
CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF BIOMEDICAL SCIENCE AND TECHNOLOGY

BMET 222: MICROBIAL PHYSIOLOGY AND GENETICS

STREAMS:

TIME: 2 HOURS

DAY/DATE: FRIDAY 12/04/2019

11. 30 A.M – 1.30 P.M

INSTRUCTIONS

- **Answer question one (compulsory) and any other two questions**
- **Sketch diagrams may be used whenever they may help to illustrate your answer.**
- **Do not write anything on the question paper**
- **This is a closed book exam. No reference materials are allowed in the examination room**
- **There will be no use of mobile phones or any other unauthorized materials**
- **Write answers legibly and use your time wisely**

QUESTION ONE

- (a) With a use of a suitable diagram, demonstrate a structure of a generalized prokaryotic cell and tabulate their physiological functions. [8 marks]
- (b) Discuss the transfer of gene in bacteria that alter the DNA gene content. [8 marks]
- (c) Discuss drugs resistance as applied in medical microbiology and the specific mechanisms involved in drug resistance development. [8 marks]
- (d) Briefly describe the process of prokaryotic DNA replication. [6 marks]

QUESTION TWO

- (a) With a use of a clear well labeled diagrams, illustrate the difference between the gram negative and gram positive cell wall. Briefly explain the function of a cell wall in the microbial organisms. [8 marks]
- (b) Discuss how bacterial metabolism can positively affect human health. Give example of bacteria involved. [6 marks]
- (c) Certain bacteria have endospores. Giving two examples of some of the bacteria with this special structure, explain the role of endospores in microorganisms. [6 marks]

QUESTION THREE

- (a) Using a suitable diagram, demonstrate and explain the phrase of growth in the bacterial growth curve. [8 marks]
- (b) Discuss the general structure of lipopolysaccharide in bacteria and explain its role in bacteria pathogenicity. [4 marks]
- (c) Discuss some of the major nutrients and physical requirements for bacterial growth. [8 marks]

QUESTION FOUR

- (a) Using a suitable diagram, demonstrate structures of bacteriophage. [4 marks]
 - (b) Using a clear well labeled diagram, illustrate and discuss the formation of a peptidoglycan in bacteria. [8 marks]
 - (c) Briefly explain the arrangement of flagella in bacteria cell. [4 marks]
 - (d) Bacteria cells exists in different shapes, give the structures of the peptidoglycan that determines the shape of a bacteria cell and explain bacteria cell depending on their cell shape. [4 marks]
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