FACULTY	HEALTH SCIENCES AND VETERINARY MEDICINE		
SCHOOL	VETERINARY MEDICINE		
DEPARTMENT	PARA-CLINICAL STUDIES		
PROGRAMME	VETERINARY MEDICINE		
MODULE	VETERINARY PUBLIC HEALTH I		
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DURATION	**3 hours**	**Marks**	150

First Opportunity Examination Paper

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This memorandum consists of 11 (eleven) pages including this front page

Instructions

Read the questions carefully

Answer all questions

Write clearly and concisely

Hand in this question paper together with the answer booklet

Part 1:

Multiple Choice Questions:

Tick the correct answer [1 (one) or 2 (two) answers might be possible]
1 mark for each correct answer (Total marks 30)

1.	**1. Which pathogen is associated with waterborne disease and is resistant to chlorination?** a.) *Salmonella spp* b.) *Cyclospora spp* c.) *Cryptosporidium spp* d.) Cholera **2. Give the medical term for the zoonotic disease, commonly called "ringworm"?** a.) Dermatophilosis b.) Dermatophytosis c.) Malassezia d.) Chicken pox **3. Which pathogenic organism could lead to abortion in humans?** a.) *Campylobacter jejuni* b.) *Escherichia coli O157:H7* c.) *Listeria monocytogenes* d.) *Toxoplasma gondii* **4. Name the bacteria that can be obtained from undercooked or raw hamburger** *a.) Listeria monocytogenes* *b.) Escherichia coli 0517:H7* *c.) Leptospira interrogans* *d.) Campylobacter jejuni* e.) *Shigella*	30 marks

5. After an outbreak of Salmonellosis, whereas the source of the outbreak was identified, the competent authority should concentrate on:

a.) Integrate hygiene and sanitation in the school curriculum

b.) Temporary closure of all egg production facilities

c.) Awareness and education in the affected community

d.) Prohibition to sell raw eggs and egg products

6. With reference to the HACCP system: The periodical check of the temperature in a chilled storage room by means of a thermometer is falling under the:

a.) Auditing for prerequisites
b.) Monitoring action
c.) Corrective action
d.) Company action
e.) Competent authority check

7. How would you evaluate, during an inspection, the total absence of identified Critical Control Points (CCPs) in a HACCP plan?

a.) Negatively: Food Business Operator doesn't have the process under control.
b.) Positively, if critical limits are properly identified and managed.
c.) Positively, if there are evidences that all possible hazards are properly managed by the pre-requisite programmes.
d.) Negatively: HACCP must include CCPs.
e.) The Food Business operator can decide if or if not he/she will use CCPs.
f.) Evaluation of CCPs are not part of an inspection.

8. In the European Union (EU) legislation, food safety systems or HACCP based systems with equivalent results are:

a.) Prepared by the Competent Authority (CA) together with HACCP team in the establishment
b.) Required by law (based on import EU regulations)
c.) On voluntary basis
d.) Approved by the Competent Authority
e.) Developed by the company and implemented by the Competent Authority
f.) Recommended by the Competent Authority

9. How can evidence be collected during an audit?

a) Just with direct observation
b) Through documentary review and managment meeting reports in different ways: direct observation, interview with workers, documents and records analysis and measurements
c) Only workers and supervisor interviews are relevant
d) During an audit it is not necessary to collect evidence
e) Microbiological and residue results comparison

10. What shall be done if, during the assessment, deviations which may have serious consequences on the safety of the product are observed?

a.) Adoption of immediate corrective measures shall be requested.
b.) A written notification shall be delivered to the Food business operator within 15 days.
c.) Nothing, it is up to the Food buisiness operatorto decide if and how to adopt corrective action.
d.) The product will get destroyed.
e.) Product samples will be taken and results will determine what steps will be taken.

11. Which of the following can cause food contamination because of neglected biological hazards control in pre-requisite program?

a.) Dust
b.) Earring
c.) Live insects
d.) Perfume
e.) Hair

12. Which zoonotic food-borne agent is not commonly linked to Ready-To-Eat food?

a.) *Campylobacter jejuni*
b.) *Escherichia coli* O157:H7
c.) *Listeria monocytogenes*
d.) *Brucella melitensis*
e.) *Salmonella enteritidis*

13. Several reasons make bush meat to be a world wide concern, which ones of the concerns below are not related to bush meat:

a.) Trade in bush meat is of conservation concern when it is unregulated and uncontrolled

b.) Trade in bush meat is of conservation concern when it is regulated.

c.) When over-harvesting results in various associated environmental impacts.

d.) Trade in bush meat is used for subsistence and meeting basic food needs.

e.) Bush meat trade is often for the purpose of supplying prosperous city-dwellers with expensive status foods.

