

Study & Master

Support Pack | Grade 12

CAPS

Module 6 Units 2 – 5

Agricultural Sciences

Animal diseases and protection

This support pack for the **Animal diseases and protection** module in the **Agricultural Sciences Grade 12 CAPS curriculum** provides valuable revision activities. All activities have the answers provided. Learners can work through these individually at home or these could form the basis of a catch-up class or online lesson. You have permission to print or photocopy this document or distribute it electronically via email or WhatsApp.

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Module 6 – Animal diseases and protection

Unit 2 Animal diseases

Short questions

1. Various possible answers are provided for the following questions. Write only the correct letter (A–D) next to the question number.
 - 1.1 In which ONE of the following animal species are foot-and-mouth disease symptoms common?
 - A horses
 - B poultry
 - C cattle
 - D dogs
 - 1.2 The disease in farm animals that leads to aggressive behaviour, frequent bellowing, excessive salivation and paralysis of the hindquarters is
 - A anthrax
 - B bird flu
 - C bluetongue
 - D rabies
 - 1.3 The most effective way to control viral diseases in farm animals is to use as a preventative measure.
 - A antibiotics
 - B dosing
 - C dipping
 - D vaccination
 - 1.4 bacteria secrete toxins that cause diseases in animals.
 - A Symbiotic
 - B Pathogenic
 - C Mutualistic
 - D Zoonotic
 - 1.5 The purpose of vaccination is to
 - A prevent parasites
 - B prevent diseases
 - C treat diseases
 - D control parasites5 × 2 (10)
2. Supply ONE word/term for each of the following descriptions. Write only the word/term next to the question number.
 - 2.1 A preventative measure whereby sick animals with contagious diseases are kept away from the herd to prevent the spread of diseases
 - 2.2 Medication injected into an animal to control bacterial infections
 - 2.3 The type of organism responsible for transmitting viral diseases such as bluetongue in sheep
 - 2.4 The type of micro-organism that causes foot-and-mouth disease in cattle
 - 2.5 Pathogens that mainly cause mild diseases in animals that are easily treated with antiseptic medication on affected areas5 × 2 (10)

3. In the table below a description and TWO possible answers are given. Decide whether the description in column B relates to A only, B only, both A and B or neither A nor B of the answers in column A.

| Column A | | | Column B |
|----------|---|---------------------------|---|
| 3.1 | A | Foot-and-mouth disease | A disease characterised by blisters that are more or less round and later develop sores on the mucous membranes of the mouth and tongue |
| | B | Rift Valley fever | |
| 3.2 | A | Cattle, sheep and poultry | Three main types of livestock affected by foot-and-mouth disease |
| | B | Goats, sheep and pigs | |
| 3.3 | A | Tick fever | A disease that occurs commonly in areas where ticks occur such as the bushveld region |
| | B | Redwater | |
| 3.4 | A | Heartwater | An infected animal with this disease has red-coloured urine |
| | B | Redwater | |
| 3.5 | A | Infected and immune | An area is contaminated with the disease with the effect that animals will easily contract the disease |
| | B | Infected and susceptible | |

5 × 2 (10)

Longer questions

4. Read the following extract and then answer the questions that follow.

Rift Valley fever (RVF) is a disease that severely affected most farmers in the Free State due to high rainfall between January and February 2010. The pathogen is transmitted by mosquitoes amongst the herds of livestock. According to the Free State Red Meat Producers Organisation (RPO) the outbreak meets the criteria to be classified as an epidemic.

Thirty-eight farms were confirmed infected and affected, nearly 100 000 animals in the province were potentially infected whilst 23 000 animals were confirmed as affected. Farmers were warned to limit the movement of animals and dip them regularly with super methionine-based substances against mosquitoes. Human beings can be infected through the handling of meat, blood and organs of infected animals as well as by drinking milk of the infected animals.

