EXAMINATIONS COUNCIL OF ESWATINI
Junior Certificate Examination

AGRICULTURE **516/01**

PAPER 2 October/November 2020

Confidential

MARK SCHEME

{516/02}

MARKS: 100

This document consists of **6** printed pages.

Section A

1. (a) (i) A legume must be included.
(ii) Heavy feeders must follow light feeders/start with heavy feeders in a new land.
(iii) Crops of the same family/attached by same disease should not follow each other.
(iv) Deep-rooted: carrots, must follow shallow rooted: onions. [4]
(v) A grass must be included. (any four)

[Total: 4marks]

2. (a) Veterinarian/veterinary doctor/veterinary assistant. [1]
(b) Guide water usage; proper water usage; fair access to water; proper distribution; sustainable use of water. [1]
(c) Clean sprayer; oil all moving parts; tighten nuts, bolts and screws. [2]

[Total: 4 marks]

3. (a) (i) Air pollution [1]
(ii) Contaminate the water and kill fish/life due to lack of oxygen [2]
(b) - Maintains balance of ecosystem – by protecting water resources/reduces pollution/forms and protects the soil/helps ecosystem recover from disaster.
- Provides biological resources – by providing food, clothing and shelter/medicines/industrial materials/breeding stock/diversity of species, ecosystems and genes.
- Provides social benefits – such as recreation, tourism, cultural value, and education and research.
- Improves productivity.
- Prevents extinction of species – by enabling organisms to adapt to changes in the environment, and provides wide range of materials and foods for survival. [2]

[Total: 5 marks]

4. (a) To regulate plant temperature; to allow absorption of nutrients in roots. (define transpiration and one explanation). [2]
(b) High humidity – spread of fungal diseases
Low humidity- increases evapotranspiration **(any one)** [2]

[Total: 4 marks]

5. (a) (i) Well aerated;
(ii) Drained/good water holding capacity;
(iii) Fertile soil;
(iv) Easy to cultivate **(any two)** [2]

(b) (i) To determine acidity/alkalinity - to allow soil treatment/to select suitable crop/to know which fertilizer to apply. [2]

[Total: 4 marks]

6. (a) (i) Harvesting at the wrong time.
(ii) Incorrect harvesting method.
(iii) Harvesting too early/late. [3]
(b) Phostoxin; Actellic 2% Dust (Blue Cross Dust); Lihawu; Fumaphos [1]

[Total: 4 marks]

7. (a) Queen. [1]
(b) (i) Drone fertilize the virgin queen.
(ii) Sperm fertilize virgin queen.
(iii) Queen lay eggs. [3]

[Total: 4 marks]

8. (a) Giving livestock extra feed /provide for nutritional shortages in animal diet. [1]
(b) Ticks [1]
(c) To reduce production – because cattle has less to eat/overgrazing. [2]

[Total: 4 marks]

9. (a) Production of plant from seed. [1]
(b) (i) Reduce transplanting shock/roots are not disturbed/seedling has a ball of compost.
(ii) Each seedling grow in its own space/no competition amongst plants.
(iii) Make transplanting easy. [3]

[Total: 4 marks]

10. (a) (i) full/broad (any one)
(ii) dull/sunken (any one) [2]

(b) The small stones (grit) - for grinding the food . [2]

[Total: 4 marks]

11 (a) Reliable water supply: accessibility: good soil: protection from strong wind and livestock [2]
(b) From tree trunk to drip line – that is how far roots spread; water every day for the first two weeks – tree is still young and needs to establish receipt. [2]

[Total: 4 marks]

12 (a) (i) What are you going to produce- variety; breed?
(ii) How much land-labour and capital you need?
(iii) Why do you want to produce it?
(iv) How much should you produce?
(v) When should you produce it?
(vi) Where will you produce it?
(vii) How will you produce? **(any five)** [5]
[Total: 5 marks]

SECTION B

1 Topic: vegetable production. [1]

Introduction: nutritional importance (provides minerals and vitamins); economic importance (source of money). [1]

