

POSSIBLE ANSWERS
OCT / NOV 2006

AGRICULTURAL SCIENCE/P2/HG 2
SENIOR CERTIFICATE EXAMINATION - 2006

SECTION A

QUESTION 1

1.1 Multiple choice

- | | | |
|--------|-----------|------|
| 1.1.1 | B / D ✓ ✓ | (2) |
| 1.1.2 | B ✓ ✓ | (2) |
| 1.1.3 | B ✓ ✓ | (2) |
| 1.1.4 | A ✓ ✓ | (2) |
| 1.1.5 | C ✓ ✓ | (2) |
| 1.1.6 | D ✓ ✓ | (2) |
| 1.1.7 | C ✓ ✓ | (2) |
| 1.1.8 | B / D ✓ ✓ | (2) |
| 1.1.9 | B ✓ ✓ | (2) |
| 1.1.10 | D ✓ ✓ | (2) |
| | | [20] |

1.2 Correct terms

- | | | |
|-------|---|------|
| 1.2.1 | Mitosis / mitotic cell division / cleavage / segmentation / somatic cell division ✓ ✓ | (2) |
| 1.2.2 | Inelastic / little response / little change / stability of demand ✓ ✓ | (2) |
| 1.2.3 | Crop factor ✓ ✓ | (2) |
| 1.2.4 | Vitamin D ✓ ✓ | (2) |
| 1.2.5 | Roughage / crude fibre / cellulose ✓ ✓ | (2) |
| | | [10] |

- 1.3 Replacement of word (s)
- 1.3.1 Beak ✓ ✓ (2)
- 1.3.2 Retroperistalsis / reverse peristalsis ✓ ✓ (2)
- 1.3.3 Vulva ✓ ✓ (2)
- 1.3.4 Mechanisation ✓ ✓ (2)
- 1.3.5 Zero grazing / feedlot practices ✓ ✓ (2)
- [10]
- 1.4 Matching the columns
- 1.4.1 E ✓ ✓ (2)
- 1.4.2 B ✓ ✓ (2)
- 1.4.3 G ✓ ✓ (2)
- 1.4.4 C ✓ ✓ (2)
- 1.4.5 A ✓ ✓ (2)
- [10]
- TOTAL SECTION A: [50]**

SECTION B

QUESTION 2 :ANIMAL NUTRITION

2.1 Digestive tract of the ruminant

2.1.1 Ruminant / bovine / cow / bull / sheep / goat✓ (1)

2.1.2

Part of alimentary canal	Cow	Chicken
1. Mouth, lips, teeth and tongue	Broad thick lips hardly movable✓ All four pairs of teeth✓ Tongue long, muscular, movable, very rough surface✓	No lips, a horny beak✓ No teeth✓ Narrow, pointed tongue, hardly any muscle tissue✓
2. Pharynx	Long and wide✓	Very short tube✓
3. Oesophagus	Long narrow tube (1m)✓ Modified into 3 compartments	Dilates to form a bag-like enlargement✓ into the crop
4. Stomach	Compound stomach / 4 chambers✓	Simple stomach / 2 chambers✓
5. Small intestines	Very long narrow tube (approx 45m)✓	Shorter and smaller✓
6. Large intestine	Caecum ✓	Caeca✓
7. Posterior external opening	Anus	Vent/cloaca✓ Uro-genital organ

Very important - (Any TWO corresponding differences for two marks each – total of 4 marks) – no need to answer in a table form (4)

2.1.3 A – oesophagus/gullet✓ (1)

B – rumen✓ (1)

C – reticulum/honeycomb stomach/net stomach✓ (1)

D – omasum/leaf stomach/✓ (1)

E – abomasum/true or simple stomach/milk stomach✓ (1)

2.1.4 cellulose is digested by the enzyme cellulase✓
 produced and secreted by the rumen bacteria✓
 no gland in the body of the animal produces this enzyme✓
 cellulose is broken down by cellulitic bacteria into:✓
 volatile/free fatty acids/ acetic, proprionic and butyric✓
 fatty acids absorbed into the bloodstream through the rumen wall✓
 these serve as the energy source for the body✓
 fatty acids affect the butterfat composition of milk✓
 gases / carbon dioxide and methane✓
 gases escape via the blood and lungs or through the rumen (belching and
 eructation)✓ (Any 6) (6)

2.1.5 long enough to provide sufficient absorption area✓
 many folds increase surface area for absorption✓
 villi also increase surface area for absorption✓
 involuntary muscles provide constant movement or peristalsis✓
 many capillaries in folds of intestine for absorption✓
 thin layer of epithelium cells enhances absorption✓
 lacteal for absorption of fatty acids and glycerol✓
 walls are moist, mucous substances produced and elastic✓ (Any 4) (4)

