

**GAUTENG DEPARTMENT OF EDUCATION
PREPARATORY EXAMINATION**

**AGRICULTURAL SCIENCE
(Second Paper)**

POSSIBLE ANSWERS

SECTION A

QUESTION 1

1.1		
1.1.1	B	
1.1.2	A	
1.1.3	D	
1.1.4	C	
1.1.5	A	
1.1.6	C	
1.1.7	A	
1.1.8	B	
1.1.9	C	
1.1.10	B and D	2x10=[20]
1.2		
1.2.1	B	
1.2.2	None	
1.2.3	C	
1.2.4	A only	
1.2.5	C	2x5=[10]
1.3		
1.3.1	Polymorphic	
1.3.2	Marketing	
1.3.3	Acrobacterium tumefaciens	
1.3.4	Price	
1.3.5	Temporary	2x5=[10]
1.4		
1.4.1	Selection aids	
	1 – Performance testing	
	2 – Visual assessment	
	3 – Breed characteristics	
	4 – Pedigree	(4)
1.4.2	Resistance to diseases/adaptability to climatic conditions/fertility status	(1)
		[5]

TOTAL SECTION A: [45]

QUESTION 2

MANAGEMENT / MARKETING

2.1

2.1.1 **Entrepreneurialship:** The combination of land, labour and capital to produce a product with the aim of gaining/making profit (2)

2.1.2 **Managerial factors ensuring success of entrepreneurs**

- Financial insight and management
- Knowledge and skills with regards to the business
- Planning
- Knowledge of competitors
- Mainly market orientated
- Client service
- High quality work enjoys priority (three only) (3)

2.2

2.2.1 **Four phases of an entrepreneurial process**

- Identification and evaluation of the opportunity
- Development of a business plan
- Determining required resources
- Starting and managing the enterprise (4)

2.2.2 **Main components of a good business plan**

- Product /service plan
- Sales and marketing plan
- Management plan
- Financial plan
- Operations plan (Three only) (3)

2.3

2.3.1 Identification of components in diagram

- A. Inputs
- B. Outputs
- C. Transformed into
- D. Feedback loop

(4)

2.3.2

Examples of A in box E: Fixed: land
 Movable: machinery, describes how inputs
 can be converted into outputs

(3)

2.4

2.4.1 Methods of free marketing in a free marketing system

- A. Indirect selling
- B. Direct sales
- C. Retailers

(3)

2.4.2

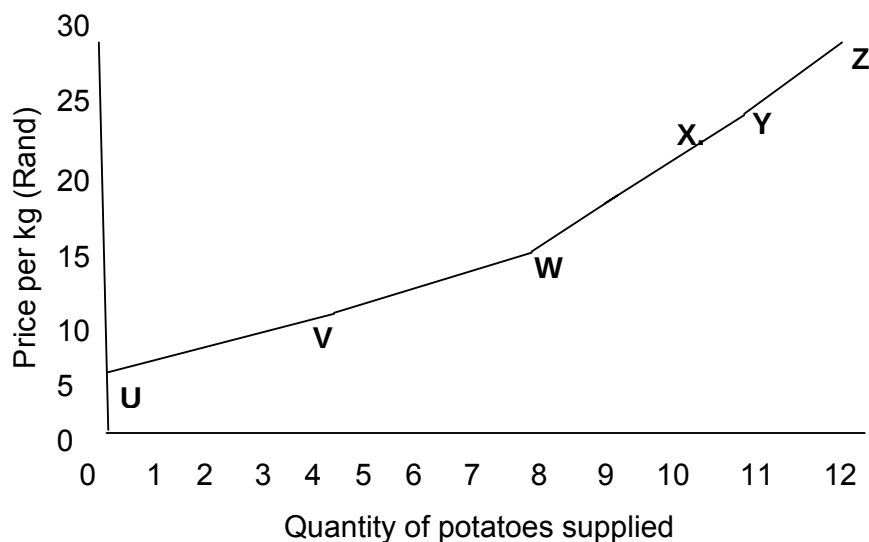
Advantages of free marketing

- Prices, method and time of payment can be negotiated
- Producers encouraged to produce high quality products
- Stimulates entrepreneurship
- Encourages innovation and drive
- Equilibrium prices established by market forces (two only)

