



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES

QUALIFICATION: BACHELOR OF AGRICULTURE	
QUALIFICATION CODE: 07BAGR	LEVEL: 7
COURSE CODE: ANH620S	COURSE NAME: ANIMAL HEALTH
SESSION: NOVEMBER 2019	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	PROF. T. WASSENAAR
MODERATOR:	DR. A. SAMKANGE

INSTRUCTIONS
<ol style="list-style-type: none">1. Answer ALL the questions.2. Write clearly and neatly.3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. All written work MUST be done in blue or black ink
2. No books, notes and other additional aids are allowed

THIS QUESTION PAPER CONSISTS OF 3 PAGES (excluding this front page)

Question 1	Immunity and vaccinations, causes of disease, their transmission and spread	36 marks
1.1	(i) What are antibodies? (1 mark) (ii) Which cells produce antibodies? (1 mark) (iii) How do antibodies protect the body against pathogens (name three mechanisms)? (3 marks)	5 marks
1.2	a) Explain the concept of herd immunity. (2 marks) b) Why is it important? (1 mark)	3 marks
1.3	Discuss how the immune response works: a) Tell the story of how it functions – there are 8 aspects to this (8 marks) b) Pay particular attention to how the non-specific and specific immune systems differ from each other (which components belong to which system) (2 marks), and c) ...how they are related to each other, or to put it in another way: how do they let each other know that there is a pathogen that needs to be attacked. (2 marks) Use drawings to illustrate the process and components.	12 marks
1.4	Discuss the various non-infectious causes of disease. Include an example of a disease caused by each factor (where relevant).	8 marks
1.5	(i) Explain the modes of transmission of diseases in farm animals (1 mark each for main division into two kinds, 0.5 marks for each subsequent division). (ii) In your opinion, why is it important to understand the modes of transmission of diseases (2 marks)	8 marks
Question 2.	Notifiable diseases, the law and veterinary services	6 marks
2.1	Discuss the four thematic areas (the four Divisions) that the Directorate of Veterinary Services is responsible for (0.5 mark each). Include a brief description of each division. (0.5 mark each)	4 marks
2.2	Name two of the important legislations that mandates the control of animal health in Namibia.	2 marks

Question 3 Infectious and non-infectious diseases

26 marks

3.1 Below is a table containing some basic information about four infectious diseases, with some missing information numbered a - f. Provide the missing information. 6 marks

Disease	Type of pathogen	Affected species (= "susceptible host")	Most important symptom
Avian Influenza	(a)	(b)	Respiratory symptoms with facial swelling and blue comb
(c)	Bacterium	Cattle	Fast, difficult or noisy breathing, discharges from the nose, shallow coughing especially after exercise, >5% die of respiratory symptoms
Rift Valley fever	(d)	(e)	Fever, abortion storm, sudden death, weakness, vomiting and abdominal pain, discharge from nose (mucus and pus), bloody diarrhoea, haemorrhages in mucous membranes, jaundice
(f)	Virus	Cattle	Necrotic lesions in the mouth and on the muzzle, progressive opacity of the corneas leading to blindness, discharge from eyes and nose

3.2 List two common infectious causes of abortion in sheep 2 marks

3.3 Write short notes on the following: 8 marks
 (i) The "triangle" of causes of mastitis (6 marks)
 (ii) The rationale behind FMD zonings (2 marks)

3.4 Read the example below that deals with rabies, then write sentences that describe the following aspects of the disease **bluetongue**: 4 marks

- The course of the disease (is it peracute, acute or chronic or combinations) (0.5 mark)
- What is the cause (0.5 mark)
- Which organ system is mostly affected (0.5 mark)
- How is it transmitted (0.5 mark)
- Which species are affected (0.5 mark)
- Most important symptoms (0.5 mark)
- Most important pathological signs (0.5 mark)
- How is it controlled (0.5 mark)

Example: Rabies is a viral disease causing an acute encephalitis, it is transmitted mostly through the bite of a predator (dog), it affects all warm-blooded animals, causes behavioural changes or paralysis with no specific post-mortem signs and is chiefly controlled through vaccination.

3.5 Explain the three transmission cycles of the Rift Valley fever virus. Illustrate your answer with a diagram that shows how the different cycles are related to each other. 6 marks

Question 4 Animal Health Management, Animal Welfare 32 marks

- 4.1 A farmer is complaining that her sheep are aborting. Describe the entire investigative approach you will take in order to arrive at a tentative diagnosis of the cause(s) of abortion in her flock. For each procedure in the investigation, explain why you are asking a specific question or doing a specific examination (10 marks) 10 marks
- 4.2 Name the three basic groups of activities involved in management of animal health and write a short explanatory sentence on each. 6 marks
- 4.3 Name the two principles in the prevention and control of animal disease (2 marks) and give one example each of the ways in which these principles can be applied (2 marks) 4 marks
- 4.4 Explain what you understand under the term “sentience” in animals 4 marks
- 4.5 Discuss the basic principles of the scheduling of drugs used for the treatment of disease conditions in animals 6 marks
- 4.6 (i) Where is the correct place on the body of a cow or goat to apply an intramuscular or subcutaneous injection? 2 marks
(ii) Where on its body should it NOT be injected even though there are sometimes a lot of muscle there?
Make a rough drawing to illustrate your answers.