Adapted from *Farmer's Weekly*, 9 April 2010

- 4.1 Name the type of micro-organism that causes Rift Valley fever. (1)
- 4.2 Identify the specific vector that carries this pathogen. (1)
- 4.3 Rift Valley fever can be classified as an epidemic disease. Justify your answer by giving TWO reasons that support this statement. (2)
- 4.4 State TWO measures that farmers can apply to prevent further outbreaks of this disease. (2)
- 4.5 Mites are closely related to ticks, but are much smaller and most cannot be seen with the naked eye. Mites are found on less hairy parts of the bodies of cattle, sheep, goats, pigs and horses.
- 4.5.1 Give a reason from the above statement to prove that mites are external parasites. (1)
- 4.5.2 Identify TWO non-ruminants in the extract that are affected by mites. (2)
- 4.5.3 Mites cause a proclaimed disease called mange. Explain a characteristic of this disease and name TWO responsibilities of the farmer in this regard. (3)

Unit 3 Internal parasites (endoparasites)

Short questions

1. Various possible answers are provided for the following questions. Write only the correct letter (A–D) next to the question number.
- 1.1 Parasites in the alimentary canals of farm animals that are responsible for a shortage of red blood cells are
- A blowflies
- B mites
- C ticks
- D roundworms

- 1.2 have indirect life cycles.
- A Tapeworms and liver flukes
 - B Roundworms and liver flukes
 - C Roundworms and tapeworms
 - D Tapeworms, roundworms and liver flukes
- 1.3 Tapeworms are transmitted to sheep by means of a/an host.
- A intermediate parasitic mite
 - B intermediate non-parasitic mite
 - C final parasitic mite
 - D final non-parasitic mite
- 1.4 The eggs of liver flukes are passed out via the into the faeces.
- A bile
 - B blood
 - C urine
 - D enzymes
- 1.5 The segments of the bodies of tapeworms, known as, are sacs filled with eggs.
- A scolex
 - B suckers
 - C proglottids
 - D cysts

5 × 2 (10)

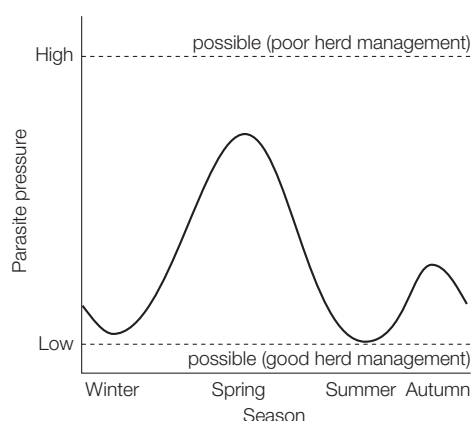
2. In the table below a description and TWO possible answers are given. Decide whether the description in column B relates to A only, B only, both A and B or neither A nor B of the answers in column A.

| Column A | | | Column B |
|----------|---|--------------------|--|
| 2.1 | A | Watery diarrhoea | Visible symptoms that cattle suffer from roundworm infestation |
| | B | Bottle jaw | |
| 2.2 | A | Anthelmintics | Medications administered to farm animals for deworming |
| | B | Vermicides | |
| 2.3 | A | Rotational grazing | Prevention of parasite infestation by keeping cattle on land where they do not have access to any vegetation |
| | B | Zero grazing | |
| 2.4 | A | Dung beetles | Biological control measures against internal parasites in farm animals |
| | B | Anthelmintics | |
| 2.5 | A | Nasal bot | Internal parasites that live in the alimentary canals of farm animals |
| | B | Sheep ked | |

5 × 2 (10)

Longer questions

3. The graph below indicates the seasonal trends in the occurrence of parasites that vary with regard to season and management. Answer the questions that follow.



- 3.1 Identify the season with the highest parasite infestation. (1)
- 3.2 Supply a reason for the high parasite pressure during the season mentioned in 3.1. (1)
- 3.3 State TWO good herd management practices that may lead to less parasite pressure. (2)
- 3.4 Suggest a way of diagnosing parasite infestations. (1)
- 3.5 State THREE economic impacts of internal parasites. (3)
- 3.6 Identify TWO biological control measures of internal parasites. (2)

Unit 4 External parasites (ectoparasites)