14. A main complication for zoonotic Listeriosis is?

a.) Chronic reactive artritis

b.) Hemolitic uremic syndrome

c.) Meningitis

d.) Crohn's disease

e.) Guillain Barre syndrome

15. In a slaughter house, the knife sterilisers must be available for cleaning and sanitation purposes; therefore, the sterilizer water must have a minimum temperature of?

a.) 42^0C

b.) 100^0C

c.) 62^0C

d.) 82^0C

e.) Above 132^0C

16. The most important limiting criteria for the maximum daily slaughtering throughput in an abattoir are?

a.) The slaughterline, the chiller/freezer capacity

b.) The size of the premises

c.) The slaughterline speed/hourly throughput

d.) The number of workers

e.) All of the above

17. What is a Critical Control Point (CCP)?

a.) Each non-conformance detected during auditing activity.

b.) A procedure, a step, an operational phase that if not controlled properly can lead to an unacceptable risk.

c.) A target value.

d.) A point which is critical but possible to control.

e.) A point which indicates a microbiological sample point.

18. The causative agent of Neurocysticercosis is

a.) *Ancylostoma caninum*

b.) Cysticercus suis

c.) Toxocara suis

d.) Cysticercus cellulosae

19. A cattle truck has arrived at an export abattoir. During offloading, one of the animals is unable to stand and remains lying in the truck. How should this animal be handled?

a.) It must be dragged out and slaughtered at the end of the slaughter day.

b.) A prodder must be used to get it out of the truck.

c.) It must be brought to the slaughter floor and slaughtered immediately.

d.) It must be shot/killed on the spot.

e.) The animal will be sent back to the farm of origin.

20. Define the term "disinfection" in the context of food safety.

a.) The main objective of a cleaning programme is to control microbial activity; an adequate cleaning programme will eliminate nearly all the soil present.

b.) To destroy or irreversibly inactivate specified infectious fungi and bacteria, but not necessarily their spores, on hard surfaces through the use of chemicals, heat or ultraviolet rays

c.) To reduce microorganisms of public health importance to levels considered safe, based on established parameters, without adversely affecting either the quality of the product or its safety

d.) It is vital to product wholesomeness and an essential foundation for HACCP systems

21. What does the word "insanitary" mean in the Food Safety context?

a.) A state or occurrence which may lead to the avoidable contamination of edible food products when they are exposed, processed, handled, stored or packaged.
b.) Any edible food products produced, packed, or held under required conditions where they may have become contaminated with filth or may have been rendered injurious to health.
c.) An avoidable occurrence which causes contamination of edible food products.
d.) A state, condition, or occurrence which may lead to the contamination or adulteration of edible food products when they are exposed, processed, handled, stored, or packaged.

22. Which one of these cestode species does <u>not</u> have zoonotic potential?

a.) *Taenia multiceps*
b.) *Taenia saginata*
c.) *Taenia serialis*
d.) *Taenia solium*
e.) *Taenia ovis*

23. Select the *Salmonella* strain that is restricted to animals <u>ONLY</u>

a.) S. enteriditis, S. paratyphi, S. dublin

b.) S. gallinarum, S. enteriditis, S. dublin

c.) S. paratyphi, S. dublin, S. choleraesuis

d.) *S. pullorum, S. dublin, S. choleraesuis*

24. Which ones of the following principles are NOT part of the seven principles of HACCP?

a.) Conduct hazard analysis

b.) Identify the HACCP team

c.) Identify critical control points

d.) Identify critical limits

e.) Implement pre-requisite programmes

	25. Why do we pasteurize milk? a.) To remove the milk fat b.) For destruction/reduction of pathogenic micro-organisms and spoilage bacteria c.) For change of taste d.) For reduction of sugar e.) To increase the shelf-life f.) For increasing the protein content	

Part 2: True/False questions:

If the answer is false, provide the correct information.

Questions with false answers are awarded 3 marks, whereas those with true answers are awarded 1 mark. Total (20 marks).

If the false answer is not rectified or corrected, a 0 (zero) mark will be granted.