2.2 Environmental temperature:

2.2.1 Hot weather:
 - cows require extra energy when panting trying to cool their bodies this
 energy could have been used for milk production✓ ✓
 - enzymes become inactivated with a resultant decrease in production✓ ✓
 - animals also use energy when walking around looking for a cool place
 such as under the trees or shelter✓ ✓ (Any 2) (4)

2.2.2 Cold weather:
 - environmental temperature drops below body temperature therefore
 additional heat is required to maintain body temperature✓ ✓
 - heat must be produced by an increase in metabolic rate✓ ✓
 - production of heat uses energy which could be used for milk
 production✓ ✓ (Any 2) (4)

2.3 Nutritive ratio:

2.3.1 **No credit for the formula**

$$NR = 1 : \frac{(78\% - 9\%) \checkmark}{9\%}$$

$$= 1 : \frac{69 \checkmark}{9}$$

$$= 1 : 7.67 \text{ or } 7.7 \text{ or } 8 \checkmark$$

(3)

2.3.2 **Purpose:**

maintenance ✓

drought feeding ✓

(2)

Reason:

because NR is wide ✓

protein concentration is relatively low per unit of digestible non-nitrogen

nutrients ✓

(Any 1)

(1)

[6]

2.4 Mineral nutrition:

Method	Mineral deficiency	Type of animal
2.4.1 Injections for milk fever	Calcium/magnesium ✓	Lactating dairy cows / beef cows / cattle / ruminants ✓
2.4.2 Soil sods	Iron ✓	Young pigs/piglets ✓
2.4.3 Dosing with cobalt bombs	Cobalt ✓	Ruminants ✓

(2)

(2)

(2)

40

QUESTION 3: ANIMAL REPRODUCTION

3.1 Factors affecting calving percentage:

3.1.1 **Explanation of each point must be given for 2 marks**

(a) underfeeding ✓ ✓

overfeeding ✓ ✓

unbalanced rations ✓ ✓

causes abortion ✓ ✓

- poor conception rates ✓ ✓ (Any 1) (2)
- (b) incorrect ratio of male / bull to female / cow ✓ ✓
 ineffective disease and parasite control ✓ ✓
 camps not large enough ✓ ✓
 animals mated too young have not reached sexual maturity ✓ ✓
 incorrect mating season ✓ ✓ (Any 1) (2)
- (c) sexual immaturity ✓ ✓
 inexperience ✓ ✓
 over-exertion ✓ ✓
 incorrect feeding / malnutrition / under and over nutrition ✓ ✓
 psychological factors ✓ ✓
 disease ✓ ✓
 temperament ✓ ✓
 genetic factors ✓ ✓
 old age ✓ ✓ (Any 1) (2)
- (d) pathological infertility ✓ ✓
 pathogens cause Trichomoniasis, Brucellosis, Vibriosis ✓ ✓
 cause impotence ✓ ✓
 cause abortions ✓ ✓ (Any 1) (2)

3.1.2

Any 4 solutions can be given as long as they correlate to 3.1.1

- Malnutrition – improved grazing management system ✓
 - e.g. rotational grazing, foggaging, overwintering ✓
 - supplementary feeding e.g. licks ✓ (Any 1) (1)
- Management - implement a beef management programme ✓
 - correct bull to cow ratio ✓
 - control parasites and diseases ✓
 - mate males and females at correct age ✓
 - correct mating seasons ✓ (Any 1) (1)
- Lack of libido – mate bulls at correct age ✓
 - proper feeding and caring of bulls ✓
 - cull old bulls ✓

- 3.4.2 mating of two pure bred animals of different breeds ✓ ✓
 e.g. Hereford bull x Angus cow ✓
 maximises heterosis ✓ (2)
- 3.4.3 (a) Crossbreeding ✓ (1)
 (b) Inbreeding ✓ (1)

35**QUESTION 4 : OPTIMAL RESOURCE UTILISATION**

- 4.1 use of pesticides in concentrations that are too high ✓
 careless application of pesticides ✓
 unnecessary use of pesticides ✓
 pollution of drinking water occurs through soil erosion ✓
 incorrect irrigation practices e.g. flood irrigation ✓
 overgrazing causes an increase of poisonous plant species ✓ (Any 5) (5)
- 4.2 storage of water for drought periods ✓
 water storage is extremely capital extensive undertaking (costly) ✓
 state control of natural resources and the use of resources effectively ✓
 to protect citizens against flooding ✓
 government is responsible for equal distribution of water ✓
 generate revenue ✓ (Any 3) (3)
- 4.3 $E_t = E_o \times f$
 $= 10\text{mm} \times 0.7$ ✓
 $= 7\text{mm}$ ✓
 $90\text{mm} - 7\text{mm}$ ✓
 $= 83\text{mm}$ moisture available ✓ (4)
- 4.4 prepare a fine tilth/seedbed ✓
 control weeds ✓

