



# basic education

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Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## **SENIOR CERTIFICATE EXAMINATIONS**

**AGRICULTURAL SCIENCES P1**

**2018**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 10 pages.**

**SECTION A****QUESTION 1:**

1.1	1.1.1	B ✓✓	(10 x 2)	(20)
	1.1.2	B ✓✓		
	1.1.3	C ✓✓		
	1.1.4	C ✓✓		
	1.1.5	A ✓✓		
	1.1.6	C ✓✓		
	1.1.7	D ✓✓		
	1.1.8	D ✓✓		
	1.1.9	A ✓✓		
	1.1.10	B ✓✓		
1.2	1.2.1	Both A and B ✓✓	(5 x 2)	(10)
	1.2.2	None ✓✓		
	1.2.3	B only ✓✓		
	1.2.4	B only ✓✓		
	1.2.5	A only ✓✓		
1.3	1.3.1	Fodder/feed flow ✓✓	(5 x 2)	(10)
	1.3.2	Mastitis ✓✓		
	1.3.3	Cryptorchidism ✓✓		
	1.3.4	Mesoderm ✓✓		
	1.3.5	Corpus luteum ✓✓		
1.4	1.4.1	Ether/crude fat ✓	(5 x 1)	(5)
	1.4.2	Foot and mouth disease/FMD ✓		
	1.4.3	Endometrium ✓		
	1.4.4	Dystocia ✓		
	1.4.5	Placenta/allanto-chorion/umbilical cord ✓		
<b>TOTAL SECTION A:</b>			<b>45</b>	

**SECTION B****QUESTION 2: ANIMAL NUTRITION****2.1 The alimentary canal of a farm animal****2.1.1 Identification of parts**

- A** Ventriculus/gizzard/muscular stomach ✓ (1)  
**D** Cloaca/vent ✓ (1)  
**F** Crop ✓ (1)

**2.1.2 Importance of part**

- B** Stores/releases bile ✓ (1)  
**E** Releases digestive juices/enzymes for digestion ✓ (1)

**2.1.3 Definition of chemical digestion**

- Process where complex food particles are broken down to simpler substances ✓
- through the series of chemicals/enzymes/juices ✓ (2)

**2.2 Processes involved in the movement of food through the digestive tract****2.2.1 Identification of the processes labelled**

- C** Absorption ✓ (1)  
**D** Assimilation ✓ (1)  
**E** Excretion/egestion/defaecation ✓ (1)

**2.2.2 Indication of the letter of process**

- (a) **C** ✓ (1)  
(b) **B** ✓ (1)

**2.2.3 The enzyme responsible for the digestion of food in A**

- Salivary amylase/ptyalin ✓ (1)

**2.3 Mixture of TWO feeds (Pearson Square)****2.3.1 Indication of the parts**

- (a) Maize meal: 31 parts ✓ (1)  
(b) Soya beans: 2 parts ✓ (1)

**2.3.2 Justification of the answers**

- (a) Lesser DP/DP of 11%/more of it is needed to give the required protein/carbohydrate rich ✓ (1)  
(b) Higher DP/DP of 44%/less of it is needed to give the required protein/protein rich ✓ (1)

**2.3.3 Calculation of the quantity of maize meal (in kg) in a 285kg mix**

- $\frac{31}{33} \times 285 \checkmark = 267,72/268\text{kg} \checkmark$   
**OR**  
 $\frac{31}{33} \times 100 \checkmark = \frac{93,94}{100} \times 285 = 267,72/268\text{kg} \checkmark$  (2)

**2.4 Fodder flow****2.4.1 Calculation of the total feed supply (in ton) during the year**

450 000 kg + 216 000 kg ✓  
 = 666 000 kg ÷ 1000 ✓  
 = 666 tons ✓

(3)

**2.4.2 TWO problems of the feed flow programme**

- Deficit/shortage/too little feed during the dry months ✓
- Calving period coincide with the dry period ✓
- Supplementary feeding is too costly/R756 000 ✓ (Any 2)

(2)