2.1	*Trichinella spiralis* is a parasite in pigs, which might be detected during meat inspection.	True	False
2.2	The term "condemned product" means the product has passed the veterinary inspection and is declared fit for human consumption	True	False
2.3	Anthrax, Plague, *Erysipelas* and Lyme disease are zoonotic and cause lesions on the skin.	True	False
2.4	Control measure/point ⟨food safety⟩ is an action or activity that can be used to prevent or eliminate a food safety hazard or reduce it to an acceptable level	True	False
2.5	The Ministry of Agriculture, Water and Land Reform (MAWLR) is recognized as the competent authority for food processing export facilities, responsible for the certification of plants, animals and animal products and they are the custodian for food safety in Namibia	True	False
2.6	A carcass, including all body parts is conditionally passed and must undergo freezing treatment when, during postmortem inspection if excessive *Cysticercus bovis* cysts are observed.	True	False
2.7	Food chain means series of processes involved in the production, processing, distribution, storage, and handling of an animal from primary production to consumption	True	False

2.8	The main responsibilities of a state veterinarian at an abattoir are ante-mortem, post-mortem, certification based on the respective export requirements and verification of the Food Safety system of the company.	True	False
2.9	The hand washbasins in a food processing establishment must be outside the processing area and be supplied with warm water running not less than 60^0C	True	False
2.10	Waste water from an abattoir which slaughters cattle and sheep, containing blood and ingesta can be used for irrigation of fruit trees and vegetable fields.	True	False

Part 3: Short and long answer questions (100 marks)

3.1	**The UN Sustainable Development Goals requiring simultaneous progress in a variety of dimensions, the so called "pillars". The One Health concept as a link between safety, health, environment and sustainable development is built on certain pillars.** **Elaborate on the development of the original One Health pillars and the additions thereof.**	8 marks
3.2	**It is the function and responsibility of the food processing company to implement an approved food-safety system and to validate the effectiveness of this system on a continuous basis. It is the responsibility of the official Veterinarian to verify that an approved food-safety system is indeed in place and that the pre-requisite programs (PRP) and associated monitoring systems reflect the accurate representation of the system and procedures implemented at the establishment.** **Elaborate why the PRPs are the foundation of any food safety system (6 marks)**	6 marks
3.3	**The HACCP analysis is used to reduce food safety risks during production.** **a.) Explain the difference between a critical Point (CP) and a Critical Control Point (CCP) in a hazard analysis and how they can be analysed. (8 marks)** **b.) Using the HACCP analysis: determining the Hazard significance of a metal fragment in red meat. (8 marks)**	16 marks
3.4	**Transmission of foodborne pathogens occurs via the oral route. How those pathogens contaminate milk and milk products can vary based on the organism, its reservoir, food handling/processing, and cross-contamination**	10 marks

	prior to serving. Contamination by foodborne pathogens can occur at several points along the milk production chain. **a.) Explain the most important points where contamination might occur along the milk production chain. (6 marks)** **b.) A dairy farmer wants to sell raw milk to a milk plant and is looking for information on the possible risks of bacteriological zoonotic diseases. As a veterinarian, you need to give him/her the most common bacterial pathogens. List four (4) organisms at genus or species level that may be present in raw milk. (4 marks)**	
3.5	**a.) Name and define in detail, the inspections which should be performed by a veterinary public health official (Veterinarian) at an abattoir to guarantee that meat is safe for human consumption (9 marks)**	9 marks
3.6	**Food Safety of Products of animal origin applying the HACCP based principles provides direction on the obligations and responsibilities of the Food Business Operator and the Veterinarian with regards to the implementation and maintenance of a HACCP system in food business establishments.** **a.) Give the definition of HACCP and the basic requirements that are necessary to develop a fully functioning Food Safety system. (15 marks)** **b.) Illustrate in the form of a diagram the main components of a food safety system within a quality management programme. (4 marks)**	19 marks

3.7	**Definition of a flow diagram for a beef slaughterhouse: a schematic and systematic presentation of the sequence and interactions of steps of the food production process for a beef slaughter facility.** **Draw a flow diagram of the different process steps in the dirty and clean areas respectively, including ante and post mortem inspection points (17 marks)**	17 marks
3.8	**Microbiological testing at specific points in the food chain is an important tool for verifying a risk-based approach in a modern food safety system. Two criteria for microbiological performance should be included in a complete food safety system to guarantee that the produced product is safe for the consumer.** **a.) Name the two criteria (2 marks)**	7 marks

	b.) What is the difference between these criteria (5 marks)	
3.9	**Define and explain the difference between food safety and food quality. Give an example of each. (8 marks)**	8 marks
	END OF EXAMINATION PAPER	