Short questions

1. Various possible answers are provided for the following questions. Write only the correct letter (A–D) next to the question number.
- 1.1 Which ONE of the following is incorrect with regard to the life cycle of a one-host tick?
- A The egg hatches into a six-legged larva.
 - B The larva moults into an eight-legged nymph.
 - C The larva and nymph live on an intermediate host.
 - D The nymph moults into an eight-legged adult.
- 1.2 Which combination of the following descriptions best describes external parasites?
- i) They live on the skin surface of the host.
 - ii) Ticks may damage the skin.
 - iii) These parasites may also secrete toxins.
 - iv) Liver fluke infests animals through an intermediate host when these animals graze on wet areas.
- A (i), (ii) and (iii)
 - B (i), (ii) and (iv)
 - C (ii), (iii) and (iv)
 - D (i), (iii) and (iv)
- 1.3 The life cycle of the single-host tick follows the following pattern of metamorphosis:
- A adult – eggs – nymphs – larvae
 - B adult – nymphs – eggs – larvae
 - C adult – eggs – larvae – nymphs
 - D adult – larvae – eggs – nymphs
- 1.4 are chemicals used to control ticks and mites.
- A Anthelmintics
 - B Vermicides
 - C Antibiotics
 - D Acaricides
- 1.5 The stage in the life cycle of the nasal worm enters the nasal cavity, moves up into the sinus cavity, feeds on the secretions, moults several times and is eventually sneezed out.
- A pupal
 - B larval
 - C adult
 - D nymph
- 5 × 2 (10)

2. In the table below a description and TWO possible answers are given. Decide whether the description in column B relates to A only, B only, both A and B or neither A nor B of the answers in column A.

| Column A | | | Column B |
|----------|---|-----------------|---|
| 2.1 | A | Abscesses | Symptoms of external parasite infestation in farm animals |
| | B | Skin damage | |
| 2.2 | A | Mange | Proclaimed disease caused by an external parasite such as the mite |
| | B | Dermatitis | |
| 2.3 | A | Lice | Insect attacking the wet tail areas of sheep where they lay eggs, the larvae breed out and cause severe skin damage |
| | B | Blowfly | |
| 2.4 | A | Fleece rot | This condition in merino sheep makes them very susceptible to attacks by blowflies |
| | B | Blowfly strike | |
| 2.5 | A | Red-legged tick | One-host tick that transmits diseases such as redwater and anaplasmosis to farm animals |
| | B | Bont tick | |

5 × 2 (10)

Longer questions

3. Study the medicine leaflet below and then answer the questions that follow.



DRASTIC Deadline[®] extreme

THE RESISTANCE BREAKER

What is resistance?

- The ability of the tick to resist the effect of the chemical active used against it
- Resistance is genetically inheritable

How does resistance develop?

- Repeated use of a specific chemical
- Insufficient strength of a dip mixture
- Genetic mutations of the parasite




Not seeing it, does NOT mean it is not there!

- **March/April - Critical**, more adult ticks are treated so that fewer, eggs are viable in the upcoming season,
- **September/October - Critical**, more larvae and nymph stages are treated and are prevented from reaching the adult stage,
- **December/January - Additional, optional** treatment for areas with extreme tick activity.



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- 3.1 Briefly explain how the described tick-control measure works. (4)
- 3.2 Suggest TWO measures that farmers can put in place to prevent ticks from developing resistance to the acaricide. (2)

- 3.3 State TWO ways in which animal breeders and cattle farmers can deal with tick resistance that is genetically inherited. (2)
- 3.4 Identify the critical stage of the life cycle of ticks where the eggs are viable. (1)
- 3.5 Name TWO ways of controlling this pest in grazing camps (2)
4. The passage below deals with the infestation of bont ticks in livestock.

The tick challenge in livestock

Ticks play an important role as transmitters of diseases in animals, the type of which depends on the species of tick in question. Diseases such as redwater, gall sickness and heartwater are all acquired via tick bite and subsequent injection of the parasite that enters the bloodstream and causes the disease in the host animal. Production losses occur as a result of such tick-borne diseases by way of underperformance or

even death of the infested animals.

Ticks with long mouth parts often create an opening in the skin of an animal that allows for the introduction of bacteria to deeper layers beneath the skin. This results in a loss of tail tips or ear lobes in cattle. In the eastern coastal regions of southern Africa, the bont tick challenge has led to a loss of teat function in cows as a result of mastitis and abscesses in the udder.