Steps of seedbed preparation
- Choose a sunny site/good soil/near water source
- Mark out the size not more than 1m wide
- Add 1 bucket of compost/manure per square metre and dig it in
- Add 70g of 2:3:2 (22) per square metre and rake it in
- Mark out rows 15 to 20cm apart
- Sow the seeds thinly and cover with soil
- Cover with mulch water seedbed and [7]

Methods of planting: indirect - seedbed/seed trays; direct – planting in plots [2]

Management of seedlings in the seedbed
- Thinning (remove weak seedlings leaving strong ones; to avoid overcrowding;
- thin to at least 1cm apart) **(any two)**
- Watering (water daily and twice on very hot days; avoid watering in the late afternoon to prevent damping off); amount of water is dependent on weather conditions, soil type, vegetable type and growth
- Pests and disease control (spray seedling weekly; with mixture of Dithane and Malathion to prevent diseases and pests) [6]

Steps of transplanting
- Water seedbed well
- Mark out the rows and make planting stations
- Apply basal dressing fertilizer and mix well with the soil
- Fill planting holes with water
- Use trowel to lift seedlings from seedbed/lift a few seedlings using a trowel
- Plant seedlings to the depth of first set of leaves
- Firm the soil around the seedling and water

- Shade the seedlings [8]

[Total: 25 Marks]

2. Topic: Harvesting and (safe) storage of maize. [1]

Introduction: Reward for hard work; ensure good crop quality; to reduce crop losses/avoid produce getting spoilt. [1]

Signs of readiness: - Plant dry up/turn brown
- Cobs/ears hang down [2]

Effects of harvesting too late: - Pest infestation/damage
- Get mouldy/germinate [2]

Modern methods of storage: - Metal drums / tins
- Sacks
- Grain tanks
- Silos [4]

Storage practices that limit damage:
- Store properly dried crops
- Use clean storage areas
- Maintain storage areas
- Store old and new crops separately
- Stack harvested crops correctly
- Use tanks or drums that are in good condition placed under shade
- Keep stored crops free from moisture
- Check stored crops regularly
- Use chemicals with care. **(any six)** [6]

Enemies of stored crops
- Insects
- Rodents (rats and mice)
- Moulds [3]

Steps in treating grain stored in bags
- Empty the bag onto the floor
- Sprinkle the correct amount of Actellic 2%Dust
- Shovel heap to other part of floor
- Shovel it back again
- Shovel until you do not see particles of Actellic powder
- Fill clean storage containers with grain. [6]

3. **Topic**: goat production; dairy goat management [1]

Introduction: goats provide milk/meat/wool/income/rituals/traditional ceremonies/attire [1]

Breeds: Saanen;Toggenburg; Angora; Boer; Kalahari; Nguni **(any two)** [2]

Factors Considered When Buying Breeding Stock

- Buying healthy goats/strong well build legs and feet
- Bright and alert eyes
- Shinny clean coat
- Firm udder/ undamaged teats
- Avoid buying horned goats
- Ask to see production records/resistance to diseases
- Do not buy milking goats if you will not use the milk **(any five)** [5]

Features of a goat house: milking area; dairy; kidding pens; communal pen; feeding trough; watering trough **(any three)** [3]

Signs of Heat

- Makes a lot of noise
- Shakes her tail
- Restless
- Allow other goats to mount her/mounts other goats
- Clear sticky liquid from vulva [5]

Management During Pregnancy

- Dry-off two months before kidding.
- Steaming-up: Give 500g concentrates/supplements in the last two months before kidding. [2]

Feeding

- Variety of feeds: (grasses, vegetables, leaves, maize stalks, ground nuts, tops, yellow maize meal, bread, and kitchen leftovers).
- Elephant grass; leucaena (leguminous pasture plants).
- Salt licks
- Concentrates
- Water **(any four)** [4]

Caring for young after Kidding

- Ensure it gets colostrum
- Remove mucous from mouth for proper breathing [2]

[Total: 25 Marks]