



EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

AGRICULTURE

6882/02

Paper 2

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1 hour

Confidential

MARK SCHEME

{6882/02}

MARKS: 80

This document consists of 5 printed pages.

Section A: Structured Questions

- 1 (a) non- ruminant/monogastric [1]
- (b) volatile fatty acids/ acetic/ propionic/ butyric; carbon dioxide; methane; lactose **R = VFA** [2]
- (c) vitamin B/K; protein; carbohydrate/ energy; complete digestion/ absorption
- R = nutrients; reabsorption** [2]
- (d) rennin solidify/ coagulation of milk for pepsin to act on; pepsin converts proteins into amino acids **R = lactase** [2]
- [7 Marks]**

- 2 (a) (i) primary cultivation/ ploughing/ digging/ forking; secondary cultivation/ tilling/ raking/ harrowing; soil amendments/ liming/ fertilization/ manuring; drainage; planting rows/ stations [2]
- (ii) potash/ wood-ash obtainable from burnt wood [1]
- (b) mix/ add nutrient reagent and soil extract; compare to turbidity chart/ observe colour change [2]
- (c) well drained/ ease of infiltration/ well aerated; easy to cultivate; fertile/ rich in nutrients; good water-holding capacity; easy spread of roots/ germination **OVP** [2]
- (d) soil sample mixed with distilled water; add buffer solution/ Barium Sulphate; add universal indicator shake well and allow to settle/ pH meter; compare colour changes
- OR**
- Measure 1 drop soil extract; place in a vial; add 4 drops of indicator solution; shake and compare colour [3]
- (e) optimal use of land/ more than one product harvested; improves soil fertility/ symbiotic relationship for a better harvest (beans and maize); good soil cover/ improved moisture content increase crop success; insurance/ risk reduction [2]

[12 Marks]

- 3 (a) (i)** centre pivot system/ overhead irrigation [1]
- (ii)** uniform application of water; system needs little maintenance; simple to operate;
low labour cost; minimises erosion; controls amount of water supplied
- R = cools the plant; minimise water usage** [2]
- (b)** increased yield; improve quality of the produce/ provides water at critical stages of
growth; prolonged farming season [2]
- (c)** soil erosion/ silting; spread of weed seeds/ soil borne diseases; leaching; wastage of water/
evaporation; nutrients imbalance in the field/ saltation/salinisation [2]
- (d)** sensors/ moisture/ blockage/ dead plants/ soil temperature; computer control/
programming/ data capturing; timing; location/GPS; direction [2]

[9 Marks]

- 4 (a) (i)** mating sire and dam of the same herd to transmit desirable characteristics of
individual animal/ mating closely related animals/ same family
- (ii)** genes having different effect/ different alleles in loci/ dissimilar genes
- R = example only** [2]
- (b)** gametes **H; H; h; h**
- F1 = Hh, Hh, Hh, Hh** 1 mark = gametes; 1 mark = outcomes [2]
- (c)** **1 HH = Polled; 2 Hh = polled; 1 hh = horned**
- 3:1 Phenotypic ratio**
- 1 mark for correct working; 1 mark for correct genotype; 1 mark for phenotypic ratio [3]
- (d)** faster growth rate/ early maturity; muscular development/ body size; disease/ drought
resistance; properly developed reproductive organs; high milk yield; good mothering
ability; easily calves; prolific/ calves yearly; high weaning rate/ low mortality .. **any 3** [3]
- (e)** stimulate gametes/ sperm cell production; muscular development; fast growth rate;
male accessory glands development; libido; development of sex organs [2]

[12 Marks]

- 5 (a) (i)** horizontal stay/ struts [1]
- (ii) give support to strainers/ corner posts/ gate posts and keeps them vertical;
hold wires between corners [1]
- (b)** compensate for sag; strengthen fence; keeps wires parallel/ maintain horizontal spacing between the lines [2]
- (c)** keep clean of overgrowth and climbing plants; patch any cuts in the fence/ repairing fence; ensure tightness of wire; preserve with creosote/ paint/ galvanise; replace rotten/ burnt posts [3]
- (d)** provide a boundary for movement control and protection; provide a subdivision for rotational grazing/ reduce overgrazing; uniform utilization of pasture/ avoids selective grazing; facilitate the provision of pasture grasses in winter [3]

[10 Marks]

- 6 (a) (i)** Wages of casual workers; purchase of fertilizer; purchase of pesticides and seeds; transport to market [2]
- (ii)** TFC = rent; 500 + salary for permanent staff; 5600 + purchasing farm machinery; 15000 + building renovation; 400 + electricity bill; 400 = **E21,900** [2]
- (iii)** gross margin = Total Revenue – Total variable cost (TVC)
- $$= \quad \text{E43,000} \quad - \quad \text{E 3,295} \quad = \quad \text{E39, 705} \quad [2]$$
- (b)** population growth/ increase of consumers; increased purchasing power/ income levels; increase price of related goods; consumer preferences/ tastes; decrease in maize price [2]
- (c)** management factors/ weeding/ pest and disease control/ fertiliser application/ level of inputs/ personnel skills/ availability of resources/ use of technology
financial factors/ price of inputs/ cost of labour/ capital availability
environmental factors/ rainfall/ soil conditions/ errant weather/ floods/ storms/ disease and pests outbreak [2]

[10 Marks]

Section B: Essays

- 7 (a) no importation of hazardous waste; do not collect/ transport/ sort/ recover/ treat/ store/ dispose/ manage waste in an adverse effect; dispose waste should not be a litter; no person shall import/ export/ trade in waste without permission/ licence; report waste quantities to be disposed to relevant authorities [3]
- (b) provides permit/ licence for GMO's seed importation; quality assurance control for seed quality/ healthy/safe products; quality seeds for increased crop production; supervision of man-made disasters/ excavation that leads to erosion/ siltation; natural disasters/ damage of flora and fauna/ drought/ wild fires; protect natural resources/ avoid soil/ water pollution [3]
- (c) starvation; death; disease outbreak; decreased livestock production [4]
- [10 Marks]**
- 8 (a) decompose organic matter; decay to form humus; fix/ add soil nitrogen; participate in nutrient cycles [3]
- (b) increase soil fertility; pest and disease control/ break cycle of pests; improvement of soil structure; efficient utilisation of nutrients [4]
- (c) kill weeds; loosen soil; incorporate organic matter/ lime/ fertiliser; kills pathogens and pests [3]
- [10 Marks]**
- 9 (a) feed ad-lib; starter day one to 21; grower day 21 to 35/ grower day 21 to slaughter; finisher day 35 to 42 R = vaccination programme [3]
- (b) digestion; blood circulation/ nutrient transport; egg formation; metabolism; cooling the body/ temperature control; excretion; formation of body fluids/ hormones/ blood [3]
- (c) good hygiene/ litter management/ clean and disinfect/ footbath usage/ limit visitors; vaccination; good housing/ prevents birds and predators/ protection from bad weather; good feeding regime and type; disease free stock/ avoid mixing birds of different ages/ breeds/ isolate sick birds [4]
- [10 Marks]**