UNIVERSITY OF NAMIBIA

FACULTY	HEALTH SCIENCES AND VETERINARY MEDICINE		
SCHOOL	VETERINARY MEDICINE		
DEPARTMENT	PARACLINICAL VETERINARY STUDIES		
PROGRAMME	BACHELOR OF VETERINARY MEDICINE		
MODULE	INFECTIOUS DISEASES I		
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DURATION	**3 HOURS**	**MARKS**	150

FIRST OPPORTUNITY EXAMINATION

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External Moderator: Prof. Ngonda Saasa

This paper consists of nine **(9)** pages including this front page.
Additional materials to be supplied: **None**

Instructions

Read the questions carefully

This Paper consists of Section A, B, C, D and E. Students should answer all questions from Section A to D and choose one question from Section E.

Hand in this question paper together with the answer booklet

SECTION A: MULTIPLE CHOICE QUESTIONS. **[20 marks, 1 mark each]**

Choose the correct answer.

1. The fungus that causes valley fever, fibromatous lesions in respiratory tract and bones is:
   a. *Aspergillus niger*
   b. *Bordetella bronchiseptica*
   c. *Coccidioides immitis*
   d. *Candida albicans*

2. The most commonly encountered pathogenic salmonella in all species is:
   a. *S. paratyphi*
   b. *S. enteritidis*
   c. *S. typhi*
   d. *S. typhimurium*

3. The common risk factor in the causation of dermatophilosis in sheep is:
   a. Tick infestation
   b. Shearing
   c. Rainfall
   d. All the above

4. In dermatophilosis of sheep, skin lesions lead to the characteristic appearance of _____?
   a. Paint brush
   b. Nodular lesions
   c. Pallisade
   d. Vesicular lesions

5. The aetiologic agent of Fowl typhoid is:
   a. *Salmonella paratyphi*
   b. *Salmonella enteritidis*
   c. *Salmonella gallinarum*
   d. *S. typhimurium*

6. Which of the following statements is false about the epidemiology of *Actinobacillus seminis* infections in sheep?
   a. Mainly a problem of young virgin rams on high plane of nutrition
   b. Venereal transmission by clinically and sub-clinically infected rams for long periods
   c. Ewes infected by the rams can become carriers and source of infection for other rams
   d. Vertical transmission does not occur.

7. Anthrax is septicemic in the following species:
   a. Cattle, sheep and wild ungulates
   b. Pigs
   c. Horses
   d. Humans

8. The mode of transmission of brucellosis is the following except:
   a. Contact trough skin and mucous membranes
   b. Ingestion of contaminated food and water
   c. Natural service with infected bulls
   d. All the above routes

9. By which ONE of the following methods does *Bacillus anthracis* survive between hosts?
   a. As a dried vegetative cell
   b. In soil as a spore
   c. In water
   d. In semen

10. Enzootic pneumonia in pigs is caused by:
   a. *Mycoplasma hyopneumoniae*
   b. *Mycoplasma mycoides*
   c. *Actinobacillus pleuropneumoniae*
   d. *Haemophilus influenza*

11. Bacillary white diarrhea in chicks is caused by:
   a. *Salmonella gallinarum*
   b. *Salmonella arizonae*
   c. *Salmonella pullorum*
   d. *Salmonella enteritidis*

12. Which bacterial pathogen causes contagious caprine pleuropneumonia in goats?
   a. *Mycoplasma mycoides*
   b. *Brucella melitensis*
   c. *Coxiella burnetiid*
   d. *Chlamydia psittaci*

13. What is the primary mode of transmission of Rhodococcus equi in foals?
   a. Direct contact with infected horses
   b. Ingestion of contaminated water
   c. Inhalation of contaminated dust
   d. Transmission through insect vectors

14. What is a characteristic lesion found in the lungs of cattle affected by Contagious Bovine Pleuropneumonia (CBPP)?
   a. Multifocal liver abscesses
   b. Caseous necrosis in lymph nodes
   c. Fibrinous pleuropneumonia
   d. Necrotizing enterocolitis

15. Which bacterial pathogen is associated with contagious ovine foot rot?
    a. *Treponema pallidum*
    b. *Fusobacterium necrophorum*
    c. *Actinobacillus pleuropneumoniae*
    d. *Mannheimia haemolytica*