(2)

2.5

2.5.1 Graph

Heading: Supply curve for potatoes

(6)

2.5.2 **Type of graph**

- Supply (1)

2.5.3 **Concept of price elasticity**

- It is the relationship between a change in price and the change in the demand for the produce.
- A measure of how supply or production of goods responds to a change in price (4)

[35]**QUESTION 3****PRODUCTION FACTORS AND MANAGEMENT**

3.1

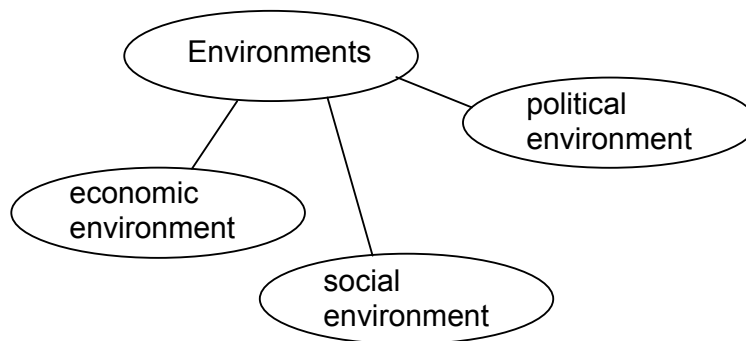
3.1.1 **Management functions**

- Planning
- Organizing
- Leading
- Controlling (3)

3.1.2 **Factors to be managed**

- A. Land
- C. Labour
- B. Capital (3)

3.1.3



(3)

3.2

3.2.1 **Impact of HIV/Aids on farms**

- Makes planning difficult due to unpredictable absenteeism
- Skills and experience are lost to death
- Unpredictable absenteeism is rife
- Healthy labourers have to work overtime
- Time-off for funerals (Three only) (3)

3.2.2 Aspects that were discussed at the HIV/Aids Lekgotla

- Access to condoms
- Access to treatment for sexually transmitted diseases
- Access to anti-retroviral drugs through government programme (3)

3.2.3 Limiting the impact of HIV/Aids

- Make use of increased mechanization
- Make condoms easily accessible
- Introduce an AIDS awareness programme
- Ensure that infected staff have access to government programmes (two only) (2)

3.3

3.3.1 Causes of land degradation

- Soil has been eroded/removed/degraded
- Vegetation has been lost (1)

3.3.2 Contribution of land degradation to rural poverty

- Farmers vulnerable to drought and economic factors
- Loss of rural life opportunities (2)

3.3.3 Laws that control management of natural resources in South Africa

- National Water Act (1998)
- National Veld and Forest Fire Act (1998)
- Conservation of Agric Resources Act (1983)
- Sustainable Utilisation of Agricultural Resources Bill (2003) (One only) (1)

3.4

3.4.1 Weaknesses

- Lack of experience in the production of vegetables
- Lack of experience in exportation of produce (2)

3.4.2 Opportunities

- Demand for baby vegetables
- S.A. supports BEE
- Technology expertise provided by the extension officer (one only)

Challenges

- Minimum labour wages
- Unstable exchange rates (one only) (2)

3.4.3 **Managerial strategy to implement**

- Develop a vision
- Develop a mission statement
- Develop a business strategy
- Develop an enterprise strategy (two only) (2)

3.4.4 **Institutions for granting financial assistance**

- BEE
- Land bank
- Development bank of S.A
- Any financial institution (one only) (1)

3.4.5 **Types of budgets**

- Enterprise budget
 - Whole-farm budget
- Enterprise budget is a budget of one particular enterprise on a farm whereas the whole-farm budget combines all the farm enterprises to show the net returns on the farm business (4)

