2)

2.7 **Equilibrium price for an agricultural product**

2.7.1 **Identification of the lines**
A - Demand ✓ (1)
B - Supply ✓ (1)

2.7.2 **Definition of the concept equilibrium price**
When the price ✓ of a product settles at the point where the demand is equal to supply ✓ (2)
2.7.3 **TWO factors affecting the demand**
- Consumer income/sociological factors ✓
- The number of consumers ✓
- The tastes and preferences of consumers ✓
- Competing/substitute goods ✓
- Complementary goods ✓
- The usefulness of the product ✓
- The range of products available to consumers ✓
- Season ✓
- Quality of the product ✓
- Advertising ✓

(Any 2) (2) [35]

### QUESTION 3: PRODUCTION FACTORS

3.1 **Illustration of the different skills of a farmer and farm worker**

3.1.1 **Identification of the production factor represented by the graph**
- Management ✓

(1)

3.1.2 **TWO other management skills important for a successful farmer**
- General business management skills ✓
- Interpersonal/communication ✓
- Decision-making ✓
- Production/operational ✓

(Any 2) (2)

3.1.3 **Comparison of the skills C and D of farmer and farm worker**

<table>
<thead>
<tr>
<th>SKILLS</th>
<th>FARMER</th>
<th>FARM WORKER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Solving (C)</td>
<td>Has 95%/higher capability to come up with solutions to problems ✓</td>
<td>Has 40%/lower capability to come up with solutions to problems ✓</td>
</tr>
<tr>
<td>Technical (D)</td>
<td>Has 40%/lower capability of technical skills ✓</td>
<td>Has 100%/higher capability of technical skills ✓</td>
</tr>
</tbody>
</table>

(4)

3.2 **Income statement**

3.2.1 **Identification of the document**
- Income statement/cash analysis book/statement ✓

(1)

3.2.2 **Identification of TWO examples of:**

(a) **Fixed cost items**
- Rent ✓
- Insurance ✓

(2)

(b) **Variable cost items**
- Manure ✓
- Transport ✓
- Fuel ✓
- Electricity ✓
- Pesticides ✓

(Any 2) (2)
3.2.3 **Calculation of the total income of tomatoes**

- Total Income = R2 800 + R2 940 + R2 140 ✓
- = R7 880 ✓

(2)

3.2.4 **TWO reasons for keeping financial records**

- Allows the farmer to manage capital ✓
- To draw up a budget ✓
- To plan for the future of the enterprise ✓
- To analyse past/future performance of the enterprise ✓
- To apply for loans ✓
- Provide information for tax purposes ✓
- Provide proof of payment ✓
- Monitors cash flow ✓

(Any 2) (2)

3.3 **Capital**

3.3.1 **The type of credit**

Short term loan/credit ✓

(1)

3.3.2 **Calculation of the interest**

- Interest = \( \frac{11.5 \times R195 000}{100} \)
- = R22 425 ✓

(2)

3.3.3 **Determination of profitability of farming enterprise**

- R195 000 + R22 425 = R217 425 ✓
- R240 000 – 217 425 = R22 575 ✓
- The business is profitable/viable ✓

(3)

3.3.4 **Sustainability of the enterprise**

It is sustainable ✓

(1)

3.3.5 **Reason**

The farmer will manage to repay the loan and its interest and still remain with profit/R22 575 ✓

(1)

3.4 **Labour**

3.4.1 **Identification of the production factor**

Labour ✓

(1)

3.4.2 **Differences between casual and seasonal farm worker**

**Casual worker** - Employed to perform a non-repetitive work ✓

**Seasonal worker** - Employed to perform a repetitive work/employed during peak period ✓

(1)
3.4.3 **THREE problems associated with farm workers**
- Farm workers are scarce ✓
- Lack of training/skills/educational opportunities ✓
- Farm worker migration ✓
- Competitions with other industries ✓
- Low wages ✓
- Lack of opportunities/promotion ✓
- Dreadful diseases/HIV/AIDS/TB ✓
- Poor labour management ✓
- Social problems ✓
- Poor working conditions/safety ✓
- Labour unrests/strikes ✓
- Lack of benefits ✓
- Dreadful diseases/HIV/AIDS/TB ✓
- Social problems ✓
- Poor working conditions/safety ✓
- Labour unrests/strikes ✓
- Lack of benefits ✓
- Workers not working regularly ✓ (Any 3) (3)