- incorporate organic matter/fertiliser✓
 incorporate inorganic fertilisers/amendments (lime and fertiliser)✓
 improve aeration✓
 improve drainage✓
 better root penetration✓
 destroy surface crust for water infiltration✓
 destroy impermeable layers in the subsoil✓
- (Any 5) (5)
- 4.5 scrub/macchia/fynbos✓
 forest types✓
 savanna/savannah✓
 grasslands✓
 semi-deserts/karoo✓
- (5)
- 4.6 labour saving/economical✓
 effective weed control✓
 pest control✓
 water saving✓
 adaptable to steep slopes/terrain✓
 running costs are lower/economical✓
 relatively cheaper to install/economical✓
 used on shallow soils with low water capacity✓
 suitable for widely spaced row crops✓
- (Any 3) (3)
- [25]

QUESTION 5 : AGRICULTURAL ECONOMICS

5.1 Case study

- 5.1.1 producer receives the average of all the sales during a specific year✓
 producers receive a guaranteed price which gives them financial security✓
 protects producers against price fluctuations✓
 against very low prices which could be the case had they marketed on their own✓
 reduces marketing costs/cost effective as the farmers do not have to build their own storage facilities✓

best characteristics are transferred to the progeny✓

quickest way to pure lines✓

chances for variations are slim✓

(Any 5)

(5)

[40]

QUESTION 4: OPTIMAL RESOURCE UTILISATION

- 4.1 aerial photographs of the region are taken for information in connection with topography, drainage patterns and differences in soil✓
 veld reconnaissance – area under survey inspected carefully✓
 the survey area is visited to indicate information on the aerial photographs such as cultivated lands, boundaries, fences, roads, buildings etc.✓
 preliminary mapping of the land and veld types is done✓
 the region is divided into homogenous groups✓
 position of profile test holes are indicated✓
 profile test holes are studied, horizons and soil forms are identified✓
 morphological properties of soil are described according to the colour, depth, mottles, texture, structure etc. of soil✓
 all acquired information is analysed, evaluated and soil maps are prepared✓
- (Any 6) (6)
- 4.2 **Each point mentioned gets a mark, learner can list five measures and get the marks. Each point mentioned with an explanation gets two marks**
 cultivation of wind breaks✓
 strip cultivation✓
 grow cover crops✓
 mulch cultivation✓
 apply organic matter✓
 avoid overgrazing✓
 correct stocking rate✓
 avoid veld fires✓
 apply rotational grazing✓
 build contour ridges✓
 build many drinking troughs for livestock✓
- (Any 5) (5)

4.3 Drainage systems:

- 4.3.1 A Natural system✓ (1)
 B Herringbone system / Fish-bone system✓ (1)
 C Grid system✓ (1)
- 4.3.2 A undulated area / land having wet scatter patches✓ (1)
 B a land with a depression down the middle✓ (1)
 C level soil with a slope uniform in one direction✓ (1)
- 4.3.3 inspection pits at regular intervals✓
 outlet must be covered with wiremesh✓
 must have a clear plan✓
 covering material must be at least 100mm thick around the pipe✓
 the back filling must be made compact✓
 there must be no hard lumps or clods in the backfill✓
 covering material must have good filtration ability✓ (Any 5) (5)

4.4. Irrigation systems:

- 4.4.1 (a) topography – steep slopes cause water to flow faster✓
 (b) quantity of water available – requires large quantities of water✓
 (c) infiltration rate of the soil – soil dominated by macro/micro pores are not suitable (sandy soils/clay soils)✓
 (d) type of crop to be cultivated – deep rooted crops suitable e.g. carrot, fruit trees✓
 (e) method of cultivation – strip/contour cultivation is suitable✓ (5)
- 4.4.2 bed irrigation✓
 furrow irrigation✓ (2)
- 4.4.3 Tensiometer✓
 evaporation pans / class-A pan / Scheeper's pan /
 American Standard Class A pan✓ (2)

- 4.5 Light✓
 cover material should allow 65 to 75 % of the light required for plant growth and photosynthesis✓
 Air✓
 ventilators on the top and sides of the greenhouse control air supply✓
 Temperature✓
 partial shading and electrical heating are used to control temperature✓
 Moisture✓
 controlled irrigation (scheduled irrigation) is a necessity in a greenhouse to provide sufficient moisture for the plant to ensure optimal growth✓ (Any 2)

(4)

[35]

QUESTION 5 : AGRICULTURAL ECONOMICS

5.1 Case study

- 5.1.1 (a) garden land✓
 security fence✓
 irrigation pipe✓
 market stalls ✓ (Any 2) (2)

- (b) tractor✓
 implements✓
 mouldboard plough✓
 disc harrow✓ (Any 2) (2)

Note: The learner cannot have implements and mouldboard plough or disc harrow.

