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**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2017

**AGRICULTURAL SCIENCES P1
MARKING GUIDELINE**

MARKS: 150

This marking guideline consists of 7 pages.

SECTION A**QUESTION 1**

- | | | | | |
|-----|--------|---------------------------|----------|------|
| 1.1 | 1.1.1 | D ✓✓ | | |
| | 1.1.2 | B ✓✓ | | |
| | 1.1.3 | C ✓✓ | | |
| | 1.1.4 | C ✓✓ | | |
| | 1.1.5 | D ✓✓ | | |
| | 1.1.6 | A ✓✓ | | |
| | 1.1.7 | C ✓✓ | | |
| | 1.1.8 | A ✓✓ | | |
| | 1.1.9 | B ✓✓ | | |
| | 1.1.10 | A ✓✓ | (10 × 2) | (20) |
| 1.2 | 1.2.1 | B only ✓✓ | | |
| | 1.2.2 | A only ✓✓ | | |
| | 1.2.3 | B only ✓✓ | | |
| | 1.2.4 | Both A and B ✓✓ | | |
| | 1.2.5 | None ✓✓ | (5 × 2) | (10) |
| 1.3 | 1.3.1 | Ad lib ✓✓ | | |
| | 1.3.2 | Topical ✓✓ | | |
| | 1.3.3 | Bunching ✓✓ | | |
| | 1.3.4 | An-oestrus/sub-oestrus ✓✓ | | |
| | 1.3.5 | Semen ✓✓ | (5 × 2) | (10) |
| 1.4 | 1.4.1 | Amylase ✓ | | |
| | 1.4.2 | Optimum ✓ | | |
| | 1.4.3 | Leydig ✓ | | |
| | 1.4.4 | Resorption ✓ | | |
| | 1.4.5 | Implantation ✓ | (5 × 1) | (5) |

TOTAL SECTION A: 45

SECTION B**QUESTION 2: ANIMAL NUTRITION**

- 2.1 2.1.1 Cattle/Sheep/Goat ✓ (1)
- 2.1.2 (a) A ✓ (1)
(b) B ✓ (1)
(c) A ✓ (1)
- 2.1.3 Presence of leaves ✓ where food particles are grinded finely ✓ (2)
- 2.1.4 Presence of rumen micro-organisms ✓ which break down cellulose ✓ into volatile fatty acids ✓ (3)
- 2.2 2.2.1 Protein rich roughage ✓ Lucerne hay ✓
Carbohydrate rich roughage ✓ oat hay ✓ (4)
- 2.2.2 Maize meal ✓ (1)
- 2.2.3 Ration cannot be fed to pigs ✓ (1)
- 2.2.4 Ration contains urea ✓ which cannot be digested by pigs. ✓ (2)
- 2.3 2.3.1 Non-ruminant ✓ (1)
- 2.3.2 • Crude fibre ✓ was poorly digested ✓
• High/73% ✓ of crude fibre was excreted ✓ (Any 1) (2)
- 2.3.3 $\frac{7 \text{ kg} - 4 \text{ kg}}{7 \text{ kg}} \times 100 \checkmark = 42,8 \% \checkmark$ (2)
- 2.3.4 Only 42,8 % of feed ✓ has been digested and absorbed ✓ (2)
- 2.4 2.4.1 • Roughage have a higher crude fibre content ✓
• Concentrates have low crude fibre ✓ (2)
- 2.4.2 • Roughage – less than 60% TDN ✓
• Concentrates – More than 60% TDN ✓ (2)
- 2.5 2.5.1 $15 \text{ t/ha} \times 19,6 \text{ (ha)} \checkmark = 294 \text{ tons} \checkmark$ (2)
- 2.5.2 August ✓ (1)
- 2.5.3 • Feed required is 65t and feed available is 35t ✓✓
• There is a shortage of 30t ✓✓ (Any 1) (2)
- 2.5.4 $56 + 60 + 85 \checkmark = 201 \text{ tons} \checkmark$ (2)

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QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