**2.4.3 ONE precautionary measure a farmer needs to take**

- Make provision for the dry months from the excess feed during the rainy season/storage/making hay ✓
- Reduce the numbers of animals/culling/selling ✓
- Change calving to the rainy season ✓ (Any 1)

(1)

**2.5 Mineral/vitamin responsible for deficiency symptoms**

2.5.1 Zinc/Zn ✓

(1)

2.5.2 Phosphorus/P ✓

(1)

2.5.3 Vitamin K ✓

(1)

2.5.4 Vitamin A/retinol ✓

(1)

**2.6 Feed components of a ration****2.6.1 Indication of the type of the animal**

Ruminant/cattle/sheep/goat ✓

(1)

**2.6.2 TWO reasons to support the answer**

- Can consume feed high in crude fibre/roughage(Lucerne and oats hay) ✓
- Molasses is utilised to activate the rumen micro-organisms ✓
- Can utilize NPN/urea ✓ (Any 2)

(2)

**2.6.3 Identification of the concentrate in the ration**

Maize meal ✓

(1)

**2.6.4 TWO reasons of including molasses in this ration**

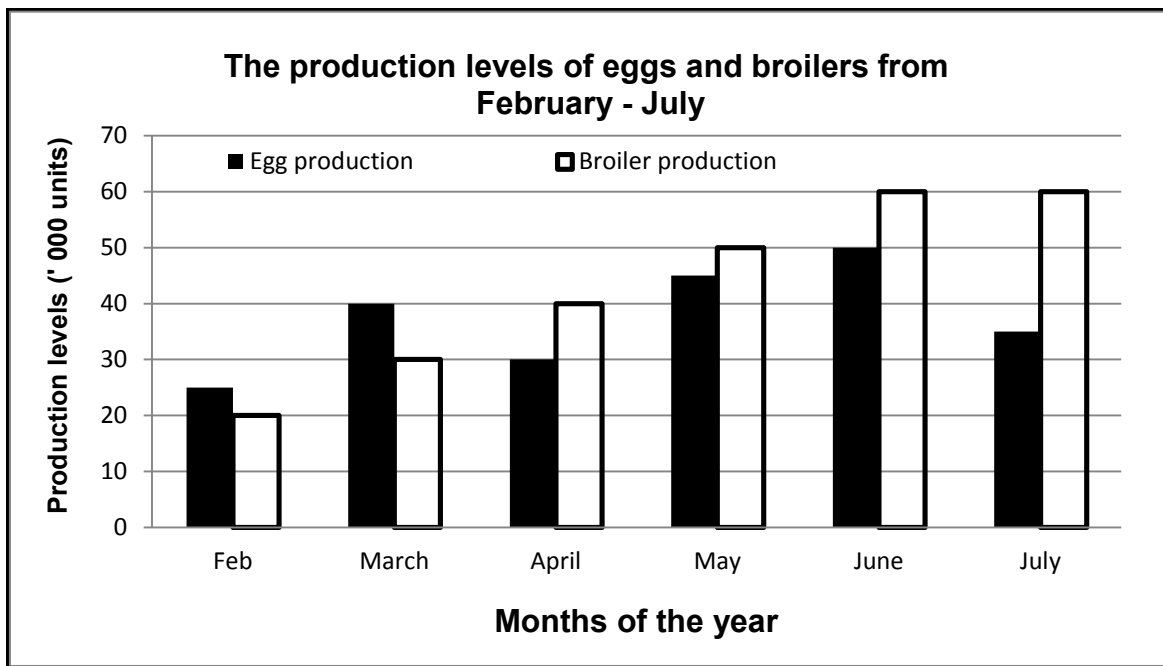
- Improves the palatability/digestibility of roughages ✓
- Molasses is utilised to activate the rumen micro-organisms/provide energy ✓
- Binds the ration together/reduce dust/wastage of a ration ✓ (Any 2)

(2)