- (c) vegetable seeds✓
 fertilisers✓ (2)

- 5.1.2 (a) production of a commodity more than its demand /
 production exceeds consumption✓ ✓ (2)

- (b) lowering of commodity quality due to spoilage in storage✓ ✓
 profit loss due to lowering price on special sales✓ ✓ (4)

- (c) produce commodities according to demand✓
 initiate production of uncommon commodities yet in demand✓

- establish new market outlets✓
- produce off-season crops which are in demand✓ (Any 2) (2)
- 5.1.3 free marketing system✓ ✓ (2)
- Reasons:
- producers send and sell commodities at their own time✓
- individual determines the price of the commodity✓
- sales are for cash✓
- no middle men or intermediaries✓
- each producer produces quality products because of competition✓
- no delay in getting payment✓
- show initiative and drive✓
- work harder✓
- job opportunities✓ (Any 4) (4)
- 5.2 Marketing functions:
- 5.2.1 provides specifications accepted by both the buyer and the seller✓
- gives uniformity to a group of products✓
- consumer know what they are going to get and what they have paid✓
- helps to deliver quality products✓
- increases the efficiency of the marketing system ✓ (any 2) (2)
- e.g. quality, size, mass, colour and moisture✓ (any 1) (1)
- (any one example)
- 5.2.2 is the actual sorting process of products✓
- according to the laid-down standard specifications✓ (any 2) (2)
- e.g. grade 1, grade 2, and grade 3/grade A, grade B and grade C, etc.✓ (any 1) (1)
- (any one example)
- 5.2.3 changes the basic form of the original product✓
- to make it more suitable for the consumer or storage✓ (any 2) (2)
- e.g. milk must be processed before products such as milk powder, butter, cheese, etc. can be produced✓
- (any one example) (any 1) (1)

- 5.3 decide on what must be done with respect to a need or problem/formulate aims and objectives✓
 observe, collect ideas and information/organise information✓
 consider all variables which cannot be controlled e.g. diseases, prices, weather conditions, etc.✓
 consider possible methods of action and decide on a particular production direction✓
 draw up a plan of action for a chosen production line✓
 control and evaluate the action plan so that possible deficiencies can be eliminated✓

(6)

[35]

TOTAL SECTION B: 150

GRAND TOTAL : 200

AFDELING A

VRAAG 1

1.1: MEERVOUDIGEKEUSE-VRAE

- 1.1.1 B / D ✓✓ (2)
- 1.1.2 B ✓✓ (2)
- 1.1.3 B ✓✓ (2)
- 1.1.4 A ✓✓ (2)
- 1.1.5 C ✓✓ (2)
- 1.1.6 D ✓✓ (2)
- 1.1.7 C ✓✓ (2)
- 1.1.8 B / D ✓✓ (2)
- 1.1.9 B ✓✓ (2)
- 1.1.10 D ✓✓ (2)

[20]

1.2: KORREKTE TERME

- 1.2.1 mitose/mitotiese seldeling/kliewing/segmentasie/somatiese seldeling ✓✓ (2)
- 1.2.2 onelasties / min reaksie/ min verandering / vraag is stabiel ✓✓ (2)
- 1.2.3 gewasfaktor ✓✓ (2)
- 1.2.4 vitamien D ✓✓ (2)
- 1.2.5 ruvoer / ruvesel / sellulose ✓✓ (2)

[10]

1.3: WOORDVERVANGING

- 1.3.1 snawel/bek ✓✓ (2)
- 1.3.2 retroperistalse / tru-peristalse ✓✓ (2)
- 1.3.3 vulva ✓✓ (2)
- 1.3.4 meganisasie ✓✓ (2)
- 1.3.5 vetmesting / voerkraal praktyke ✓✓ (2)

[10]

1.4: PASITEMS

- 1.4.1 E ✓✓ (2)
- 1.4.2 B ✓✓ (2)
- 1.4.3 G ✓✓ (2)
- 1.4.4 C ✓✓ (2)
- 1.4.5 A ✓✓ (2)

