



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P1

2019

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

SECTION A**QUESTION 1**

1.1	1.1.1	C ✓✓	(10 x 2)	(20)
	1.1.2	B ✓✓		
	1.1.3	B ✓✓		
	1.1.4	D ✓✓		
	1.1.5	A ✓✓		
	1.1.6	D ✓✓		
	1.1.7	B ✓✓		
	1.1.8	C ✓✓		
	1.1.9	A ✓✓		
	1.1.10	D ✓✓		
1.2	1.2.1	B only ✓✓	(5 x 2)	(10)
	1.2.2	None ✓✓		
	1.2.3	Both A and B ✓✓		
	1.2.4	A only ✓✓		
	1.2.5	B only ✓✓		
1.3	1.3.1	Peristalsis ✓✓	(5 x 2)	(10)
	1.3.2	Shed/feed shed/silo/barn ✓✓		
	1.3.3	Cloning/nuclear transfer ✓✓		
	1.3.4	Synchronisation of oestrus ✓✓		
	1.3.5	Freemartin ✓✓		
1.4	1.4.1	Biological value/BV ✓	(5 x 1)	(5)
	1.4.2	Chronic ✓		
	1.4.3	Hypoplasia ✓		
	1.4.4	Mummification ✓		
	1.4.5	Implantation ✓		

TOTAL SECTION A: 45

SECTION B**QUESTION 2: ANIMAL NUTRITION**

- 2.1 Alimentary canal of a farm animal**
- 2.1.1 **Name of the animal**
Poultry/fowl/chicken ✓ (1)
- 2.1.2 **Identification of the letter**
(a) C ✓ (1)
(b) E ✓ (1)
(c) A ✓ (1)
- 2.1.3 **The role of part B in digestion**
It moistens ✓ and softens/soaking food ✓ (2)
- 2.1.4 **Identification of the letter corresponding to a pig stomach**
A ✓ (1)
- 2.2 Digestion in the stomach and small intestines**
- 2.2.1 **Name of the enzymes**
A Rennin ✓ (1)
E Lipase ✓ (1)
- 2.2.2 **Identification of the labels**
B Peptides/polypeptides/peptones/proteoses ✓ (1)
C Starch ✓ (1)
F Amino acids ✓ (1)
- 2.2.3 **Part of the small intestines where digestion occurs**
Duodenum ✓ (1)
- 2.2.4 **Explanation of the importance of fat emulsification**
It increases the surface area ✓ for easier digestion ✓ (2)
- 2.3 Minerals and vitamins**
- 2.3.1 Zinc ✓ (1)
- 2.3.2 Vitamin A ✓ (1)
- 2.3.3 Phosphorus ✓ (1)
- 2.3.4 Vitamin K ✓ (1)
- 2.4 Nutritive ratio**
- 2.4.1 **Recommendation of the feed**
(a) Feed B ✓ (1)
(b) Feed A ✓ (1)
(c) Feed C ✓ (1)

2.4.2 **Indication of the part representing digestible non-nitrogen**
8 ✓ (1)

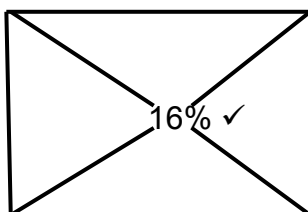
2.4.3 **Justification for recommending feed A for a calf**
It is rich in protein/narrow nutritive ratio ✓ needed for growth ✓ (2)

2.5 **Pearson square**

2.5.1 **The method used to prepare a ration**
Pearson square method ✓ (1)

2.5.2 **Calculation of the ratio of maize : sunflower oilcake meal**

Maize 14% 29 parts ✓



Sunflower 45 % 2 parts ✓

Ratio of maize to sunflower oilcake meal is 29:2 ✓ (4)

2.5.3 **Calculation of percentage of sunflower oilcake meal**

$$29 + 2 = 31 \checkmark$$

$$\frac{2}{31} \times 100 \checkmark$$

$$= 6,45/6,5\% \checkmark$$

OR

$$\frac{2}{31} \checkmark \times 100 \checkmark$$

$$= 6,45/6,5\% \checkmark$$

(3)

