NATIONAL
SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2016

AGRICULTURAL SCIENCES P1
MEMORANDUM

MARKS: 150

This memorandum consists of 6 pages.

SECTION A

QUESTION 1

1.1   1.1.1   C √√
       1.1.2   B √√
       1.1.3   A √√
       1.1.4   A √√
       1.1.5   D √√
       1.1.6   A √√
       1.1.7   C √√
       1.1.8   B √√
       1.1.9   A √√
       1.1.10   D √√   (10 x 2)   (20)

1.2   1.2.1   None √√
       1.2.2   B only √√
       1.2.3   A only √√
       1.2.4   B only √√
       1.2.5   Both A and B √√   (5 x 2)   (10)

1.3   1.3.1   Pancreas √√
       1.3.2   Stock density √√
       1.3.3   Virus √√
       1.3.4   Impotence √√
       1.3.5   Concentration √√   (5 x 2)   (10)

1.4   1.4.1   Urea √
       1.4.2   Conduction √
       1.4.3   Mesoderm √
       1.4.4   Posture √
       1.4.5   Bulbo-urethral/Cowpers gland √   (5 x 1)   (5)

                                                             TOTAL SECTION A: **45**

SECTION B

QUESTION 2: ANIMAL NUTRITION

2.1   2.1.1   Non-ruminant/monogastric √   (1)

       2.1.2   Single/Simple stomach/Monogastric √   (1)

2.2   2.2.1   C √   (1)
       2.2.2   D √   (1)
       2.2.3   F √   (1)
       2.2.4   I √   (1)
       2.2.5   E √   (1)

2.3   2.3.1   It is highly soluble than biuret. √   (1)

       2.3.2   Avoid keeping the lick in rain. √   (1)

       2.3.3   • A mixture of 2 kg urea and 20 kg molasses be sprayed on grazing √
                 • Use of premixed fodders/mixtures/stock licks √   (2)

2.4   2.4.1   • Only abomasum is functioning √
              • Rumen/reticulum/omasum still underdeveloped √
              • Oesophogal groove transport milk to the abomasum √   (Any 2 x 1)   (2)

      2.4.2   When the calf starts eating solid food/starts grazing √   (1)

      2.4.3   • Enable to digest cellulose √
              • Hydrolyse protein √
              • Synthesis of vitamins √
              • Synthesis of amino acids √   (Any 2 x 1)   (2)

2.5   2.5.1   DE of 5 kg DM intake = Gross Energy – energy lost in faeces
                                    = 92,5 J –   42,5 J√
                                    = 50 J √   (2)

      2.5.2   Nett energy = **Metabolic energy** – Energy lost as heat

              Metabolic energy = 50 J – 18,5 J = 31,5 J √

              Nett energy   =   Metabolic energy – Energy lost as heat
                            =   31,5 J – 9 J √
                            =   22,5 J √

NB:	Learners may use different ways/formula to arrive at 22,5 J, e.g.
	NE = GE – energy lost in faeces – energy lost in urine and gases – heat loss
	OR
	NE = DE – energy lost in urine + gases – heat loss	(3)

2.6   **Percentage of feed mixture**
      Ratio of Maize meal : peanut oilcake meal = 22 : 7,5
      22 + 7,5 = **29,5** √
      % of peanut oilcake meal $= \frac{7,5}{29,5} \times 100$ √
      $ = 25,42 \%$ √   (3)

2.7   2.7.1   Concentrate requirement $= \frac{70}{100} \times 60$ kg/day
                                       = 42 kg/cow/day √
                                       = 42 kg × 30 days × 100 cows √
                                       = 126 000 kg (126 tons) √   (3)

      2.7.2   Feed supply   = 650 kg × 30 × 6   = 117 000 kg √
              Feed required = 100 × 60 kg × 30 = 180 000 kg p/month × 6
                            = 1 080 000 kg √
                            = Feed supply – Feed required
                            = 117 000 kg –1 080 000 kg
                            = -963 000/1 000 √
                            = -963 tons √   (4)

      2.7.3   Not enough √ - pasture has a shortage of 963 tons √   (2)

2.8   2.8.1   Tranquillisers √   (1)

      2.8.2   Antibiotics √   (1)
   **[35]**

QUESTION 3: ANIMAL PRODUCTION, PROTECTION AND CONTROL

3.1   3.1.1   A   Feeding shed √
                 B   Holding pen √   (2)

       3.1.2   (a)   Holding pen / B √   (1)
                (b)   Feeding shed / A √   (1)

       3.1.3   •   Give cows time to pick up their calves before moving √
                •   Cows and calved should be moved slowly √
                •   Avoid trying to work cows and calves with dogs √   (3)

3.2   3.2.1   To warn animals of your presence √   (1)

