



**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)
UNIVERSITY EXAMINATIONS (MAIN PAPER)
2021/2022 ACADEMIC YEAR**

THIRD YEAR SECOND SEMESTER EXAMINATIONS

**FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN MEDICAL LABORATORY
SCIENCES**

COURSE CODE: BML 326

COURSE TITLE: CLINICAL BACTERIOLOGY

DATE: 28/04/2022 TIME: 12.00 -2.00 PM

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C**, carrying respectively: Multiple Choice Questions (**MCQs**), Short Answer Questions (**SAQs**) and Long Answer Questions (**LAQs**). Answer all questions.

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over

SECTION A: Multiple Choice Questions (20 Marks)

1. Enteric bacteria are mainly classified based on their ability to ferment various sugars including lactose. **Which of the following bacteria is a non-lactose fermenter?**
 - a) *Klebsiella* spp
 - b) *Salmonella* spp
 - c) *Enterobacter* spp
 - d) *Citrobacter* spp

2. Select the correct answer, other than food poisoning what other clinically important types of diseases are caused by *Clostridium perfringens*?
 - a) Gas gangrene
 - b) Impetigo
 - c) Cellulitis
 - d) Toxic shock syndrome

3. Rheumatic fever is most commonly caused by
 - a. *Streptococcus viridans*
 - b. *Streptococcus pyogenes*
 - c. *Staphylococcus aureus*
 - d. None of these

4. The commonest form of anthrax in man is
 - a. Alimentary
 - b. Cutaneous
 - c. Pulmonary
 - d. Hepatic

5. *Salmonella typhi* and *S. paratyphi* are the two major pathogens that cause enteric fever. Which of the following are Not the possible specimen taken for the routine diagnosis of the disease?
 - a. Blood
 - b. Sputum
 - c. Feces
 - d. Urine

6. The mode of spread of tetanus neurotoxin from blood to brain is
 - a. Via lymphatics
 - b. Arterial blood
 - c. Cranial nerves
 - d. None of these

7. Virulence factor for *Streptococcus pneumoniae*:
 - a. Capsular polysaccharide
 - b. Specific soluble substance
 - c. Vi-antigen
 - d. Forssmann antigen

8. *Neisseria gonorrhoeae* causes
 - a. Urethritis
 - b. Conjunctivitis in newborns
 - c. Arthritis
 - d. All of the above

9. Diphtheria is an example of
 - a. Bacteraemia

- b. Pyaemia
 - c. Septicemia
 - d. Toxaemia
10. Virulence in gonococcus is due to
- a. Pili
 - b. Cell membrane
 - c. Its cellular location
 - d. Cyclic enzymes
11. Mantoux test detects
- a. *M. tuberculosis*
 - b. *Cynaobacteria*
 - c. Clostridia
 - d. Both a and b
12. Bacitracin sensitivity test is done for
- a. Pneumococci
 - b. Group 'A' Streptococci
 - c. Gonococci
 - d. Staphylococci
13. In Tuberculosis therapy mainly used antibiotic is
- a. Penicillin
 - b. Streptomycin
 - c. Chloramphenol
 - d. Cycloserine
14. Amoxycillin is combined with clavulanic acid to inhibit
- a. DNA gyrase
 - b. Cell synthesis
 - c. Protein synthesis
 - d. β -lactamase enzymes
15. Which of the following cocci-shaped bacteria usually grow in pairs?
- a. *Neisseria spp*
 - b. *Pseudomonas spp*
 - c. *Klebsiella spp*
 - d. *Clostridium spp*
16. Which pathogen is a major cause of dental disease?
- a) *Staphylococcus epidermidis*
 - b) *Streptococcus mutans*
 - c) *Staphylococcus aureus*
 - d) *Streptococcus agalactiae*
17. Which of the following microbe can live only inside the cell (**obligate intracellular pathogen**)?
- a) *Salmonella*
 - b) *Mycobacterium*
 - c) *Rickettsia*
 - d) *Vibrio*

18. Which of the following enzyme is also known as the alpha-toxin and can damage the cell membranes resulting in hemolysis and tissue destruction?
 - a) Lecithinase
 - b) Enterotoxin
 - c) Alpha
 - d) Beta
19. Which of the following is the most correct general characteristic of *Clostridia spp*?
 - a) Grows well in Nutrient agar
 - b) Produce alpha-hemolytic colonies
 - c) Grows in aerobic conditions
 - d) Produces neurotoxins
20. Toxic shock syndrome is caused by
 - a. Staphylococcus albus
 - b. Staphylococcus aureus
 - c. Streptococcus viridans
 - d. None of these

SECTION B: Short Answer Questions (40 Marks)

1. Describe **FOUR** extracellular toxins and enzymes produced by *Staphylococcus aureus* (8mks)
2. Classify *Streptococcus* basing on polymeric carbohydrate in their cell wall and type of hemolysis (8mks)
3. Describe factors contributing to meningococcal invasiveness (8mks)
4. Discuss the pathogenesis and clinical picture of *Bacillus anthracis*(8mks)
5. Describe Laboratory examination of urogenital specimen(8mks)

SECTION C: Long Answer Questions (60 Marks)

1. Discuss in detail pathogenesis of *Escherichia coli* basing on the **FOUR** main types of clinical syndromes (20mks)
2. *Clostridia* are gram positive, sporing rod shaped bacteria. Describe the common species(20mks)
3. *Mycobacterium tuberculosis* infection is acquired from other humans through droplet and the respiratory tract. Discuss its pathogenesis (20mks)