2.6 **TWO roles of a good fodder flow programme**

- To ensure safe use of the resources ✓
- To meet animal feed requirements ✓
- Margin over feed costs ✓
- Manageability ✓
- Focus on weekly/monthly/annual production and consumption ✓
- Ensure the continual supply of fodder to animals ✓

(Any 2)

(2)

[35]

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL**3.1 Farming systems****3.1.1 Identification of farming systems**

- A** Subsistence ✓ (1)
B Commercial ✓ (1)

3.1.2 Comparing subsistence and commercial farming systems**(a) Purpose of the output**

- Subsistence** - Output is mainly for feeding the family/not for profit ✓ (1)
Commercial - Output is mainly for selling/profit ✓ (1)

(b) Impact on environment

- Subsistence** - No/little impact as there is no pollution ✓ (1)
Commercial - Huge impact because of high production of manure/higher rate of pollution ✓ (1)

3.1.3 Disadvantage of farming system B

- Large scale spread of diseases/loss of production ✓ (1)

3.1.4 Economic benefit of farming system B over A

- High production/income/profit for the farmer ✓ (1)

3.2 Facilities used in an animal production enterprise**3.2.1 Identification of the facilities**

- A** Water trough ✓ (1)
B Feed trough ✓ (1)

3.2.2 Indication of the purpose for facility C

- To restrain farm animals ✓ (1)

3.3 Life cycle of a parasite**3.3.1 Classification of parasite**

- Internal/endoparasite ✓ (1)

3.3.2 Reason

- It lives in the body of the host ✓ (1)

3.3.3 Identification of intermediate host

- Snail/slug ✓ (1)

3.3.4 Environmental condition for survival of an intermediate host

- Wet/moist condition ✓ (1)

- 3.3.5 **TWO precautionary measures to prevent parasite infestation**
- Avoid/fence off wet areas during grazing ✓
 - Rotational grazing/resting veld ✓
 - Zero grazing ✓
 - Veld burning ✓
 - Breed animals resistant to parasite infestation ✓
 - Clean drinking water ✓
 - Provision of good nutrition ✓
- (Any 2) (2)

3.4 **Animal handling**

- 3.4.1 **TWO reasons for handling farm animals**
- Normal management programmes of animals/dehorning/marking/castration/docking ✓
 - Prevention/treatment of parasites/dosing/vaccination ✓
 - Determination of the animal's age ✓
 - Determination of pregnancy ✓
 - Generation of data such as growth rate, mass and market readiness ✓
 - Transportation of animals ✓
- (Any 2) (2)

- 3.4.2 **Effect of incorrect handling practice**
- (a) Animals will flee/lash out/injures the handler/get startled ✓ (1)
- (b) Sheep will be injured/damage the skin ✓ (1)
- (c) There will be fighting/aggression ✓ (1)

3.5 **TWO basic housing requirements**

- Protection from extreme climatic conditions/direct solar radiation/rain/wind ✓
 - Sufficient/adequate lighting ✓
 - Provision of cooling/heating systems ✓
 - Provision of bedding ✓
 - Food and clean water should be easily accessible ✓
 - Easy movement of workers should be ensured ✓
 - Housing construction must be cost-effective ✓
 - Appropriate size to minimize over-crowding ✓
- (Any 2) (2)

3.6 **Diseases caused by micro-organisms in farm animals**

- 3.6.1 **Identification of the letters**
- (a) Mastitis ✓ (1)
- (b) Virus ✓ (1)
- (c) Dark/red urine ✓ (1)
- (d) Wool sheep/Merino sheep ✓ (1)
- (e) Protozoa ✓ (1)

3.6.2 **TWO roles of the state in the control of farm animal diseases**

- Public awareness/notify public ✓
- Conduct research ✓
- Import/export bans ✓
- Supplying veterinary services ✓
- Generate and implement legislation ✓
- Control movement of animals/movement permits ✓
- Setting of quarantine zones ✓

(Any 2) (2)