Source: Agricultural Sciences Paper 1, November 2012,
Department of Basic Education

- 4.1 Referring to the extract, supply TWO reasons why ticks are the most economically significant parasite in livestock farming. (2)
- 4.2 Classify the bont tick according to its life cycle and give a reason to support your answer. (2)
- 4.3 Give a possible reason for a serious bont tick outbreak in the coastal region. (1)
- 4.4 Many fly species are also external parasites that bite and suck blood from their hosts. Name a fly species that attacks open wounds and tick bites in wool sheep breeds. (1)
- 4.5 Name TWO biological methods of controlling ticks. (2)

Unit 5 Animal poisoning

Short questions

1. Various possible answers are provided for the following questions. Write only the correct letter (A–D) next to the question number.
- 1.1 Which ONE of the following is incorrect with regard to poisonous plants.
- A Overgrazing may cause plant poisoning in animals, forcing them to consume toxic plants.
 - B Hunger and drought will not drive animals to eat toxic plants.
 - C Exotic animals are more susceptible to poisonous plants.
 - D Fodder, containing poisonous plants, fed to animals may cause plant poisoning.
- 1.2 Which ONE of the following is not a nervous symptom caused by plant poisoning?
- A restlessness
 - B muscle tremors
 - C star-gazing
 - D nasal discharge
- 1.3 Excessive intake of sodium chloride leads to poisoning in farm animals.
- A urea
 - B salt
 - C ammonia
 - D lead

- 1.4 Excessive amounts of in the blood of animals can lead to urea poisoning.
- A copper
 - B salt
 - C ammonia
 - D lead
- 1.5 Which combination describes reproductive symptoms caused by plant poisoning?
- i) Difficult parturition
 - ii) Poorly developed udder
 - iii) Abortions
 - iv) Bloat
- A (i), (iii) and (iv)
 - B (ii), (iii) and (iv)
 - C (i), (ii) and (iv)
 - D (i), (ii) and (iii)

5 × 2 (10)

Longer questions

2. The map below indicates the distribution of *Lantana camara* in South Africa.



- 2.1 What is significant about the location of the provinces of South Africa invaded by the poisonous plant *Lantana camara*? (1)
- 2.2 Supply a reason why this plant is more widely spread in these areas. (1)
- 2.3 Which province is most affected by *Lantana* invasion? (1)
- 2.4 According to this map, which two provinces are not invaded by *Lantana camara*? (2)
- 2.5 Name THREE symptoms of poisoning by *Lantana camara*. (3)
- 2.6 How can *Lantana* poisoning be treated? (4)

Memorandum

Unit 2

Short questions

- | | | | | | |
|--------------------------|-----------------|-------------|-------|-------|------|
| 1.1 C | 1.2 D | 1.3 D | 1.4 B | 1.5 B | (10) |
| 2.1 Isolation/Quarantine | 2.2 Antibiotics | 2.3 Vector | | | |
| 2.4 Virus | 2.5 Fungi | | | | (10) |
| 3.1 A | 3.2 B | 3.3 A and B | 3.4 B | 3.5 B | (10) |

Longer questions

- 4.1 Virus (1)
- 4.2 Mosquito (1)
- 4.3 Reasons for proclaiming an epidemic (any two):
- Widespread occurrence of a disease that spreads rapidly through an area
 - Animals are killed in their thousands
 - Humans can also be affected (2)
- 4.4 Preventative measures for the spread of RVF (any two):
- Limit the movement of animals/quarantine
 - Avoid wet areas
 - Regular dipping of animals with super methionine-based substance against mosquitoes
 - Vaccinations against the disease
 - Avoid handling products of infected animals
 - Notify/report to the relevant authorities (2)
- 4.5.1 Mites are found on the skin or less hairy parts of animals. (1)
- 4.5.2 Horses and pigs (2)
- 4.5.3 Characteristics of proclaimed disease (any one):
- Spreads very rapidly
 - Great losses of skin and wool production
 - Not easily controlled
- Responsibilities of farmer (any two):
- Notify/report immediately to the relevant authorities
 - Adhere to quarantine measures
 - Dip the sheep regularly (at least twice a year) and disinfect pens (3)