[10]

TOTAAL AFDELING A: 50

AFDELING B

VRAAG 2: DIEREVOEDING

2.1 Spysverteringskanaal van 'n herkouer

2.1.1 herkouer/bees/koei/bul/skaap/bok ✓

(1)

2.1.2

Deel van spysverteringskanaal	Koei	Hoender
Bek, lippe, tande en tong	Breë, dik lippe wat skaars beweeg ✓ Al vier pare tande ✓ Tong lank, gespierd, beweegbaar, baie growwe oppervlak ✓	Geen lippe, benerige snawel ✓ Geen tande ✓ Smal, gepunte tong, feitlik geen spierweefsel nie ✓
Farinks	Lank en wyd ✓	Baie kort buis ✓
Esophagus	Lang, smal buis (1 m) ✓ Bestaan uit 3 kompartemente	Swel om 'n sakagtige vergroting te vorm ✓ Vorm krop
Maag	Veelvuldige maag / 4 dele/kompartemente ✓	Enkelvoudige maag / 2 dele/kompartemente ✓
Dunderm	Baie lang, nou buis (ongeveer 45 mm) ✓	Korter en kleiner ✓
Dikderm	Caecum ✓	Caeca ✓
Posterior external opening	Anus ✓	Kloaakmond / urinogenitale orgaan ✓

Baie belangrik - enige 2 ooreenstemmende verskille vir 2 punte elk –nie nodig om in 'n tabel te beantwoord.

(4)

2.1.3 A – esophagus/slukderm ✓

(1)

B – rumen ✓

(1)

C – retikulum/ruitjiespens/blompens/ net stomach ✓

(1)

D – omasum/blaarpens ✓

(1)

E – abomasum/ware of enkelvoudige maag/ melk maag ✓

(1)

2.1.4 [enige 6]

- sellulose word verteer deur die ensiem sellulase ✓
- wat deur die rumenbakterieë geproduseer en afgeskei word ✓
- geen klier in die diereliggaam produseer hierdie ensiem nie ✓
- sellulose word afgebreek deur sellulitiese bakterieë in: ✓
- vlugtige/vrye vetsure/asyn-, proprioön- en bottersuur ✓
- vetsure wat deur die rumenwand in die bloedstroom geabsorbeer word ✓
- dit dien as 'n energiebron vir die liggaam ✓
- vetsure affekteer die bottervetsamestelling van melk ✓
- gasse/koolstofdiksied en metaan ✓
- gasse ontsnap via die bloed en longe of deur die rumen (winde opbreek en eruktasie) ✓

(6)

2.1.5 [Enige 4]

lank genoeg om genoeg absorpsiearea te verskaf ✓
baie voue vermeerder oppervlakarea vir absorpsie ✓
villi vermeerder ook oppervlakarea vir absorpsie ✓
onwillekeurige spiere verskaf aanhoudende beweging of peristalse ✓
baie kapillere vate ✓
dun wande van epiteelselle ✓
laktalevat of limfvat ✓
vogtige en elastiese wande ✓

(4)

2.2 Omgewingstemperatuur

2.2.1 Warm weer:

[enige 2]

- koeie benodig ekstra energie wanneer hulle hyg om hulle liggame af te koel hierdie energie kon vir melkproduksie gebruik gewees het ✓✓
- ensieme raak ongeaktiveer met 'n gevolglike afname in produksie ✓✓
- diere gebruik ook energie wanneer hulle rondloop om te soek na 'n koel plek soos onder 'n boom of skuiling ✓✓

(4)

2.2.2 Koel weer:

[enige 2]

- omgewingstemperatuur val tot onder liggaamstemperatuur daarom bykomende hitte nodig om liggaamstemperatuur te handhaaf ✓✓
- hitte moet geproduseer word deur 'n toename in metaboliese tempo ✓✓
- hitteproduksie gebruik energie wat vir melkproduksie gebruik kon word ✓✓

(4)

2.3 Voedingsverhouding

$$2.3.1 \text{ VV} = 1 : \frac{(78\% - 9\%) \checkmark}{9\%}$$

$$= 1 : \frac{69 \checkmark}{9}$$

$$= 1 : 7,67 \text{ of } 7,7 \text{ of } 8 \checkmark$$

(3)

2.3.2 Doel:

onderhoudvoeding ✓
droogte voeding ✓

(2)

Rede: [enige 1]

omdat VV baie wyd is ✓
proteïenkonsentrasie is relatief laag per eenheid verteerbare nie-
stikstofvoedingstowwe ✓

(1)