       3.2.2   Makes them feel insecure √   (1)

       3.2.3   Allow animals to establish social groups √   (1)

3.3   3.3.1   D √   (1)
       3.3.2   C √   (1)
       3.3.3   A √   (1)
       3.3.4   B √   (1)

3.4

		Subsistence	Commercial	
3.4.1	Purpose	Produce only enough to feed the family √	Produce to sell for a profit √	(2)
3.4.2	Management	Limited as only few animals and crops produced √	Intensive to ensure increased production √	(2)

3.5   3.5.1   **A**   Chronic √
                B   Very sudden/develops within an hour/weeks √
                C   Acute √
                D   Deadly √   (4)

       3.5.2   Anthrax √   (1)

       3.5.3   •   Burn the carcass √
                •   Do not cut open the animal carcass √
                •   Burry carcass deep in the ground √   (Any 2 x 1)   (2)

3.6   3.6.1   Nasal worm √   (1)

       3.6.2   (a)   C √   (1)
                (b)   A/B √   (1)

       3.6.3   Summer √   (1)

       3.6.4   •   Sneezing and nasal irritation √
                •   Yellow nasal discharge √
                •   Shaking of head to get rid of the parasite √   (3)

3.7   3.7.1   Proper hygiene standards in abattoirs √   (1)

      3.7.2   Quarantine of imported animals at ports of entry √   (1)

      3.7.3   • Reporting any suspicion of the disease √
              • Eradication programs √
              • Immunisation campaigns √   (Any 1)   (1)

[35]

QUESTION 4: ANIMAL REPRODUCTION

4.1   4.1.1   Embryo transfer √   (1)

      4.1.2   • Prostglandin injection √
              • Gonadotropin - release hormone √   (2)

      4.1.3   **A**   Donor √   (1)

      4.1.4   37 °C √   (1)

      4.1.5   (a)   Their reproductive cycle is extended to produce more progeny √   (1)
              (b)   More profit from selling superior animals √   (1)

4.2   4.2.1   **A**   Oestrus √
              B   Di-oestrus √
              C   Met-oestrus √
              D   Pro-oestrus √   (4)

      4.2.2   (a)   A √   (1)
              (b)   C √   (1)

4.3   4.3.1   **B**   vas deference √
              D   scrotum√
              F   seminal vesicle √   (3)

      4.3.2   • Hypoplasia √
              • Cryptochidism √
              • Sperm defects √   (Any 2 x 1)   (2)

4.4   4.4.1   Exhaustion/Fatigue √   (1)
      4.4.2   Malnutrition √   (1)
      4.4.3   Lack of experience √   (1)
      4.4.4   Temperament √   (1)

4.5   4.5.1

Milk yield of group 1 and 2 over 25 weeks
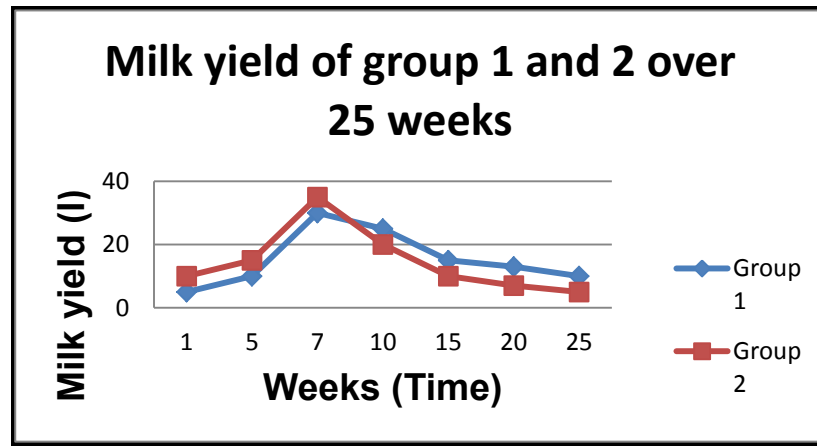
Marking graph with the following checklist:

Criteria	Yes: 1 mark	No: 0 mark
1 Line graph	1	0
2 Y-axis labelled	1	0
3 X-axis labelled	1	0
4 Points correctly labelled in group 1 and group 2	1	0
5 Correct heading	1	0
6 Units (and time)	1	0

(6)

4.5.2   Milk yield increases drastically in week 7 and drops from week 15 to week 20. √

OR

For both groups milk yield increases from week 1 to week 7 and then it decreases after week 7 until week 25.   (1)

4.6   4.6.1   C √   allantois √   (2)
    4.6.2   F √   placenta √   (2)
    4.6.3   B √   chorion/embryonic sac √   (2)

[35]

TOTAL SECTION B: 105
GRAND TOTAL: 150