Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2018

AGRICULTURAL SCIENCES P1 MARKING GUIDELINE

MARKS: **150**

This marking guideline consists of 10 pages.

SECTION A

QUESTION 1

1.1	1.1.1	C √√		
	1.1.2	B √√		
	1.1.3	D √√		
	1.1.4	B √√		
	1.1.5	B √√		
	1.1.6	D √√		
	1.1.7	A √√		
	1.1.8	C √√		
	1.1.9	A √√		
	1.1.10	A √√	(10 x 2)	(20)
1.2	1.2.1	Both A and B √√		
	1.2.2	B only √√		
	1.2.3	A only √√		
	1.2.4	None √√		
	1.2.5	B only √√	(5 x 2)	(10)
1.3	1.3.1	Nitrogen-free extract √√		
	1.3.2	Quarantine √√		
	1.3.3	Chin ball marker √√		
	1.3.4	Pregnancy/gestation √√		
	1.3.5	Freemartin √√	(5 x 2)	(10)
1.4	1.4.1	Ideal protein/egg protein √		
	1.4.2	Battery √		
	1.4.3	Urethra √		
	1.4.4	Flushing/harvesting √		
	1.4.5	Anterior √	(5 x 1)	(5)

TOTAL SECTION A: 45

SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1 2.1.1 **Animal with stomach compartments**
Fowl/chicken/poultry/birds √ (1)

2.1.2 **TWO reasons visible to justify the answer**
- 2 caecum/ceaca √
- Presence of a gizzard/ventriculus /proventriculus √
- Presence of crop (Any 2 x 1) (2)

2.1.3 **Identification of the letter**
(a) C √ (1)
(b) E √ (1)
(c) D √ (1)

2.1.4 **TWO adaptation features of part D**
- Presence of small stones √
- Thick wall muscle / very tough wall √ (2)

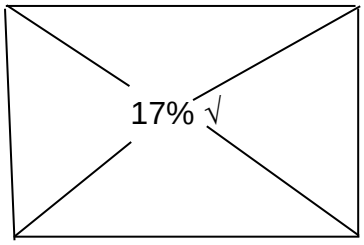
2.1.5 **Indication of type of feed suitable for fowls**
Concentrates √ (1)

2.2 **Nutritional information of different feeds**

2.2.1 **Classification of feeds**
A Protein-rich roughage √
B Protein-rich concentrate √
C Carbohydrate-rich concentrate √
D Carbohydrate-rich roughage √ (4)

2.2.2 **Pearson square**

Feed C 9 /maize meal



21 parts √

Feed B 38/ Soya bean oil-cake meal

8 parts √

Feedlot ration of feed C : B is 21 : 8 √ (4)

2.2.3 **Calculation of percentage of feed B**

21 + 8 = 29 √

$\frac{8}{29}$ x 100 √

= 27,59/28% √ (3)

2.3 **Feed energy flow**

2.3.1 **Indication of the letter representing types of energy**

(a) C √ (1)

(b) B √ (1)

2.3.2 **Calculation of energy in A (digestible energy)**

Gross energy – energy in faeces
18,5 MJ/kg – 7,32 MJ/kg √
= 11,18 MJ/kg √ (2)

2.4 **Supplements**

2.4.1 (a) **Tranquilisers**
They calm animals making them to eat more √ (1)

(b) **Antibiotics**
Prevent animals from getting diseases √ (1)

(c) **Somatotropin hormone**
Hormones increase the rate at which feed is converted to muscles √ (1)

2.5 **Feed flow programme**

2.5.1 **Calculation of the total dry matter in tons**
3 200 kg/ha x 40 ha = 128 000 kg √
= $\frac{128\ 000\ \text{kg}}{1\ 000}$ √

= 128 tons √ (3)

2.5.2 **Determination of the total requirement by all animals for 120 days**
Total requirement by calves = 200 x 120 = $\frac{24\ 000\ \text{kg}}{1\ 000}$ √
= 24 tons √
Total required by all animals = 24 + 72 + 5,4 = 101,4 tons √ (3)

2.5.3 **Suggestion of the season**
Summer/rainy season √
Reason
= There is an excess of 26,6 tons (128 – 101,4 = 26,6) √ (2)

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QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