2.4 Mineralevoeding:

Metode	Mineraaltekort	Tipe dier
2.4.1 Insuitings vir melk koors	Kalsium/magnesium ✓	Lakserende melkkoeie / vleis koeie / beeste/herkouer ✓
2.4.2 Grondsooie	Yster ✓	Jong varkies ✓
2.4.3 Dosering met kobaltbomme	Kobalt ✓	Herkouers ✓

(3 x 2) (6)

[40]

VRAAG 3: DIEREPRODUKSIE

3.1 Faktore wat kalpersentasie beïnvloed

3.1.1 Explanation of each point must be given for 2 marks

- (a) ondervoeding ✓✓
 oorvoeding ✓✓
 ongebalanseerde rantsoene ✓✓
 veroorsaak aborsies ✓✓
 swak bevrugtingstempo's ✓✓ [enige 1] (2)
- (b) verkeerde verhouding van manlik/bul tot vroulik/koei ✓✓
 ondoeltreffende siekte- en parasietbeheer ✓✓
 kampe nie groot genoeg nie ✓✓
 diere te jonk laat paar, nog nie geslagsrypheid bereik nie ✓✓
 foutiewe paringseisoen ✓✓ [enige 1] (2)
- (c) geslagsrypheid ✓✓
 onervaring ✓✓
 ooreising ✓✓
 verkeerde voeding / wanvoeding / onder en oorvoeding ✓✓
 psigologiese/sielkundige probleme ✓✓
 siekte ✓✓
 temperament ✓✓
 genetiese faktore ✓✓
 oud ✓✓ [enige 1] (2)
- (d) patologiese onvrugbaarheid ✓
 patogene veroorsaak trigomoniasis, brusellose en vibriose ✓
 veroorsaak impotensie ✓
 veroorsaak aborsies ✓ [enige 1] (2)

3.1.2 Enige 4 oplossings wat met 3.1.1 korreleer

- wanvoeding -verbeterde weidingbestuurstelsel ✓
 -bv. wisselweiding, 'foggaging', oorwintering ✓
 -aanvullende voeding, bv. lekke ✓ [enige 1] (1)
- bestuur -implementeer 'n vleisbeesbestuurprogram ✓

- korrekte bul-tot-koeiverhouding ✓
 - beheer parasiete en siektes ✓
 - paar manlike en vroulike diere op regte ouderdom ✓
 - korrekte paringseisoen ✓ [enige 1] (1)
- gebrek aan geslagsdrang
- paar bulle op regte ouderdom ✓
 - behoorlike voeding en versorging van bulle ✓
 - dun ou bulle uit ✓
 - beheer siekte en parasiete ✓
 - korrekte bul-tot-koeiverhouding ✓ [enige 1] (1)
- siekte
- doeltreffende beheer van siektes / gee medisyne of inspuiting ✓
 - 'n inentings- en dipprogram ✓ [enige 1] (1)
- 3.2 Kunsmatige inseminasie
- 3.2.1 Kunsmatige inseminasie (KI) ✓ (1)
- 3.2.2 A – pistilet/pistolette ✓ (1)
- B – serviks/nek van uterus ✓ (1)
- C – uterus/ baarmoeder ✓ (1)
- D – ovarium/eierstok ✓ (1)
- 3.2.3 B / C ✓ (1)
- 3.2.4 [enige 4]
- dit verhoog die volume van die semen sodat 'n groot aantal semendoserings berei word ✓
 - dit verskaf voedingstowwe aan die sperms ✓
 - dit beskerm die sperms teen pH-veranderings ✓
 - dit beskerm teen skielike koue skokke ✓
 - bakteriële groei word voorkom ✓
 - dit handhaaf die lewensvatbaarheid/lewenskrag van die sperms ✓ (4)
- 3.3 Hormone vir parturisie en melkproduksie
- 3.3.1 [enige 2]
- stimuleer mioëpiteelselle ✓
 - melk word in die melkbuisse en klierholtes tot in die spene afgedruk ✓
 - verseker melkvystellingslaatrefleks vir 5 – 7 minute ✓
 - help met parturisie/kalwing/partus ✓ (2)
- 3.3.2 [enige 2]
- stimuleer follikelvorming ✓
 - estrogeen veroorsaak bronstigheid en verlaag melkproduksie ✓
 - ontwikkeling van die eierstokke ✓ (2)

- 3.3.3
- opgewondenheid of vrees veroorsaak dat die dier hierdie hormoon vrystel ✓
 - wat melkejksie/-uitwerping inhibeer ✓ (2)

