UNIVERSITY OF NAMIBIA

FACULTY	HEALTH SCIENCES AND VETERINARY MEDICINE		
SCHOOL	VETERINARY MEDICINE		
DEPARTMENT	PARACLINICAL		
PROGRAMME	VETERINARY MEDICINE		
MODULE	VETERINARY MICROBIOLOGY II		
MODULE CODE	V3611EM		
DATE	June 2025		
DURATION	**3 HOURS**	**MARKS**	**150**

SECOND OPPORTUNITY EXAMINATION

Examiners: Prof. C. Ntahonshikira, Prof. K Siegfried & Dr L Mwense
Internal Moderator: Dr. F. Chitate
External Moderator: Prof. Giovannni Franzo

This **Paper** consists of **six (6)** pages including this front page.

Instructions

Answer all questions
Write clearly and concisely
Hand in this question paper together with the answer booklet
Additional material to be supplied: None

SECTION A: MULTIPLE CHOICE QUESTIONS [15 marks]

Choose the correct answer **[15 marks, @1 mark]**

1. Stain useful in the evaluation of fungal organisms
    a. Lactophenol cotton blue
    b. Methylene blue
    c. Crystal violet
    d. Giemsa stain
2. Positive tube coagulase test is a property of all the following species of *Staphylococcus*, except:
    a. S. aureus
    b. S. hyicus
    c. S. intermedius
    d. S. Lugdunensis
3. Gram-stain morphology of *Bacillus anthracis* is:
    a. Jennis racket appearance
    b. Drumstick appearance
    c. Bamboo stick appearance
    d. Spectacle glass appearance
4. Rhizoids are root like structures in fungus produced by
    a. Rhizopus
    b. Mucor
    c. Absidia
    d. All
5. Among the following which is coagulase producing organism?
    a. Streptococcus
    b. *Enterococcus*
    c. Staphylococcus
    d. Micrococcus
6. The word ending for a family in bacterial classification is:
    a. ales
    b. oid
    c. eles
    d. caea
7. Plasmids that contain genes that code for antibiotic resistance have:
    a. Colicinogenic factors
    b. Fertility factor
    c. Resistance factor
    d. None
8. The bacteria require low level of oxygen for growth is known as:
    a. Aerobes
    b. Anaerobes
    c. Microaerophiles
    d. Obligate anaerobes

9. What is an example of an intracellular pathogen?
    a. *Streptococcus pyogenes*
    b. *Mycobacterium tuberculosis*
    c. *Staphylococcus aureus*
    d. *Vibrio cholerae*
10. Which of the following is NOT a chemical method of microbial control?
    a. Phenolics
    b. Radiation
    c. Alcohols
    d. Halogens
11. Which of the following is NOT a function of virulence factors?
    a. Evading the immune response
    b. Promoting bacterial survival
    c. Increasing host immune function
    d. Facilitating colonization
12. What is the role of hemolysins in bacterial infections?
    a. Destroy white blood cells
    b. Break down red blood cells
    c. Form antibiotic-resistant spores
    d. Inhibit bacterial adhesion
13. Which of the following is the most effective method for sterilization?
    a. Boiling water
    b. Alcohol-based sanitizers
    c. Autoclaving
    d. UV light
14. A structural component that is found in all viruses is:
    a. The envelope
    b. Spikes
    c. Capsid
    d. Tail fibres
15. A type of cell culture that can reproduce for an extended number of generations and is used to support viral replication is a:
    a. Primary cell culture
    b. Continuous cell line
    c. Embryonated egg
    d. Diploid fibroblast cell

SECTION B: TRUE/FALSE QUESTIONS AND FILL IN/COMPLETE SENTENCES **[30 marks]**

I. STATE IF THE FOLLOWING STATEMENTS ARE TRUE OR FALSE. WHERE FALSE, GIVE THE CORRECT STATEMENT **[15 marks, @ 1 mark]**

1. Fungi can be photosynthetic.
2. Infectious disease is the same thing as communicable disease.
3. Leptospires have two periplasmic flagella and they are non motile.
4. A single fungus can produce different mycotoxins.
5. Antibiotics are effective against mycotoxicosis.
6. When observed under the microscope, *Bacillus anthracis* rods have round ends.
7. Fungi are a main cause of animal infections.
8. In case of *Bacillus anthracis*, the sporulation is enhanced by anerobic conditions.