3.7 **Salt poisoning in livestock**

3.7.1 **TWO symptoms of salt poisoning**

- Increased thirst ✓
- Dry/red mucous membranes of the mouth ✓
- Hypersensitivity ✓
- Irritability ✓
- Excessive salivation ✓
- Increased urination/defecations ✓
- Constipation ✓
- Vomiting and regurgitation ✓
- Inflammation of the stomach ✓
- Abdominal pain and diarrhoea ✓
- Wobbling/staggering/circling/blindness/seizures/paralysis ✓
- Dragging the hind legs/knuckling of the fetlock ✓
- Aggressiveness ✓

(Any 2) (2)

3.7.2 **TWO ways of treating animals with salt poisoning**

- Immediate removal of the source ✓
- Treatment with hypertonic dextrose/isotonic saline solution ✓
- Provision of fresh/clean water ✓

(Any 2) (2)

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QUESTION 4: ANIMAL REPRODUCTION

4.1 **Diagram of a sperm cell**

4.1.1 **Identification of Part A**

Nucleus ✓

(1)

4.1.2 **Letter of the part representing the acrosome**

B ✓

(1)

4.1.3 **Function of the Parts**

(a) **Part D** Provides energy to the sperm cell for movement ✓

(1)

(b) **Part E** Facilitates/propel movement of the sperm cell ✓

(1)

4.2 Male reproductive organs

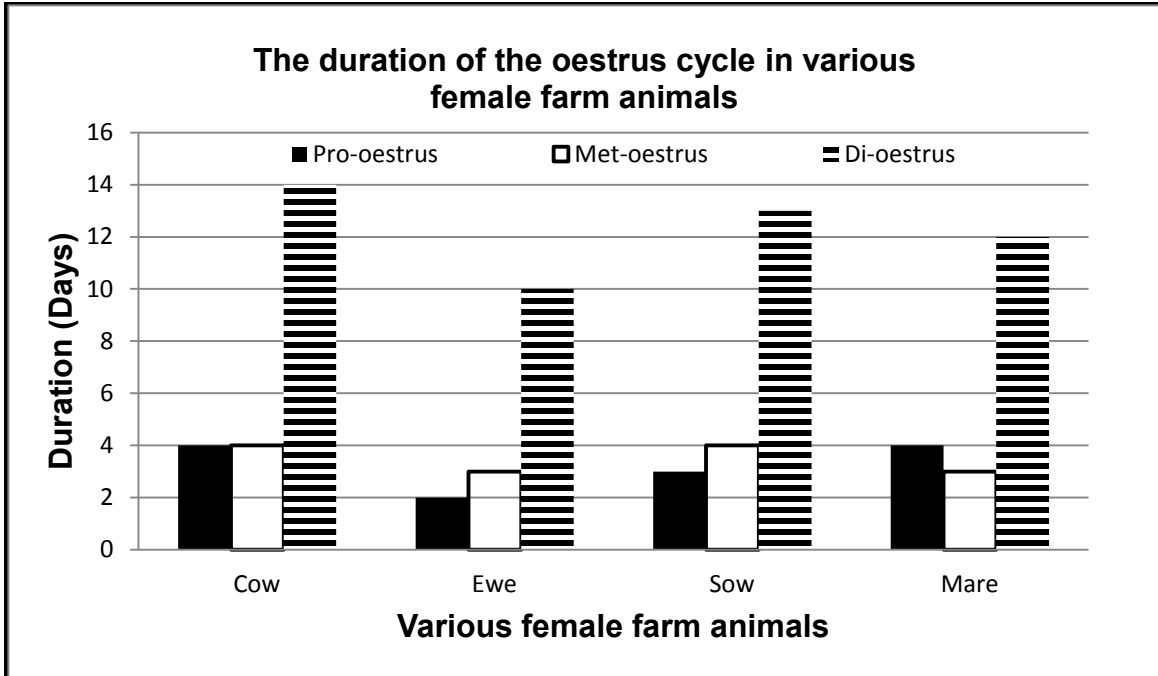
- 4.2.1 Vas/ductus deferens/seminal tube ✓ (1)
- 4.2.2 Prostate gland ✓ (1)
- 4.2.3 Epididymis/vesicular gland/seminal vesicle ✓ (1)