- 3.3.4
- laat in swangerskap geproduseer ✓
 - hormoon wat melkproduksie inisieer ✓ (2)

3.4 Teelmetodes

- 3.4.1 Kruisteling:
[enige 2]
- paring van twee rasegte /suiwertelende diere van verskillende rasse ✓
 - wyd gebruik deur kommersiële telers wat die voordele van heterose benut ✓
 - bv. Hereford-koeie en Brahman-bulle ✓ (2)

Opgradering:

- [enige 2]
- dis die herhaalde paring van opreggeteelde/volbloed- manlike diere met minderwaardige vroulike diere ✓
 - uitstekende rasegte manlike diere van 'n spesifieke ras word generasie na generasie met minderwaardige vroulike diere gepaar ✓
 - gebruik om komersiële kuddes op te gradeer ✓
 - bv. Hereford-bul kruis nie-rasegte koeie ✓ (2)

- 3.4.2 Kruisteling (1)

Redes:

- [enige 5]
- ontwikkeling van nuwe rasse ✓
 - groter produksie bv. beesvleis ✓
 - vinniger groeitempo's ✓
 - groter weerstand teen siekte ✓
 - groter vrugbaarheid ✓
 - beter aangepas ✓
 - benut voedsel beter / beter voer omset ✓
 - besit beter moederlike instinkte ✓

OF

Inteling

Redes:

- [enige 5]
- verseker genetiese uniformiteit ✓
 - dieselfde voorkoms ✓
 - slegte resessiewe gene word geëlimineer ✓
 - groter prepotensie word verkry ✓

- beste kenmerke word op nageslag oorgedra ✓
- vinnigste manier om suiwer lyne te kry ✓
- min ruimte vir variasie ✓

(5)
[40]

VRAAG 4: OPTIMALE HULPBRONBENUTTING

4.1 [enige 6]

- lugfoto's word van die streek geneem vir inligting ivm die topografie, dreineringspatrone en grondverskille ✓
- identifiseer veldtipies – inspekteur area deeglik ✓
- die opnamegebied word besoek om inligting op die lugfoto's soos bewerkte lande, grense, heinings, paaie, geboue, ens. aan te dui ✓
- voorlopige kartering van die land- en veldtipies word gedoen ✓
- die streek word in homogene groepe verdeel ✓
- posisie van profieltoetsgate word aangedui ✓
- profieltoetsgate word bestudeer, horisonte en grondvorme word geïdentifiseer ✓
- morfologiese eienskappe van grond word beskryf volgens die kleur, diepte, vlekke/are, tekstuur, struktuur, ens. van grond ✓
- alle inligting bekom word ontleed, geëvalueer en grondkaarte word voorberei ✓

(6)

4.2 Elke maatregel slegs genoem verdien een punt. Elke maatregel wat bespreek is, verdien twee punte.

[enige 5]

- aanplant van windskerms/windlanings ✓
- strookverbouing ✓
- kweek dekgewasse ✓
- dekverbouing ✓
- wend organiese materiaal aan ✓
- vermy oorbeweiding ✓
- regte veebevoorradingstempo ✓
- vermy veldbrande ✓
- pas wisselweiding toe ✓
- bou kontoerbrûe ✓
- bou baie watertrôe vir lewende hawe ✓

(5)

4.3 Dreineringsstelsels

- | | |
|---|-----|
| 4.3.1 A – natuurlike stelsel ✓ | (1) |
| B – visgraatstelsel ✓ | (1) |
| C – roosterstelsel ✓ | (1) |
| 4.3.2 A – golwende area / verspreide nat kolle ✓ | (1) |
| B – 'n land met 'n duik in die middel ✓ | (1) |
| C – gelyk grond met 'n helling uniform in een rigting ✓ | (1) |

4.3.3 [enige 5]

inspeksieputte op vaste afstande✓

bedek openinge met ogiesdraad✓

moet 'n duidelike plan he✓

dek materiaal moet minstens 100mm dik wees om die pyp✓

opvulling moet kompak wees✓

goeie deurlaatbaarheid✓

dekmateriaal moet goeie filtreervermoe he✓

moet gereeld skoongemaak word✓

(5)

4.4 Besproeiingstelsels

4.4.1 (a) Topografie – steil hellings veroorsaak dat water vinniger vloei ✓

(b) Hoeveelheid water wat beskikbaar is – benodig groot hoeveelhede water ✓

(c) Infiltrasietempo van die grond – grond gedomineer deur makro-/mikroporieë is nie geskik nie (sanderige/ kleigrond) ✓

(d) Tipe gewas wat verbou gaan word – diepgewortelde gewasse geskik bv. mielies ✓