3.4.6 **Farm records to be kept**

- Crop records
 - Labour records (2)
- [35]**

QUESTION 4

4.1

4.1.1 **Genetic factors**

- Cow's milk quality
- Growth gene (2)

Environmental factors

- Climate
- Disease (2)

4.1.2 **How to improve growth of beef cattle**

- Select bulls and/or cows with above average growth genes
- Select cows with milk quality for breeding
- Farmer should control climate by providing shelter and water
- Prevent the spread of diseases by using vaccinations, quarantine methods and Good hygiene practices (any three) (3)

4.1.3 Discontinuous variation (1)

4.1.4 **Justification of 4.1.3**

- Cows can be any weight, not only a specific/certain number or discrete category of weight (2)

4.2

4.2.1 Parents

- BB X Bb

Gametes

- B b

F1 Generation

- BB Bb Bb bb
- (black & white) (black & white) (black & white) (red & white) (5)

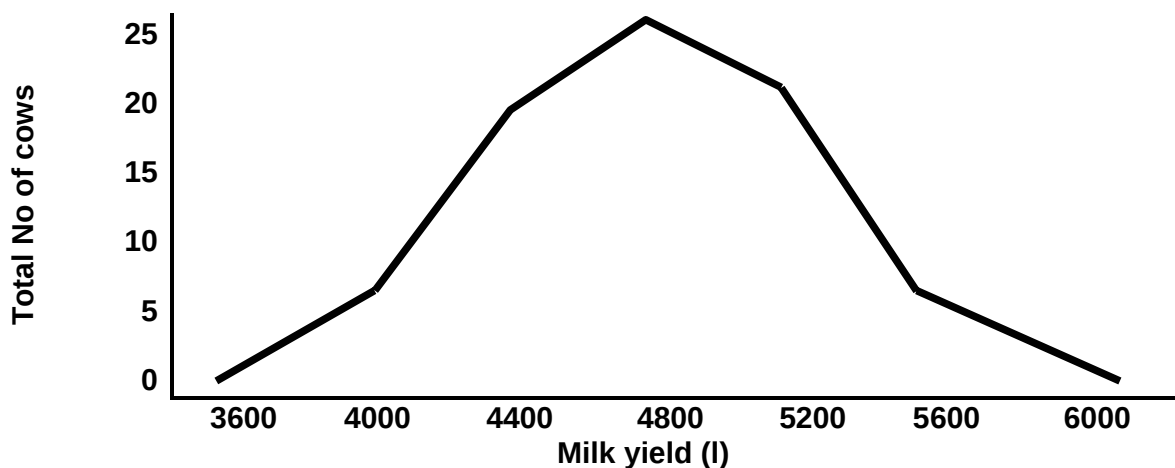
4.2.2 This statement implies that line breeding is related breeding, but not all forms of breeding are necessarily related breeding; e.g. upgrading, species crossing.

Punnett Square

	B	b
B	BB	Bb
b	Bb	bb

(2)

4.3.1 Heading: **Analysis of variation in milk yield**



(6)

4.3.2 **Type of variation**

- Continuous variation (1)

4.3.3 Groups suitable for selection

- Cows that yield more milk, that produce
 - 6 000 ℓ
 - 5 600 ℓ
 - 5 200 ℓ
- (two only) (2)

4.3.4 Contrast between continuous variation and discontinuous variation

- Continuous variation refers to a complete range of variation of characteristics
From one extreme to another whereas,
Discontinuous variation has clear-cut forms with no forms inbetween
 - Production of products that are more resistant to diseases with higher output, e.g.
Milk yields, growth rates
- (4)

Process involved in GMOs

- Developed by micro-injection of the desired genes into a fertilized egg or embryo
 - The recombinant embryos are then transferred into the uterus of a foster mother to complete their growth and development
- (5)
[35]

TOTAL SECTION B: [105]

TOTAL: 150