

THE NATIONAL UNIVERSITY OF LESOTHO

FACULTY OF AGRICULTURE

DEPARTMENT OF ANIMAL SCIENCE

SECOND SEMESTER SUPPLEMENTARY EXAMINATION

B.Sc. AGRICULTURE (ANIMAL SCIENCE)

ANS 2507: MICROBIOLOGY AND PARASITOLOGY

TIME: 3 HOURS

AUGUST, 2023

MARKS: 100

Instructions

1. Answer all the questions
2. Number your answers correctly
3. Begin every question on a new page

Question 1

(a) Differentiate between the following terms as used in microbiology and parasitology:

- (i) Sporangiospores and Zoospores [2]
- (ii) Capsid and capsule [2]
- (iii) Innate and adaptive immunity [2]
- (iv) Prokaryotic and eukaryotic cells. [3]

(b) *Campylobacter jejuni* is streptococcus bacteria that are capable of growing up to 1.0 μm . Briefly explain how these bacterial species could reach this size under favourable condition if they were initially 0.5 μm . [8]

(c) Explain why bacterial cells have higher growth and metabolism rate. [3]

Question 2

(a) Justify why under favourable environmental conditions and suitable growth, a spore germinate to become a vegetative cell again. [7]

(b) Write short notes on the following terms:

- (i) Rhizoid [3]
- (ii) Icosahedral [3]
- (iii) Algae [3]

(c) Briefly discuss synthesis of energy in an animal cell. [4]

Question 3

(a) Discuss why fungi are classified as microorganisms of economic importance. [6]

(b) Clearly show how fungi cause infection through specialized somatic structure. [4]

(c) Using detailed diagrams differentiate between fragmentation and fission as vegetative reproduction methods in fungus. [10]

Question 4

- (a) Explain ways by which microorganisms develop resistance to broad spectrum drugs. [3]
- (b) Outline positive impacts of narrow spectrum antibiotics. [3]
- (c) Indicate why gastrointestinal and mucous membranes are regarded as the most effective host defense mechanisms in animal's body. [8]
- (d) Discuss how the following virulence factors enhance the ability of microorganisms to cause infection on animals.
 - (i) Adherence [2]
 - (ii) Anti-phagocytic [2]
 - (iii) Production of exotoxins [2]

Question 5

- (a) Sheep and goats grazing on moist environmental conditions are likely to be exposed to internal parasites infections. Justify how wetlands pose internal parasitism threats to sheep and goats. [7]
- (b) Discuss how human beings attain cycticercosis. [7]
- (c) Explain the life cycle of *Rhipicephalus (Boophilus) decoloratus*. [6]