3.1 Production levels of pigs in different conditions

3.1.1 Identification of pigs

(a) Pig C √ (1)

(b) Pig A √ (1)

(c) Pig B √ (1)

3.1.2 Reason for 3.1.1 (c)

There is a high increase of final mass from initial mass of 40 kg to 70 kg / increase in mass by 30 kg as compared to other pigs. √ (1)

3.1.3 THREE factors that have contributed to highest improved production in pig B.

- Nutrition/feeding √
- Environment √
- Breeding/reproduction √
- Management √ (Any 3 x 1) (3)

3.2 Facilities in an intensive production system

3.2.1 Identification of the facility

C Holding pen √
D Feeding shed √ (2)

3.2.2 Indication of the purpose for using facilities A and B

A – It is used for loading √
B – For guiding animals towards a loading truck √ (2)

3.3 Handling guidelines

3.3.1 Indication of animal to which the handling guideline applies

(a) Poultry/chicken √

(b) Sheep √

(c) Pig √ (3)

3.4 THREE abnormal behaviour displayed by pigs when stressed

- Belly nibbling √
- Snout rubbing √
- Cannibalism √
- Ear biting √
- Tail biting √ (Any 3 x 1) (3)

3.5 **Life cycle of a parasite**

3.5.1 **Classification of the parasite based on the life cycle**
- One-host tick√

Name
- Blue tick √ (2)

3.5.2 **Reason for classification**
It remains on one host during larva and nymph stages/Completes its life cycle on only one host √ (1)

3.5.3 **Protozoan disease transmitted by parasite**
Redwater √ (1)

3.5.4 **TWO veld management practices to prevent parasite infestation**
- Veld must be rested/rotational grazing/zero grazing √
- Practice good hygiene √
- Expose animals to ticks to build immunity √
- Breed resistant animals √ (Any 2 x 1) (2)

3.6 **Swine fever**

3.6.1 **Pathogen causing swine fever and animal affected**
Virus √ (1)

Animal
Pig √ (1)

3.6.2 **TWO reasons for classifying swine fever as epidemic**
- It affects a large number of animals √
- It spreads rapidly √
- Can affect humans √ (Any 2 x 1) (2)

3.6.3 **Term meaning the disease transmitted from animals to human beings**
Zoonotic √ (1)

3.6.4 **Identification of the state role in preventing further spread of the disease**
Animals are killed and their products are destroyed √ (1)

3.6.5 **Duty of owners of animals in controlling swine fever once detected**
Reporting the outbreak of the disease to relevant authorities √ (1)

3.7 **Sustainable use of medication**

3.7.1 **TWO methods to test animal health**

- Taking animal's temperature √
- Determining pulse rate √
- Determining respiratory rate √ (Any 2 x 1) (2)

3.7.2 **THREE precautions to be taken before treating animals to ensure sustainable use of medication**

- Ensure that medicine is safe to use for the specific animal √
- Check the expiry date √
- Administer correct dosage according to weight and age of an animal √
- Correct method of administering the medicine must be followed √
- Animal products like meat and milk must not be used before the withdrawal period of the medicine √
- Medicine must be kept away from children √ (Any 3 x 1) (3)

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QUESTION 4: ANIMAL REPRODUCTION

4.1 Reproductive system of a bull

4.1.1 Identification of the letter

(a) H √ (1)

(b) F √ (1)

(c) D √ (1)