3.5 **Land**

3.5.1 **Explanation of the Law of diminishing returns as an economic characteristic of land**
- With an increase in a specific input the output will be proportionally higher ✓
- until it reaches a stage of maximum output ✓
- thereafter output will decline even with a higher input ✓ (3)

3.5.2 **TWO functions of Land**
- Land provides space/area ✓
- Land supplies raw materials ✓
- Land supplies minerals ✓
- Land supplies food/food security ✓
- Use as collateral/security ✓ (Any 2) (2)

**QUESTION 4: BASIC AGRICULTURAL GENETICS**

4.1 **A pure-breed black cow is crossed with a pure-breed red bull**

4.1.1 **Indication of the dominant colour**
Black ✓ (1)

4.1.2 **Justification of the answer in QUESTION 4.1.1**
All the F₁ offspring have black colour/black dominant over red ✓ (1)

4.1.3 **Determination of the**
(a) **Genotype of a cow - BB ✓** (1)
(b) **Genotype of the offspring - Bb ✓** (1)

4.2 **Dihybrid crossing**

4.2.1 **Identification of the type of crossing**
Dihybrid crossing ✓ (1)
4.2.2 **Reason for the answer in QUESTION 4.2.1**

This crossing involves two different characteristics/texture and colour ✓

4.2.3 **Determination of any TWO possible phenotypes of the \( F_1 \)**

- Green rough ✓
- Green smooth ✓
- Yellow rough ✓
- Yellow smooth ✓

(Any 2)

4.2.4 **Calculation of the percentage of offspring with yellow and smooth fruits**

\[
\frac{1}{16} \times 100 \% = 6.25\%
\]

(2)

4.3 **Differences in the characteristics between members of the same species**

4.3.1 **Term for the phenomenon in the statement**

Variation ✓

4.3.2 **TWO environmental factors that can have an effect on variation**

- Nutrition/diet/feeding ✓
- Climate (light intensity/temperature/rainfall) ✓
- Diseases/pests ✓
- Topography/altitude ✓
- Soil factors ✓
- Management/shelter/exercise and space ✓

(Any 2)

4.3.3 **TWO types of selection**

- Artificial selection ✓
- Natural selection ✓

(2)

4.4 **Breeding systems**

4.4.1 **The breeding system**

Crossbreeding ✓

4.4.2 **Reason for the answer in QUESTION 4.4.2**

Different/unrelated breeds of the same species are crossed/beef breed crossed with dairy breed ✓

4.4.3 **TWO advantage of cross breeding**

- Increases genetic variation ✓
- Produce heterosis/hybrid vigor/improved performance ✓

(2)

4.4.4 **TWO disadvantages of inbreeding**

- Loss of genetic variation ✓
- Leads to inbreeding depression ✓
- Increases the expression of lethal genes/deformities/unwanted genes ✓
- Increases homozygosity ✓

(Any 2)
4.5 A homozygous brown ewe (A) and a homozygous white ram (a)

4.5.1 Punnet square to illustrate the F$_2$ generation

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>♀</td>
<td>AA</td>
<td>Aa</td>
</tr>
<tr>
<td>♂</td>
<td>AA</td>
<td>Aa</td>
</tr>
</tbody>
</table>

**MARKING CRITERIA**
- Correct male gametes ✓
- Correct female gametes ✓
- Correct offspring ✓
- Punnet square with gametes and offspring ✓

4.5.2 Indication of genotypic ratio and a number of offspring
(a) 1:1/2:2 ✓
(b) 0 ✓

4.6 Polygenic inheritance

4.6.1 Determination of the genotype of the highest maize plant
AABBDD ✓

4.6.2 Calculation of the length of the longest maize plant
- 40+5+5+5+5+5+5cm [40+(5x6)cm = 30cm] ✓
- = 70cm ✓

4.6.3 TWO genotypes of maize plant that will be 55cm long
- AABbdd ✓
- AaBbDd ✓
- AaBBdd ✓
- aaBBDd ✓
- aaBbDD ✓

(Any 2) ✓

4.7 THREE techniques used to modify animals genetically
- Retroviral vectors ✓
- Micro-injection ✓
- Embryonic stem cells ✓
- Agrobacterium tumefaciens/bacterial carriers ✓
- Viral carriers ✓
- Gene gun ✓
- Electroporation ✓
- Micro-injection ✓
- Biolistics ✓
- Calcium phosphate precipitation ✓
- Gene silencing ✓
- Gene splicing ✓
- Lipofection ✓

(Any 3) ✓

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150

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