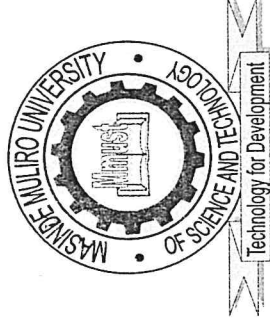


MMUST



(University of Choice)
**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY MAIN EXAMINATIONS
2021/2022 ACADEMIC YEAR**

FIRST YEAR SECOND TRIMESTER EXAMINATIONS

**FOR THE DEGREE
OF**

**BACHELOR OF SCIENCE IN CLINICAL MEDICINE/PHYSIOTHERAPY /HEALTH
PROFESSIONS EDUCATION (DIRECT ENTRY/ UPGRADING)
MAIN EXAM**

COURSE CODE: HCM136/HPE125/HPT 116

COURSE TITLE: MEDICAL MICROBIOLOGY AND PARASITOLOGY

DATE: THURSDAY 21ST APRIL 2022

TIME: 8:00-11:00 AM

INSTRUCTIONS TO CANDIDATES

This paper consists of three sections:

- i. Section A – Multiple Choice Questions
- ii. Section B – Short Answer Question
- iii. Section C – Long Answer Question.

Answer all questions

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating 1

This Paper Consists of 5 Printed Pages. Please Turn Over. ▲

SECTION A: ANSWER ALL QUESTIONS (20 MARKS)

1. Who revealed the DNA structure?
 - A. Alexander Fleming
 - B. Louis Pasteur
 - C. Watson & Crick
 - D. Jonas Salk

2. Which of the following is the best definition of Narrow spectrum Antibiotics?
 - A. Chemicals/drug that inhibit or kill one type or strain of microorganism
 - B. Chemicals/drug that inhibit or kill bacteria
 - C. Chemicals produced by microbes that inhibit or kill other microorganisms
 - D. Chemicals produced by microbes that inhibit or kill other microorganisms but are relatively harmless to eukaryotes

3. Ribosomes are known as universal cell organelle which helps in?
 - A. Protein synthesis
 - B. Motility of the bacteria
 - C. Attachment of bacteria to the host
 - D. Controlling cell activities

4. Which of the following is a killed attenuated virus vaccine?
 - A. Measles Vaccine
 - B. Mumps vaccine
 - C. Rubella vaccine
 - D. Salk vaccine

5. 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

6. What is the mechanism of action of Azoles antifungals?
 - A. Pearmeability of cell membrane
 - B. Interfere with ergosterol synthesis
 - C. Forms a barrier to fungal growth
 - D. Inhibits RNA synthesis

7. Which of the following is Human prion disease
 - A. Creutzfeld-Jacob Disease
 - B. Yellow fever
 - C. Rubella
 - D. Variola

8. The role of bacterial capsules as virulence factors is usually related to their ability to interfere with
 - A. Antibody binding
 - B. B lymphocyte activation

- C. Antibacterial penetration of bacterial cells
D. Phagocytosis
9. Resistance of *Staphylococcus aureus* to methicillin is most often caused by
- alternation of the major target for the drug
 - cell membrane impermeability
 - decreased uptake of the antibiotic
 - Inactivation of autolysins
10. A patient develops explosive, watery diarrhea 24 hours after eating seafood. What bacterium is most likely involved?
- Campylobacter fetus*
 - Salmonella typhimurium*
 - Shigella flexneri*
 - Vibrio parahaemolyticus*
11. Pathogens expelled from the respiratory tract through coughing and sneezing are an example of what mode of infection transmission?
- Direct / indirect contact
 - Droplets
 - Ingestion
 - Inoculation
12. What is the purpose of personal protective equipment?
- To protect the patient from the spread of diseases
 - To protect both the healthcare provider and the patient from being infected with diseases.
 - To protect the healthcare provider from the spread of diseases.
 - To protect equipment from being compromised.
13. A 35-year-old woman presented with a 3-day history of productive cough, breathlessness and rigors. She was treated empirically with intravenous vancomycin. What is the site of action of vancomycin?
- cell membrane integrity
 - DNA synthesis
 - peptidoglycan cross-linking
 - protein synthesis via the 50S ribosomal subunit
14. A 5 year old child presented with a 2 day history of diarrhoea. Two other children in the same class had developed similar symptoms in the same week. An outbreak control team was convened. Investigations Faeces culture *Shigella sonnei* What is the most likely cause of the outbreak?
- a visit to a petting farm
 - eating party cakes
 - eating undercooked chicken nuggets

- D. swimming in contaminated pool water
15. A virus is made up of _____?
A. Protein coat and nucleic acid
B. Protein coat and mitochondria
C. Nucleic acid and cell membrane
D. Nucleic acid, cell wall and cell membrane
16. Which of the following statements are true about the viruses?
A. Free-living
B. Obligate parasites
C. Facultative parasites
D. None of the above
17. Viruses that attack bacteria are called _____?
A. Virophage
B. Lysophage
C. Bacteriophage
D. None of the above
18. Which of the following statements are true about the tobacco mosaic virus (TMV)?
A. RNA virus
B. DNA virus
C. Bacteriophage
D. ss DNA or ds DNA
19. Which of the following is not a category of the method of virus detection?
A. Nucleic acid detection
B. Serology
C. Hematology
D. Multiplication
20. Which of the following is the genome of poliovirus?
A. DsRNA
B. DsDNA
C. SsDNA
D. ssRNA

SECTION B: SHORT ANSWER QUESTIONS: ANSWER ALL QUESTIONS (40 MARKS)

1. Outline the **Koch's postulates** in relation to presence of microorganism and a specific disease (8 Marks)
2. State the factors that are considered to pronounce a vaccine to be good (8 marks)

3. What are opportunistic infections? List two examples of opportunistic infections caused by fungi, the parts of the human body that may be affected, and the name(s) of the etiological agent(s) (8 marks)
4. Explain the antimicrobial action on inhibition of cellular membrane function (8 marks)
5. Explain FOUR types of localized cutaneous staphylococcal infections and the treatment (8 marks)

SECTION C: LONG ANSWER QUESTIONS: ANSWER ALL QUESTIONS (40 MARKS)

1. a. Discuss the Mechanisms of antimicrobial resistance by microorganisms (10 Marks)
b. List five virulence factors of *Streptococcus pyogenes* and state how each one of them assist in the ability of microorganism to cause infection (10marks)
2. a. Some bacteria secrete enzymes that hide the bacteria and allow for deeper penetration into tissue. Discuss five of these Extracellular Enzymes and the role they play in disease progression (10 marks)
b. Describe FIVE colonial characteristics that are used in identification of microorganisms (10marks)