



*(University of Choice)*

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS MAIN EXAM  
2019/2020 ACADEMIC YEAR**

**FIRST YEAR SECOND TRIMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
BACHELOR OF CLINICAL MEDICINE/PHYSIOTHERAPY /HEALTH  
PROFESSIONS EDUCATION (DIRECT ENTRY/ UPGRADING)  
(SUPPLEMENTARY/SPECIAL)**

**COURSE CODE:** HCM 235/BSP 127/NUR 100

**COURSE TITLE:** MEDICAL MICROBIOLOGY AND VIROLOGY

**DATE:** Wednesday 25<sup>th</sup> August 2021

**TIME:** 2:00 -5:00PM

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**INSTRUCTIONS TO CANDIDATES**

This paper consists of

- i. Section A: Multiple Choice Questions.
- ii. Section B: Short answer questions
- iii. Section C: Long answer questions

Answer all questions

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

**SECTION A: ANSWER ALL QUESTIONS (20 MARKS)**

1. The scientist who is credited with being the first person to use a microscope for academic study of cells is?
  - A. Anton Von Leeuwenhoek
  - B. Robert Hooke
  - C. Robert Koch
  - D. Edward Jenner
2. Which one of the following is not kingdom based on biological classification by Robert Whitaker?
  - A. Procaryotae
  - B. Eucaryotes.
  - C. Protista
  - D. Eubacteria
3. The principle involved in the streak plate method is?
  - A. Separation
  - B. Streaking
  - C. Isolation
  - D. Dilution
4. The etiologic agent of botulism is a?
  - A. Neurotoxin
  - B. Endotoxin
  - C. Enterotoxin
  - D. All of the above
5. Excluding influenza, which one of the following viruses is a common cause of acute respiratory disease?
  - A. Cytomegalovirus
  - B. Varicella-zoster virus
  - C. Adenovirus
  - D. Papillomavirus
6. Which type of *streptococcus species* is an inhabitant of human oral cavity and causes dental caries
  - A. *Streptococcus pyogenes*
  - B. *Streptococcus agalactiae*
  - C. *Streptococcus mutans*
  - D. *Streptococcus pneumoniae*
7. Conjunctivitis in a newborn is caused by?

- A. *Streptococcus*
  - B. *Pneumococcus*
  - C. *Meningococci*
  - D. *Staphylococcus*
8. *Streptococcus pyogenes* produces all of the following lesions, except?
- A. Impetigo contagiosa
  - B. Erysipelas
9. What is the function of capsid in viruses?
- A. It contains all the necessary information for viral replication in susceptible cells
  - B. Interact with host receptors for entry to cell
  - C. Maturation and release of enveloped virions
  - D. Attachment proteins or spikes in enveloped viruses
10. Building blocks of Nucleic acids are?
- A. Amino acids
  - B. Nucleosides
  - C. Nucleotides
  - D. Nucleo proteins
11. Which one of the following is an icosahedral enveloped virus?
- A. Papilloma virus
  - B. Rubella virus
  - C. Influenza virus.
  - D. Smallpox virus
12. Attenuated, oral poliomyelitis vaccine is?
- A. BCG
  - B. Measles vaccine
  - C. Sabin vaccine
  - D. TAB vaccine
13. Which of the following is a component of a fungi cell wall?
- A. Mannan
  - B. Proteins
  - C. Lipids
  - D. Polysaccharides
14. Which group of fungi do not generally produce sexual reproductive structures and are also sometimes known as imperfect fungi?
- A. Ascomycotina
  - B. Oomycetes
  - C. Zygomycotina
  - D. Deuteromycetes
15. The fungal disease that affect the internal organs and spread through the body are called?
- A. Mycoses
  - B. Systemic mycoses

- C. Mycotoxicosis
  - D. Superficial mycoses
16. Tinea capitis is?
- A. Ring worm of the foot
  - B. Ring worm of scalp
  - C. Ring worm of non-hairy skin of body
  - D. Both a and c
17. Erythromycin inhibits protein synthesis by?
- A. Attaching to 30 S ribosome unit
  - B. Attaching to 50 S unit or ribosome
  - C. By the attachment to t-RNA
  - D. By the attachment to m-RNA
18. Drug resistance to sulphonamides is due to?
- A. Production of PABA
  - B. Folic acid synthetase
  - C. Drug alteration
  - D. Low affinity for drug synthesis by bacteria
19. Which of the following method of sterilization has no effect on spores?
- A. Drying
  - B. Hot air oven
  - C. Autoclave
  - D. None of these
20. Members of the genus *Mycobacterium* produce mycolic acid in their cell wall that form a waxy barrier that:
- A. Is resistant to digestion by phagocytes
  - B. Allow for attachment of the bacteria to epithelial cells of the host
  - C. Converts fibrinogen to fibrin, forming a clot around the bacteria
  - D. Destroys IgA antibodies

**SECTION B: ANSWER ALL (40 MARKS)**

1. Explain streptococcal infections, its diagnosis and control (8 Marks)
2. a) What are bacteriophages?  
 b. Give two examples of:
  - i. Negative stranded RNA viruses
  - ii. Double stranded DNA viruses (8 Marks)
3. Explain the principle of Gram reaction based on the structure of the bacterial cell wall (8 Marks)
4. What are the advantages and disadvantages of attenuated and killed viral vaccines (8 Marks)

5. Explain the four types of functional media used in culturing bacteria (8 marks)

**SECTION C: ANSWER ALL (40 Marks)**

1. a) Discuss the Mechanisms of antimicrobial agents to microorganisms (12 Marks)  
b) Explain the process involved when carrying out of gram staining technique (8 Marks)
2. a) Discuss all the stages involved in viral replication (12 Marks)  
b) Describe any FOUR dimorphic fungi (8 Marks)