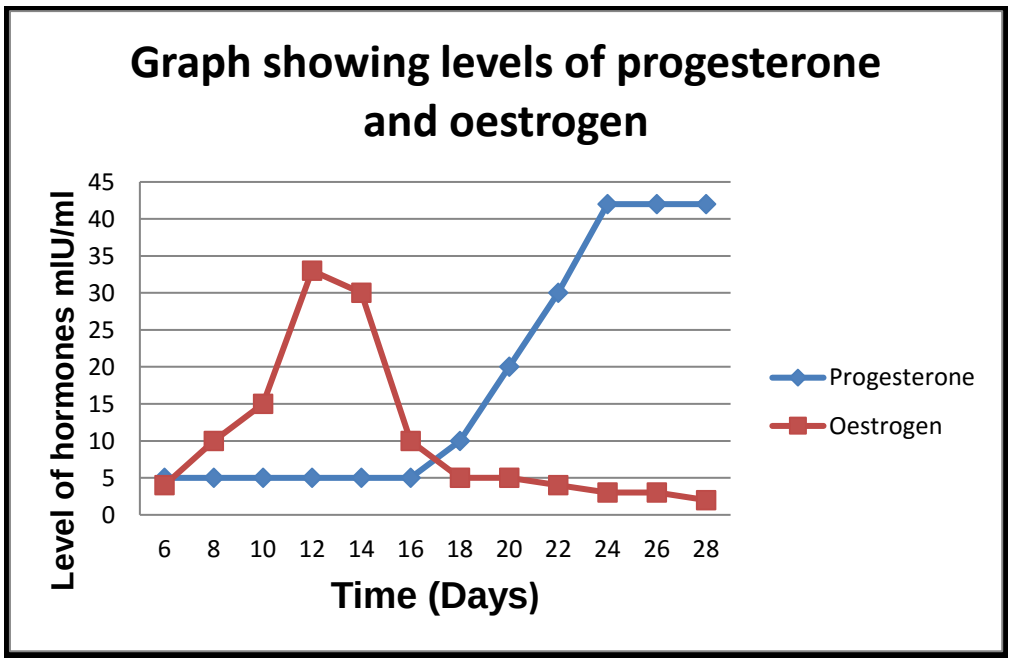
(d) G √ (1)

4.1.2 Explanation of how scrotum regulates temperature under extreme temperature conditions

When it is cold the scrotum draws the testes closer to the body √ and when it is hot it moves them away from the body. √ (2)

4.2 Graph

4.2.1 Graph on levels of progesterone and oestrogen



Criteria/rubric/marking guideline

- Correct heading √
- X-axis: Correctly labelled and calibrated (Time/days) √
- Y-axis: Correctly labelled and calibrated (Levels of progesterone and oestrogen) √
- Line graph √
- Accuracy √
- Correct units mIU/mℓ √ (6)

4.2.2 **Identification of the day when cow was in oestrus**
Day 12 √ (1)

4.2.3 **Reason**
Oestrogen is at its highest level √ (1)

4.2.4 **Stage of oestrus on day 28**
Di-oestrus √ (1)
Reason
- Progesterone is at its peak √
- Level of oestrogen is low √ (Any 1 x 1) (1)

4.3 **Synchronisation**

4.3.1 **Term referring to the process**
Synchronisation of oestrus √ (1)

4.3.2 **TWO techniques of synchronising oestrus**
- Inject prostagladin √
- Inject/ear implanting progesterone √
- MGA and PG given in a feed √
- Controlled internal drug release (CIDR) √
- Gonadotrophin-releasing hormone (GnRH) (Any 2 x 1) (2)

4.3.3 **TWO disadvantages of synchronisation**
- Labour intensive √
- It is expensive √
- High level of management is needed √
- Need good handling facilities √
- Pregnancy testing needs to be done regularly √ (Any 2 x 1) (2)

4.4 **Reproductive process in cows**

4.4.1 **Identification of the process**
Artificial insemination √ (1)

4.4.2 **TWO requirements of AI that are visible**
- Correct technique √
- Trained personnel √ (2)

4.4.3 **TWO economic benefits of artificial insemination for the farmer**
- It is a quick and economical way to improve the herd/no need to buy a bull √
- Semen of one bull can inseminate many cows √ (2)

4.5 **Indication of the stage of pregnancy**
(a) Embryonic stage √ (1)
(b) Foetal stage √ (1)
(c) Ovum stages √ (1)

4.6 **Graph on milk production, dry matter intake and body weight**

4.6.1 **Indication of the time in weeks**

(a) **Peak milk production:** Week 6/7/8/9 √ (1)

(b) **Drying up of a cow**: Week 42 √ (1)

4.6.2 **TWO reasons for the importance of colostrum**

- Has antibodies to increase calf's resistance to disease √
- Provides nutrients √
- Necessary for growth, functioning and maturation of the alimentary canal √ (Any 2 x 1) (2)

4.6.3 **Explanation of a relationship between milk production, body weight and dry matter**

The more the dry matter intake, the higher the milk production and the lesser the body weight. √√ (2)

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TOTAL SECTION B: 105
GRAND TOTAL: 150