16. Which pathogen is most commonly associated with calf diphtheria?
    a. *Fusobacterium necrophorum*
    b. *Trueperella pyogenes*
    c. *Mycoplasma bovis*
    d. *Histophilus somni*

17. Which of the following conditions is caused by *Clostridium chauvoei* in cattle?
    a. Blackleg
    b. Tetanus
    c. Botulism
    d. Malignant edema

18. Which of the following diseases is characterized by sudden death in cattle and is caused by *clostridium septicum*?
    a. Blackleg
    b. Tetanus
    c. Malignant edema
    d. Enterotoxaemia

19. The establishment of infection with *Dermatophilus congolensis* appears to depend on:
    a. Virulence of the strain
    b. General health of the animal
    c. Skin trauma and moisture
    d. All of the above

20. The current cause of food poisoning worldwide is:
    a. *E. coli*
    b. *S. enteriditis*
    c. *C. perfringens* type A
    d. *Y. enterocolitica*

SECTION B: TRUE/FALSE AND FILL IN QUESTIONS **[20 marks]**

Question 1. [10]

Indicate whether the statement is TRUE or FALSE.

a. *Listeria monocytogenes* is a gram-negative rod that primarily causes respiratory disease in ruminants.

b. *Erysipelothrix rhusiopathiae* is a gram-positive, non-motile bacillus.

c. Nocardiosis commonly causes pyogranulomatous lesions.

d. Dermatophilosis has an effective commercial vaccine.

e. Antitoxins only come from exotoxins.

f. Natural infections with *Actinobacillus lignieresii* occur in livestock and domesticated game and are characterized by infections containing granulous pus affecting the soft tissue in the body.

g. *Bacillus anthracis* is a Gram-positive, spore forming facultative anaerobic rod-shaped bacterium.

h. The causative agents of Sleepy foal sickness in horses are *A equuli. A pleuropneumoniae, A suis and A lignieresii.*

i. *Arcanobacterium pyogenes* is also associated with pharyngitis and mastitis in cattle.

j. Mycobacterial infections are difficult to treat.

Question 2. FILL /COMPLETE THE FOLLOWING SENTENCES **[10 marks]**

a. Under the American CDC (Centre for Disease Control and Prevention) there are two species of *Salmonella* namely *S. enterica* and ..... [1]

b. ..... the leading cause of greasy pig disease. [1]

c. In the infected body *Staphylococcus aureus* can be found in/on the ....., *Mycobacterium* can be found in the ....., while *Clostridium perfringens* is found in the ..... [3]

d. ..... causes Lumpy Jaw/Osteomyelitis in cattle. [1]

e. Fill in the four main *Brucella* species that cause disease in animals hosts below. Write all in full [4]

Cattle.....

Goats and sheep.....

Pigs .....

Dogs.....

SECTION C: SHORT ANSWER QUESTIONS **[30 marks]**

Question 1: List any four (4) stress factors that may activate latent or subclinical salmonellosis. [4]

Question 2: List any five (5) differential diagnoses of Haemorrhagic septicemia. [5]

Question 3: List five (5) morphological and/or characteristic features of *Clostridium* bacteria. (Include correct drawings for an extra mark.) [5]

Question 4: State three key characteristics used to identify *Clostridium* species. [3]

Question 5. Name three (3) adverse effects of infectious bovine keratoconjunctivitis in cattle? [3]

Question 6. Explain the concept "bastard strangles". [2]

Question 7. Name the three exotoxins of *Bacillus anthracis* . [3]

Question 8. Differentiate between a true pathogen and an opportunistic pathogen. [2]

Question 9. Define CBPP according to the World Organisation for Animal Health (WOAH/OIE) and mention the main susceptible animal? [3]

SECTION D: STRUCTURED QUESTIONS **[67 marks]**

Question 1. Answer the following questions about Yersinia. **[8]**

a. List the three pathogenic species of *Yesinia* [3]

b. Name two reservoirs of *Y. pestis* in Africa. [2]

c. List the two epidemic types of *Yersinia pestis.* [2]

d. Which domestic animal is most likely to be affected by *Yersinia pestis*? [1]