(e) Metode van bewerking – strook/kontoerbewerking is geskik ✓

(5)

4.4.2 bedbesproeiing ✓

leivoor-/slootbesproeiing ✓

(2)

4.4.3 spanningsmeter ✓

verdampingspanne/klas A-panne/Scheeper's pan/

Amerikaanse standard klas A-pan✓

(2)

4.5 [enige 2]

▪ Lig

▪ dekmateriaal moet 65% - 70% van die lig benodig vir plantegroei en fotosintese deurlaat ✓

▪ Lug ✓

▪ ventilators aan die bokant en kante van die kweekhuislugbeheerstelsel ✓

▪ Temperatuur ✓

▪ gedeeltelike skadu en elektriese verhitting word gebruik om temperatuur te beheer ✓

▪ Vog ✓

▪ beheerde besproeiing (geskeduleerde besproeiing) is 'n noodsaaklikheid in 'n kweekhuis om genoeg vog vir die plante te verskaf om optimale groei te verseker ✓

(4)

[35]

VRAAG 5: LANDBOU-EKONOMIE

5.1 Gevallenstudie

- 5.1.1 (a) [enige 2]
- tuingrond ✓
 - veiligheidsomheining ✓
 - besproeiingspype ✓
 - markstalletjies ✓
- (2)

- (b) [enige 2]
- trekker ✓
 - implimente ✓
 - rysterplaatploeg ✓
 - skottel-eg ✓
- (2)

Note: Leerder kry nie punte vir implemente en die voorbeelde nie.

- (c) groentesaad ✓
- kunsmis ✓
- (2)

- 5.1.2 (a) produksie van 'n kommoditeit meer as wat die vraag daarna is ✓✓ (2)

- (b)
- verlaging van kommoditeit se gehalte as gevolg van bederwing tydens berging ✓✓
 - winsverlies as gevolg van verlaging van prys op spesiale verkopings ✓✓
- (4)

- (c) [enige 2]
- produseer kommoditeite na aanleiding van vraag ✓
 - inisieer produksie van ongewone kommoditeite wat reeds in aanvraag is ✓
 - vestig nuwe markte ✓
 - produseer buite-seisoen produkte word in aanvraag is ✓
- (2)

- 5.1.3 vryemarkstelsel ✓✓ (2)

Redes:

[enige 4]

- produsente stuur en verkoop kommoditeite op hul eie tyd ✓
 - individu bepaal die prys van die kommoditeit ✓
 - verkope is kontant ✓
 - geen middelman of tussengangers nie ✓
 - elke produsent produseer gehalte goedere agv mededinging ✓
 - geen vertraging in betaling ✓
 - verhoog inisiatief en ondernemingsgees ✓
 - werk harder ✓
 - werkgeleenthede ✓
- (4)

5.2 Bemerkingsfunksies

- 5.2.1 verskaf spesifikasies wat deur beide die koper as die verkoper aanvaar word ✓
gee uniformiteit aan 'n groep produkte ✓
kliente weet wat hulle gaan kry vir wat hulle betaal het ✓
moedig kwaliteit produksie aan ✓
verhoog die doeltreffendheid van die bemerkingstelsel ✓ [enige 2] (2)
- bv. gehalte, grootte, massa, kleur en vog ✓ [enige 1 voorbeeld] (1)
- 5.2.2 dit is die werklike sorteringsproses van goedere ✓
na aanleiding van neergelegde standaard spesifikasies ✓ (2)
- bv. graad 1, graad 2 en graad 3/graad A, graad B en graad C, ens. ✓
[enige 1 voorbeeld] (1)
- 5.2.3 verander die basiese vorm van die oorspronklike produk ✓
om dit meer geskik te maak vir die verbruiker of berging ✓ (2)
- bv. melk moet geproduseer word voordat produkte soos melkpoeier, botter, kaas, ens. geproduseer kan word ✓ [enige 1 voorbeeld] (1)
- 5.3 besluit wat gedoen moet word mgt 'n behoefte of probleem/formuleer doelwitte en doelstellings ✓
neem waar, versamel idess en inligting/organiseer inligting ✓
oorweeg alle veranderlikes wat nie beheer kan word nie, bv. siektes, pryse, weerstoestande, ens. ✓
oorweeg alle moontlike metodes van aksie en besluit op 'n spesifieke produksierigting ✓
trek 'n plan van aksie op vir 'n produksiereeks gekies ✓
beheer en evalueer die plan van aksie sodat moontlike gebreke geëlimineer kan word ✓ (6)
[35]

TOTAAL AFDELING B: 150
GROOT TOTAAL: 200