II. FILL IN/COMPLETE THE FOLLOWING SENTENCES. **[15 marks, @ 1 mark]**

1. Corticosteroids are sometimes used with ..... to reduce excessive ..... while ..... eliminate bacteria.
2. .....immunity is nonspecific against organisms while ..... immunity is long lasting.
3. *Mucor* is distinguished from other members of Phycomycetes by .....
4. In Streptococci chain formation is due to the cocci dividing in ..... plane
5. Selective medium for *Clostridium* perfringens is .....
6. Pathogenic leptospira are referred to as ....., while saprophytic leptospira are also known as .....
7. Selective medium for *Staphylococcus aureus* is ..... and colonies of *S. aureus* have a ..... on this medium.
8. The two types of *Cl. tetani* toxins are ..... and .....
9. Pseudoglanders or Melioidosis is caused by .....

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

QUESTION 1. Give three (3) main diseases caused by *Clostridium* species. [3]

QUESTION 2. Colonies of *Bacillus anthracis* on blood agar have an appearance of a ..... or ..... or..... Under microscope the streptobacilli have a ..... appearance. [4]

QUESTION 3. *Clostridium tetani* produced a bulging/deforming ..... spore that gives it an appearance of ..... when observed under microscope. [2]

QUESTION 4. What is the natural habitat of *Vibrio* and *Plesiomonas* species and in which species do they usually cause diseases? [2]

QUESTION 5. Give 3 key steps that may break infection propagation/progression. [3]

QUESTION 6. Give any 3 different ways of creating anaerobic conditions for bacterial culture. [3]

QUESTION 7. Name the main genera of fungi which cause dermatomycosis. [3]

QUESTION 8. Name four (4) genera belonging to spirochetes. [4]

QUESTION 9. Give six (6) selective media used for fungal culture. [4]

QUESTION 10. In terms of pathogenicity, fungi can cause 2 types of diseases. Name them. [2]

SECTION C: STRUCTURED QUESTIONS **[75 MARKS]**

QUESTION 1. **[10]**

a. Give five (5) key points of the genus *Corynebacterium.* [5]
b. List 5 types of disease transmission by vectors [5]

QUESTION 2. **[10]**

a. Explain the different ways bacteria evade the host immune system and how these factors contribute to their pathogenicity. [5]

QUESTION 3. Give the disease caused by: **[10]**

i. *Staphylococcus hyicus*
ii. *Bacillus larvae*
iii. *S. equi* and *S. equisimilis*
iv. *Dermatophilus congolensis*
v. *Rhodococcus equi*
vi. *Brachyspira hyodysenteriae*
vii. *Borrelia burgdorferi*
viii. *Burkholderiapseudomallei*
ix. *Microsporum canis (in dogs and cats)*
x. Histoplasma capsulatum

QUESTION 4. [10]

a. Name the staining techniques used in the diagnosis of fungal infections [5]

b. Outline the prevention of mycotoxicosis [5]

QUESTION 5. **[10]**

a. Name five (5) different types of mycotoxins [5]

b. List inappropriate antimicrobial uses in medical practice (veterinary/human) leading to antimicrobial resistance [5]

QUESTION 6. **[20]**

a. Why is laboratory diagnosis important in viral infections? [5]

b. How is *Actinobacillus* transmitted and what diseases are associated with *Actinobacillus* species? Name two *Actinobacillus* species and the disease they cause. [6]

c. What are the virulence factors of *Actinobacillus*? [4]

d. How do viruses replicate inside host cells? [4]

QUESTION 7. Name five (5) types of cytopathic effects (CPE) observed in virus-infected cells? **[5]**

END OF PAPER