

**UGANDA MARTYRS UNIVERSITY
NKOZI
UNIVERSITY EXAMINATION
FACULTY OF SCIENCE**

SEMESTER II, 2022/ 2023

**THIRD YEAR EXAMINATION FOR BACHELOR OF SCIENCE WITH
EDUCATION**

**BIO 3102: BASIC BACTERIOLOGY, MYCOLOGY AND
VIROLOGY**

DATE: MAY 26, 2023

TIME: 9:30am – 12:30pm

DURATION: 3HRS

Instructions:

- 1. Carefully read through ALL the questions before attempting*
- 2. Answer all questions in section A and any three questions from section B*
- 3. All Questions in section B carry equal marks*
- 4. No names should be written anywhere on the examination booklet.*
- 5. Ensure that your Registration number is indicated on all pages of the examination answer booklet.*
- 6. Ensure your work is clear and readable. Untidy work shall be penalized*
- 7. Any type of examination Malpractice will lead to automatic disqualification*

SECTION A: SHORT ANSWER QUESTIONS (40 MARKS)

Answer all questions in section A. Give short and precise answers to each of the following questions. Write your answers in the answer booklet provided.

1. State the major contributions of Louis Pasteur in the field of microbiology. (03 marks)
2. Describe the Robert Koch's postulation on the proof of the germ theory. (02 marks)
3. State the exception to Koch's postulates. (03 marks)
4. What is meant by the following
 - i) Strain
 - ii) Generation time
 - iii) Antibiotics. (03 marks)
5. Compare a prokaryotic and eukaryotic cells. (03 marks)
6. State the components of the cell wall of the gram negative bacteria. (02 marks)
7. Describe the functions of a capsule in a bacterium. (03 marks)
8. Describe the two types of pili based on function. (02 marks)
9. State the biological importance of spores in fungi. (03 marks)
10. State the factors that influence level of interaction between the virus and its host. (02 marks)
11. Describe mechanisms that are responsible for viral persistence. (03 marks)
12. State the role of plasmids in bacteria. (03 marks)
13. What are the dangers of indiscriminate use of anti-microbial drugs? (03 marks)
14. State the virulence mechanisms applied by parasites for host attack. (03 marks)
15. State the non-specific defense mechanisms of hosts. (02 marks)

SECTION B: ESSAY QUESTIONS (60 MARKS)

Answer only Three questions from this section.

16. a) Describe the factors responsible for fungal pathogenicity. (08 marks)
b) State the factors that predispose a human host to fungal infection. (05 marks)
c) Describe ways of collecting fungal samples from the site of infection. (07 marks)

- b) Explain the effects of interaction between a virus and its host. (05 marks)
- c) Describe a generalized scheme of viral infection leading to disease in a human host. (09 marks)
18. a) Describe the various ways human hosts prevent and respond to infections. (10 marks)
- b) Describe the various ways used in the diagnosis of viral infections. (05 marks)
- c) Explain how viral infections can be prevented and treated. (05 marks)
19. a) Describe the different ways used in classifying bacteria. (10 marks)
- b) Describe the factors influencing bacterial growth in vitro. (10 marks)
20. a) Describe the mechanisms that cause genetic variation in bacteria. (06 marks)
- b) State the mechanism of action of anti-microbial drugs. (10 marks)
- c) Explain how bacteria are able to develop resistance to ant-microbial drugs. (04 marks)

END