**[35]**

3.1 **Production levels of a poultry farm on certain months of the year**

3.1.1 Bar graph on egg and broiler production from February to July



**Criteria/rubric/marketing guidelines**

- Correct heading ✓
  - X-axis: Correctly calibrated with label (Months of the year) ✓
  - Y-axis: Correctly calibrated with label (Production levels) ✓
  - Correct unit ('000) ✓
  - Bar graph ✓
  - Accuracy ✓
- (6)

3.1.2 **The trend in broiler production from February to August**

- Production from February increases/more/better until ✓
  - June/July/August when production stabilised/constant ✓
- (2)

3.2 **Production systems**

3.2.1 **Identification of production systems**

- A** Extensive production system ✓ (1)
- B** Intensive production/feedlotting system ✓ (1)

3.2.2 **Comparison of the two systems on the basis of**

- (a) **Capital investment**
  - System A:** Less capital investment ✓ (1)
  - System B:** More capital investment ✓ (1)
- (b) **Area of land in relation to production output**
  - System A:** More land occupied but relatively less production ✓ (1)
  - System B:** Less land but very high production ✓ (1)

**3.3 Naming of the structures**

- 3.3.1 Battery cages/deep litter house ✓ (1)
- 3.3.2 Farrowing pen ✓ (1)
- 3.3.3 Holding pen ✓ (1)

**3.4 Various stages of the life cycle of a parasite**

- 3.4.1 **Identification of the type of parasite**  
External/ecto-parasite ✓ (1)
- 3.4.2 **Classification of the type of parasite according to the life cycle**  
Three-host parasite ✓ (1)
- 3.4.3 **Letters representing the stages in the life cycle of the parasite**
- (a) B ✓ (1)
  - (b) D ✓ (1)
  - (c) E ✓ (1)
- 3.4.4 **TWO detrimental effects this parasite has on livestock**
- Damage the skin/teats/genitals ✓
  - Lowering the resistance/decreased immunity of the host ✓
  - Anaemia as a result of blood sucked from the host ✓
  - Transmission of diseases ✓
  - Death ✓
  - General deterioration/reduced production/reproduction/  
weight loss/retarded growth ✓
  - Irritation ✓
  - Paralysis ✓ (Any 2) (2)

**3.5. Diseases in animals**

- A** Virus ✓ (1)
- B** Anthrax ✓ (1)
- C** Cattle/sheep/goat ✓ (1)
- D** Heartwater ✓ (1)
- E** Fungus/fungal ✓ (1)

**3.6 Salt poisoning in livestock**

- 3.6.1 **Identification of the poisoning**  
Salt poisoning ✓ (1)
- 3.6.2 **TWO preventative measures**
- Enough/sufficient salt/not too much/avoid salt contaminated  
water ✓
  - Supply enough/clean/fresh drinking water ✓ (2)

**3.6.3 ONE symptom of salt poisoning in farm animals**

- Excessive salivation ✓
- Staggering/dragging the hind legs/wobbling/circling/blindness/seizures/partially paralysed ✓
- Red/dry mucus membranes of the mouth ✓
- Increased urination/defecation ✓
- Increases thirst ✓
- Vomiting ✓
- Constipation ✓
- Hypersensitivity to touch ✓
- Aggressiveness ✓
- Abdominal pain/diarrhoea ✓
- Inflammation of the stomach and small intestine ✓ (Any 1) (1)

**3.6.4 TWO possible measures to treat salt poisoning**

- Remove the source/salt ✓
  - Provide smaller quantities of clean/fresh drinking water at shorter intervals ✓
  - Treat animals with isotonic saline solution/hypertonic dextrose ✓ (Any 2) (2)
- [35]**

**QUESTION 4: ANIMAL REPRODUCTION****4.1 Reproductive system of a cow**

- 4.1.1 A ✓ (1)
- 4.1.2 B ✓ (1)
- 4.1.3 D ✓ (1)

**4.2 Hormones****4.2.1 Naming parts**

- A** Mature Graafian follicle ✓ (1)
- C** Ovum/egg/female reproductive cell/gamete ✓ (1)

**4.2.2 Indication of hormone**

- (a) Follicle stimulating hormone/FSH ✓ (1)
- (b) Progesterone ✓ (1)