4.3 Hormonal control during the oestrus cycle

- 4.3.1 **Definition of oestrus cycle**
Recurring periods of oestrus ✓ alternating with sexual rest ✓ (2)
- 4.3.2 **Process at B**
Ovulation ✓ (1)
- 4.3.3 **Function of luteinising hormone**
- Stimulates the rupturing of the Graafian follicles/causes ovulation ✓
 - For maturation of oocytes ✓
 - For the formation of corpus luteum ✓
 - Facilitates the capturing of the ova/tightening the infundibulum ✓
(Any 1) (1)
- 4.3.4 **THREE signs of oestrus in cows**
- Mounts other cows ✓
 - Restlessness ✓
 - Swelling of the vulva ✓
 - Excessive mucus secretion from the vulva ✓
 - Mucus membranes of the vagina appears red and moist ✓
 - Scratches, manure and mud on the rear end ✓
 - Cows sniffs/licks the genitalia of other cows ✓
 - Tail/head/rump hair is fluffed up ✓
 - Raised tail ✓
 - Loss of appetite ✓
 - Decrease in milk production ✓
 - Allows Mating ✓
(Any 3) (3)

4.4 Stages of the oestrus cycle

A bar graph on the duration (in days) of the different stages in the oestrus cycle in various female farm animals



Criteria/rubric/marketing guidelines

- Correct heading ✓
- X-axis: Correct calibrations and labelled (Various female farm animals) ✓
- Y-axis: Correct calibrations and labelled (Duration) ✓
- Correct unit (Days) ✓
- Bar graph ✓
- Accuracy ✓

(6)

4.5 Technique used by farmers

4.5.1 Identification of the technique

Artificial Insemination/AI ✓

(1)

4.5.2 TWO characteristics of good, quality semen

- Colour - whitish to yellowish/milky/opaque ✓
- Sticky ✓
- Less than 15 % dead sperm cells/less mortality rate ✓
- 80% of sperm cells showing forward movement/mobility/motility/viability ✓
- Less than 20 % deformation/normal morphology ✓
- Characteristic odour ✓
- Healthy/disease free semen ✓
- pH - 6,4 to 6,9/slightly acidic ✓
- Concentration - 1,1 to 4,5 billion sperm cells per ml ✓
- Volume - 4 to 8ml ✓

(Any 2) (2)

- 4.5.3 **Apparatus held by the hand A**
Pistolette/insemination gun ✓ (1)
- 4.5.4 **Best time for inseminating a cow**
The next morning ✓ (1)
- 4.5.5 **ONE negative effect of technique by inexperienced person**
- Injury of the reproductive tract of the cow ✓
 - Unexpected low pregnancy result ✓ (Any 1) (1)
- 4.6 **Reproductive technique conducted in cows**
- 4.6.1 **Reproductive technique**
Embryo transplant/ET ✓ (1)
- 4.6.2 **Letters representing the FIRST TWO stages in sequence**
E ✓
C ✓ (2)
- 4.6.3 **TWO benefits of the technique to farmers**
- More progeny produced from best cows ✓
 - More profit ✓
 - Fast genetic improvement of the herd ✓
 - Productive life of older cows is extended ✓
 - Breeding animals with improved efficiency of production ✓
 - Genes in a herd are conserved/prevent extinction of valuable animals ✓ (Any 2) (2)
- 4.7 **Stage of pregnancy**
- 4.7.1 **Term for a fertilised diploid cell**
Zygote ✓ (1)
- 4.7.2 **Cell containing 16 cells of the stage**
Morula ✓ (1)
- 4.7.3 **TWO non-infectious causes of termination of pregnancy**
- Injuries ✓
 - Malnutrition/incorrect feeding ✓
 - High dosage of drugs and hormones ✓
 - Chemical poisoning/strong laxative/toxic feeds ✓
 - Maltreatment/stress/trauma ✓
 - Transportation ✓
 - Vaccination ✓
 - Embryo abnormalities/ovum/sperm defects ✓
 - Genetic defects ✓
 - Multiple foetus pregnancies ✓ (Any 2) (2)

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TOTAL SECTION B: 105
GRAND TOTAL: 150