



EXAMINATIONS COUNCIL OF SWAZILAND
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AGRICULTURE

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MARK SCHEME

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MARKS: 80

This document consists of 5 printed pages.

Section A

1. (a) (i) crop rotation; planting resistant/ clean varieties; burn infected plants; avoid infected soils. [1]
- (ii) avoid humid areas; planting resistant/ clean varieties. [1]
- (iii) planting resistant varieties; removal of infected plants; clearing around the field; early planting [1]
- (b) Residual effect; ecological imbalances; weeds develop resistance to chemicals; can kill non targeted organisms like bacteria; accumulation of chemical on the product [2]
- (c) difficult to identify the natural enemies; cost of breeding and transportation of the natural organisms; lack of technical knowledge on breeding the organisms; availability of natural enemies [2]
- (d) (i) avoid chemicals disposal into water resources; proper chemical containers disposal; avoid using chemicals on windy or rainy days
- (ii) recycling; safe waste disposal; following specifications; planting trees for photosynthesis/ Afforestation. [2]

[9 marks]

2. (a) (i) chlorophyll. [1]
- (ii) - P = reduces excessive water loss; protects the softer tissues of the leaf.
- R = gaseous exchange. [2]
- (b) loss of water from aerial parts of the plant; cause an absorptive force on the roots; Continuous movement along xylem. [2]
- (c) (i) movement of mineral salts against concentration gradient. [2]
- (ii) for food distribution; food storage; promotes growth. [2]
- (d) ensures adequate availability of minerals in plants [2]

[11marks]

3. (a) large scale production/ mass production; ease to manage/ weeding/ spraying; allows

specialisation in technique; allows use of technology (Reject: reduced labour costs). [1]

(b) promotes exports; foreign exchange; exchange of skills and inputs (tourism = R). [2]

(c) (i) allows regrowth of vegetation; rebuilt of soil structure; minimizes existence of loose particles. [1]

(ii) cover crop prevents bare areas; soil binding; wind erosion and raindrop impact reduced. [1]

(d) low yield due to drought/ excessive heat/ floods; increases pests and diseases; soil erosion; extinction of some plant species. [2]

(e) ozone depletion; greenhouse effect/ greenhouse gases; deforestation. [2]

[9 marks]

4. (a) E84/Kg [1]

(b) number of consumers; income per household; price of substitute goods; quality; tastes/ preferences. [3]

(c) theft; weather/climate/ storms/ floods/ drought; fire; pest; diseases; yield; employees accidents and deaths; prices. [3]

(d) suppliers; market place; consumers; previous records/ experience; capital; other farmers. [3]

[10 marks]

5. (a) a pair of genes in the same loci controlling the same characteristic [1]

(b) F1

	p	p
P	Pp	Pp
P	Pp	Pp

[2]

F2

	P	p
P	PP	Pp
p	Pp	pp

[2]

- (c) 1PP: 2Pp: 1pp. [1]
- (d) (i) administration of male sex cells, into the female reproductive organ, using a syringe/ by hand. [1]
- (ii) to maintain same characteristics [1]
- (e) sustain existence of a species; improve quality; improve yield. [2]

[10 marks]

6. (a) more representative soil/ covers most areas of the field; to get proper field ph. [2]
- (b) (i) - A = organic matter.
- B = sand particles. [2]
- (ii) predominantly sandy/ rough texture/ coarse; poor structure; easily leached; dries quickly. [2]
- (c) - take one drop of soil extract.
- place it in the STA test vial.
- add 4 drops of nitrate nitrogen reagent into the STA vial.
- shake to mix and let stand 30 seconds.
- then compare colour change. [3]
- (d) - nitrogen highly soluble; sinks/ drains beyond root zone; predominance of hydrogen ions/ acidic soils. [2]

[11 marks]

Section B

- 7. (a) Desertification-** land degradation; caused by climatic processes/ environmental/ human activities. [2]
- (b) Factors of desertification** -overgrazing; poor cultivation; climate change/ global warming; poor irrigation/ saltation; deforestation; uncontrolled burning. [5]
- (c) Impact of desertification** - erosion; reduced arable land; drought; bare land; no vegetation; water resources dry up. [3]
- [10 marks]**

- 8. (a) Intermediate technology-** Use of simple devices; animal or human power for doing farm work. [2]
- (b) Structure and Mode of operation of a trailer** -leverage attached to power source tractor or animals from load; long leverage, easy load; position of load/ use axles for balance; four wheel trailer more stable than two wheel trailer; tyre pressure and condition; greasing of rotating points. [4]
- (c) Safety precautions** - properly maintained; not faulty; relevance of tools; technique of using tool/ equipment/machinery; correct working distance; lubrication/ fuel where necessary. [4]
- [10 marks]**

9. Production of maize

- (a) cutworm mode of attack-** larval stage; eats tissues/ roots during the day; feed on the base of stem at night. [2]
- (b) Effectiveness of pest control methods**
- (i)** Cultural – cheap; no pollution; no residual effects
- (ii)** Chemical – covers wide area; high population of pests killed
- (iii)** Biological – no pollution; no residual effects; environmental friendly [6]
- (c) Maize in a rotation** - follows legume; high nitrate requirement; deep rooted; pest and disease control [2]
- [10 marks]**