**4.2.3 The function of infundibulum**

It captures(picks up) the ova/channel ova into the fallopian tube ✓ (1)

**4.3 Embryo transplantation****4.3.1 Identification of the process**

Embryo transplantation/transfer/ET ✓ (1)

**4.3.2 TWO advantages of ET to farmers**

- Fast/cost effective way to increase genetic improvement ✓
- Extend the reproductive life of older/unproductive cows ✓
- Offspring from superior animals are multiplied/higher calving percentage ✓
- Genetic material in the herd is conserved ✓
- Genetic material can be transported internationally ✓
- Can improve the medical properties of products ✓
- Produce animals with improved resistance towards diseases ✓
- Prevent the extinction of valuable and endangered animals ✓
- Profits from increased sales of quality genes/products ✓
- A planned breeding programme can be implemented ✓ (Any 2) (2)

**4.3.3 The term referring to the cow that is**

- (a) Donor cow ✓ (1)
- (b) Recipient/surrogate cow ✓ (1)

**4.4 Artificial Insemination (AI)****4.4.1 TWO characteristics of good quality semen**

- Viability/mobility/motility/80% mobility/less than 15% dead sperm cells ✓
- Colour/opaque/milky white ✓
- Volume ✓
- Odour ✓
- pH between 6,4 - 6,9/slightly acidic pH ✓
- Percentage of sperm cells with defects/morphology/less than 20% deformation/fewer deformities ✓
- Concentration ✓
- No blood in semen ✓ (Any 2) (2)

**4.4.2 Functions of the dilutants of semen**

- (a) Provides energy for sperm cells ✓ (1)
- (b) Protects sperm cells against temperature changes/damage from freezing ✓ (1)
- (c) Protects sperm cells against bacterial growth/infections ✓ (1)



**4.4.3 TWO disadvantages of AI**

- Labour intensive procedure ✓
- Time consuming ✓
- Incompetent operator can harm/damage cows ✓
- Diseases can spread quickly/easily ✓
- Genetic abnormalities can spread quickly/easily ✓
- Heat detection is difficult under extensive farming conditions ✓
- Expensive in terms of storage/testing ✓
- Not always successful/improper handling can decrease conception rate ✓
- Inbreeding may occur ✓
- Genetic variability is reduced ✓
- High levels of management is needed ✓
- Expert knowledge is required ✓

(Any 2) (2)

**4.4.4 TWO congenital defects in bulls**

- Cryptorchidism ✓
- Hermaphroditism ✓
- Hypoplasia ✓
- Sperm defects ✓

(Any 2) (2)

**4.5 The membrane layers around the embryo****4.5.1 Identification of the membranes**

- A** Allantois ✓
- D** Chorion ✓

(1)

(1)

**4.5.2 TWO functions of the fluid in B**

- Protects the embryo against shock/injuries ✓
- Protects the embryo against temperature changes ✓
- Protection from the attachment to other tissues ✓
- Prevent dehydration/desiccation ✓
- Lubrication of the birth canal ✓

(Any 2) (2)

**4.5.3 The role of membrane D**

Connects the foetus to the uterine wall/attachment/forms placenta ✓

(1)

**4.5.4 The last stage of pregnancy**

Foetal stage ✓

(1)

**4.6 The milk production of a dairy cow****4.6.1 Identification of the process illustrated above**

Lactation ✓

(1)

**4.6.2 Indication of the time (in weeks) when the following occurred**

(a) Week 44 ✓

(1)

(b) Week 0 ✓

(1)

(c) Week 4 ✓

(1)

**4.6.3 THREE factors influencing the quantity of milk produced during the peak production**

- Nutrition ✓
- Climatic/environmental conditions/housing/shelter ✓
- Individuality ✓
- Breed ✓
- Age of the cow ✓
- Number of times a cow is milked during the day ✓
- Health status ✓

(Any 3)

(3)  
**[35]****TOTAL SECTION B: 105**  
**GRAND TOTAL: 150**