CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DIPLOMA IN HUMAN NUTRITION AND DIETETICS

HNDS 0122: INTRODUCTION TO MICROBIOLOGY

STREAMS: Y1S2 **TIME: 2 HOURS**

DAY/DATE:

INSTRUCTIONS:

- Answer **ALL** questions
- Do not write anything on the question paper
- No reference materials are allowed in the examination room
- **No** use of mobile phones or any other unauthorized materials
- Write your answers legibly and use your time wisely

SECTION A: MULTIPLE CHOICE QUESTIONS (15 MARKS)

1. From which of the following are Antibodies obtained?
   a. Bacteria
   b. Viruses
   c. Angiosperms
   d. Gymnosperms
2. Which of these bacterial components is least likely to contain useful antigens?
   a. Cell wall
   b. Flagella
   c. Ribosomes
   d. Capsule
3. Which of the following is NOT considered a microorganism?
   a. Virus
   b. Protozoa
   c. Fungi
   d. Mosquito
4. Which of the following pioneers of microbiology is credited with the discovery of microorganisms using quality magnifying lenses?
   a. Leeuwenhoek
   b. Semmelweis
   c. Hooke
   d. Koch
5. Which of the following is NOT true of viruses?

   a. Replicated only when inside host cells
   b. Too small to be seen in a light microscope
   c. All cause human disease
   d. Acellular
6. All bacteria:
   a. Lack nuclei
   b. Lack a cell structure
   c. Cause disease
   d. Absorb nutrients
7. The gram stain:
   a. Will differentiate bacterial cells based on chemical differences in their cell walls
   b. Requires acid alcohol as decolorizer
   c. Requires the use of steam heat while staining the cells on the slide
   d. Can be used to determine if a bacterial cell is capable of photosynthesis
8. Which one of the following allows bacterial cell motility?
   a. Cilia
   b. Plasmid
   c. Flagella
   d. Capsule
9. What do bacteria, algae, viruses, protozoa, and fungi all have in common?
   a. Are too small to study with the unaided eye
   b. Absorb nutrients
   c. Are decomposers
   d. Have nuclei
10. Which of the following is mismatched?
   a. Vibrio - comma-shape
   b. Coccobacilli - intermediate between round and rod
   c. Coccus - round
   d. Bacillus - flexible and wavy
11. The average diameter of prokaryotic cells is:
   a. 10-100 μm
   b. 1.0 to 2.0 μm
   c. 10 to 50 nm
   d. 0.1-5 μm
12. What is the purpose of the condenser on a light microscope?
   a. Allows viewer to change light intensity
   b. Concentrates the light beams on the specimen
   c. Focuses the image magnified by the objective lens
   d. Magnifies the microscope slide
13. Which of the following is a correct usage of binomial nomenclature?
   a. Homo Sapiens
   b. *homo sapiens*
   c. *Homo sapiens*
   d. *Homo Sapiens*
14. Who of the following discovered penicillin?
   a. Alexander Fleming
   b. Selman Waksman

c. Gerhardt Domagk
d. Louis Pasteur

15. Which of the following is a prokaryotic microorganism?
a. Helminth
b. Protozoan
c. Cyanobacterium
d. Mold

SECTION B: SHORT ANSWER QUESTIONS (25 MARKS)

1. Using illustrations, explain how Pasteur's swan-neck flask experiment shows that the concept of spontaneous generation was invalid. (5 marks)
2. Discuss the differences between prokaryotes and eukaryotes (5 marks)
3. Explain Robert Koch postulates for linking specific microorganisms to specific diseases (4 marks)
4. Outline the different types of light microscopes used in Microbiology (4 marks)
5. Differentiate between the following (4 marks)
   (i) Phototrophs and Chemotrophs
   (ii) Genotype and phenotype
6. Identify the three major processes through which carbohydrates are broken down to release energy (3 marks)

SECTION C: LONG ANSWER QUESTIONS (30 MARKS)

1. Elaborate on the taxonomy of living things (15 marks)
2. Describe the characteristics, reproduction, classification, mode of life and significance of Fungi (15 marks)