- 3.1 3.1.1 **A:** Extensive production system ✓
B: Intensive production system ✓ (2)
- 3.1.2 **A:** Few animals in a large space/low stocking density ✓
B: Many animals in small space/high stocking density ✓ (2)
- 3.1.3 **A** **Extensive production system:** Subsistence farming ✓
B **Intensive production system:** Commercial farming ✓ (2)
- 3.1.4 • Nutrition/feeding ✓
• Environment ✓
• Breeding/reproduction ✓
• Management ✓ (Any 2) (2)
- 3.2 3.2.1 Crush ✓ (1)
- 3.2.2 • Administration of medication/dipping/dosing ✓
• Determining the age of animal ✓
• Normal management programme (dehorning/docking/castration/markings) ✓
• Pregnancy testing ✓
• Transportation ✓ (Any 2) (2)
- 3.2.3 • High solid sides ✓
• Narrow and curved ✓
• Wide and straight to provide clear path ✓ (Any 2) (2)
- 3.3 3.3.1 Always have a red flag ✓ (1)
- 3.3.2 Should be in possession of a permit ✓ (1)
- 3.3.3 Loading ramp ✓ (1)
- 3.4 3.4.1 **A** Bacterial ✓
B Blisters on the tongue ,nose, lips in the mouth ✓
C Protozoan ✓
D Bont tick ✓
E Ringworm ✓ (5)
- 3.4.2 Notifiable ✓ (1)
- 3.4.3 Foot-and-mouth disease ✓ (1)
- 3.4.4 • Restricting the movement of animals/control measures ✓
• Quarantine the affected animals ✓
• Vaccination programmes/Veterinary services ✓
• Import bans ✓
• Legislation ✓ (Any 2) (2)

- 3.5 3.5.1 Internal parasite/endoparasite ✓ (1)
- 3.5.2 Liver fluke ✓ (1)
- 3.5.3 Snail ✓ (1)
- 3.5.4 Animal get infested during grazing ✓ (1)
- 3.5.5 Anaemia/fasciolosis ✓ (1)
- 3.5.6
- Rotation grazing/resting veld ✓
 - Avoiding wet places during grazing ✓
 - Allow animals to graze on clean pastures ✓
 - Integrated pasture management ✓ (Any 2) (2)
- 3.6 3.6.1
- Excessive salivation ✓
 - Increased thirst ✓
 - Vomiting and regurgitation ✓
 - Constipation ✓
 - Aggressiveness ✓
 - Hypersensitivity to touch ✓
 - Red and dry mucous membranes of mouth ✓
 - Increased urination and defecation ✓
 - Abnormal pain and diarrhoea ✓ (Any 1) (1)
- 3.6.2
- Provision of fresh water in small amounts at short intervals ✓
 - Give young animals isotonic saline solution/hypertonic dextrose ✓
 - Remove the source of salt poisoning ✓ (Any 2) (2)

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QUESTION 4: ANIMAL REPRODUCTION

4.1 4.1.1 Identical twin ✓ (1)

4.1.2 They are formed from the fertilisation of one egg cell by one sperm cell ✓ (1)

4.1.3 (a) **Gender** They are of the same sex ✓ (1)

(b) **Physical appearance** They are identical ✓ (1)

4.1.4 Hailurodinase ✓ (1)

4.1.5 Ovum stage ✓ (1)

4.2 4.2.1 **Table showing number of cows in oestrus during different time period**

Number of cows	Time
25	06:00 – 12:00
10	12:00 – 18:00
20	18:00 – 00:00
45	00:00 – 06:00

Marking table with the following checklist:

Criteria	Yes: 1 mark	No: 0 mark
1. Table	1	0
2. Labelling: No. of cows	1	0
3. Labelling: Time	1	0
4. Data correctly captured (time and no .of cows)	2	0
5. Correct heading	1	0

(6)

4.2.2 06:00–08:00 ✓ (1)

4.2.3 It is 12 hours ✓ after oestrus signs have disappeared ✓ (2)

4.3 4.3.1 **Oogenesis** primary oocytes ✓
Spermatogenesis primary spermatocytes ✓ (2)

4.3.2 **Oogenesis** ootids ✓
Spermatogenesis primary spermatids ✓ (2)

4.3.3 **Oogenesis** ovary ✓
Spermatogenesis testicles/testes ✓ (2)

4.4 4.4.1 Vas deferens/seminal tube ✓ (1)

4.4.2 Prostate gland ✓ (1)

4.4.3 Epididymis ✓ (1)

4.5	4.5.1	Dystocia ✓	(1)
	4.5.2	• Deviation of the head ✓ • Flexion of the elbow ✓ • Retention of one or both forelegs ✓ • Hydrocephalus ✓ • Congenital defects ✓ • Posterior presentation/position and posture ✓ • Torsion of the uterus ✓	(Any 2) (2)
4.6	4.6.1	Cloning ✓	(1)
	4.6.2	Sheep 1 Donor ✓ Sheep 2 Recipient ✓	(2)
	4.6.3	A Reproductive cloning ✓ B Therapeutic cloning ✓	(2)
	4.6.4	For the production of medicines to treat different diseases ✓	(1)
	4.6.5	• High quality products (meat, wool, et cetera) ✓ • Farmers farm with best animals with desirable characteristics ✓ • Animals can be bred for disease resistance thus, decreasing the cost of treatment ✓ • Extinct and endangered species can be revived ✓ • One female can produce many clones ✓	(Any 2) (2)
			[35]
			TOTAL SECTION B: 105
			GRAND TOTAL: 150