Question 2. **[10]**

a. Describe any three (3) virulence factors of *Actinobacillus pleuropneumonia.* [3]

b. List any three (3) post-mortem lesions associated with porcine pleuropneumonia caused by *A. pleuropneumonia*? [3]

c. Describe four methods used to control porcine pleuropneumonia. [4]

Question 3. **[10]**

a. What are the prevention strategies and methods you will institute in a dairy farm with outbreaks of footrot in the herd? [7]

b. Broadly discuss the control and prevention of mycotoxicosis. [3]

Question 4. **[5]**

Discuss the treatment and prevention methods that can be used to control an outbreak of infectious bovine keratoconjunctivitis. [5]

Question 5. **[10]**

a. Name the Dermatophyte species that commonly cause ringworm in: [3]

i. cattle
ii. dogs and cats
iii. poultry

b. Name the most common forms of avian aspergillosis. [2]

c. Discuss the transmission of glanders in animals [5]

Question 6. **[14]**

Case Scenario:

A farmer reports that several of his goats have suddenly developed severe respiratory distress. Many of the affected animals die within a few days. The goats were recently grazing with other goats on communal grazing land in the Northern Communal Areas (NCAs) , Upon clinical examination, affected goats show high fever (41–42°C), coughing, nasal discharge, painful breathing, open-mouth breathing, and reluctance to move. Some animals are standing with extended necks and abducted elbows to ease breathing. Upon post-mortem examination, you observe severe lung consolidation.

I. What is the most likely diagnosis? [1]

II. What is the causative agent of this disease at the subspecies level? [1]

III. Mention 2 possible economic impacts either to the farmer or directly affecting the goat. [2]

IV. How did the disease likely spread to the farmer's goats (transmission)? [1]

V. What other 3 diseases would you suspect (differential diagnosis)? [3]

VI. List 2 samples you would collect, and for each sample state the test you would ask the central veterinary laboratory to perform to obtain a definitive diagnosis. [2]

VII. List 2 other chronic changes that may occur visible at post-mortem. [2]

VIII. Suggest two control measures the farmer should implement to prevent further spread. [2]

Question 7. **[10]**

a. If there is a number of pathognomonic signs of the acute form of contagious bovine pleuropneumonia, the signs of the chronic form of the disease are less obvious and might be missed. Describe the signs of the chronic form. [5]

b. State the main differential diagnoses of anthrax in ruminants. [5]

SECTION E. ANSWER ONE OF THE TWO FOLLOWING QUESTIONS. **[13 marks]**

Question 1. **[8]**

a. A 3-month-old puppy (figure 1) is brought to the UNAM vet hospital with circular, patchy hair loss and mild inflammation on its face and legs. The owner reports the lesions have been slowly spreading and that a family member has developed a similar rash.



Figure 1: 3-year-old puppy brought to the UNAM vet hospital.

I. Based on the history and presentation, what is the most likely fungal condition (disease) affecting the puppy? [1]

II. Name the causative agents of this condition in **(I)** [1]

III. Mention the two major differential diagnoses for this puppy's condition? [2]

IV. Outline any two (2) diagnostic approaches for confirming this condition, and for each, briefly explain/state expected positive results. [4]

b. List any five (5) infectious causes of post-weaning diarrhoea in pigs. [5]

OR

Question 2. **[13]**

A veterinary officer is called to a commercial dairy farm containing **120 Holstein-Frisian cows**. The owner reports a subtle but persistent drop in overall herd milk yield over the past 4 months. One **5-year-old high-yielding cow** has progressive, severe weight loss (emaciation) despite a normal appetite. When the cow was culled the classic gross pathological lesion observed during post-mortem meat inspection where the circumscribed, yellowish-white, firm lumps containing a cheesy (**caseous**), necrotic center in the mediastinal and bronchial lymph nodes as seen in the picture below.



I. Based on the history and presentation what is your diagnosis and give a detailed definition of the disease? and name the causative agent? [6]

II. Name the two screening tests used to confirm this disease in live cattle? [2]

III. Name five (5) differential diagnosis of the disease you mentioned in (I)? [5]

END OF EXAMINATION PAPER