Unit 3

Short questions

- 1.1 D 1.2 A 1.3 B 1.4 A 1.5 C (10)
- 2.1 A and B 2.2 A and B 2.3 B 2.4 A 2.5 Neither A nor B (10)

Longer questions

- 3.1 Spring (1)
- 3.2 Reason for high parasite pressure (any one):
- Poor herd management
 - Environmental conditions more favourable for the breeding and multiplication of pests (1)
- 3.3 Good herd management practices (any two):
- Good nutrition
 - Health programme/chemical control/biological control
 - Avoiding wet places
 - Rotational grazing (2)
- 3.4 Diagnosing parasite infestations (any one):
- Faecal egg count
 - Postmortem examination (autopsy)
 - Inspection/observation of animals
 - Blood tests (1)
- 3.5 Economic impacts of internal parasites (any three):
- Stock losses
 - Loss of production or reproduction and illness
 - Degrading of carcasses
 - Danger to human health or other animals' health
 - Increased production cost and loss of income (3)

3.6 Biological control measures of internal parasites (any two):

- Keeping animals in good condition
- Rotational grazing
- Avoiding wet places
- Avoiding keeping animals in infested pens (good hygienic practices)
- Creating an environment for natural enemies
- Releasing fungus tea/natural organic herbs
- Using, selecting or breeding more resistant animals
- Burning of veld or pasture fields
- Sterilisation of pests/Gene modification

(2)

Unit 4

Short questions

1.1 C 1.2 A 1.3 C 1.4 D 1.5 B (10)

2.1 A and B 2.2 A 2.3 B 2.4 A 2.5 Neither A nor B (10)

Longer questions

3.1 Control of ticks in cattle (any four):

- Adult ticks are treated so that fewer eggs are produced.
- Eggs that proceed to the larval and nymph stages are prevented from reaching the adult stage.
- Areas that are highly infested are aggressively treated so there is no chance of genetic inheritance.
- It breaks the resistance to the normal active chemical substance.
- It is a systemic chemical tick-control measure.

(4)

3.2 Measures for prevention of resistance to acaricides (any two):

- Specific chemicals should not be repeatedly used so ticks cannot develop resistance.
- Dip mixtures of sufficient strength should be used.
- Breed genetically modified breeds that are resistant to the ticks.

(2)

3.3 Ways to deal with tick resistance:

- Breed animals that are resistant to the ticks and avoid using miticides.
- Control ticks biologically by using oxpeckers.

(2)

3.4 During March and April

(1)

3.5 Control of pest in grazing camps (any two):

- Burning the veld/pastures
- Dipping the animals regularly
- Resting some camps for long periods

(2)

4.1 Economic significance of ticks (any two):

- Ticks transmit diseases or provide an entry point for pathogens
- Production losses and skin damage
- Underperformance of farm animals
- Loss of teat function, ear lobes, tail tips
- Death of farm animals

(2)

4.2 Three-host tick. Each stage (larva, nymph and adult) in the life cycle is completed on a separate host. (It has two intermediate hosts and one final host.)

(2)

4.3 Humid and favourable climatic conditions

(1)

4.4 Blowfly

(1)

4.5 Biological control measures for ticks (any two):

- Use of herbs that discourage ticks
- Use of natural enemies/predators such as the oxpecker
- Breeding resistant and adaptable animals

(2)

Unit 5

Short questions

1.1 B 1.2 D 1.3 B 1.4 C 1.5 D (10)

Longer questions

2.1 Mostly coastal provinces (1)

2.2 These are wetter, more humid regions (favourable to the growth of the plant) (1)

2.3 KwaZulu-Natal (1)

2.4 Northern Cape and Free State (2)

2.5 Symptoms of *Lantana camara* poisoning (any three):

- Anorexia
- Severe depression
- Photosensitivity
- Jaundice
- Loss of appetite
- Ruminal stasis
- Diarrhoea (3)

2.6 Treatment of *Lantana* poisoning:

- Remove animals to *Lantana*-free areas.
- Give intravenous fluids and encourage animals to eat.
- Treat skin damage with antibiotics and sunscreens.
- Drenching with activated charcoal. (4)