MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

EXAMINATIONS

FOR THE DIPLOMA
IN
MEDICAL LABORATORY SCIENCES (DIPLOMA)

COURSE CODE: BMD 225

COURSE TITLE: MEDICAL MICROBIOLOGY II

MAIN EXAM

DATE: 9TH DECEMBER 2020 **TIME:** 8.00 -10.00 AM

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)

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. Staphylococcus species consist of
   A. Gram positive cocci in chains
   B. Gram negative diplococci
   C. Gram positive cocci in clusters
   D. Gram negative cocci in clusters

2. How do the colonies of Staphylococcus appear on Blood agar medium
   A. Golden- yellow pigmented colonies
   B. Lemon yellow colonies
   C. White colonies
   D. Greenish colonies

3. Plate count method is used to enumerate:
   A. Bacteria and Algae.
   B. Bacteria and viruses.
   C. Bacteria and protozoa.
   D. Bacteria.

4. Staphylococcus aureus is
   A. Facultative anaerobes.
   B. Microaerophilic.
   C. Obligate aerobes.
   D. Aerotolerant

5. Streptococcus pyogenes grows better on:
   A. MacConkey agar incubated aerobically
   B. Nutrient agar anaerobically
   C. Blood agar aerobically
   D. Blood agar incubated anaerobically

6. Bacteria which tolerate high salt concentration are called as

   A. Barophile
   B. Mesophiles
   C. Halophiles
   D. None of these

7. Bacterial cell can reproduce by

   A. Binary fission
   B. Mitosis
   C. Meiosis
   D. All of above

8. Bacterial cell wall is mainly composed by

   A. Peptidoglycan
   B. Lipids
   C. Protein
   D. Vitamin

9. Total cell count determination means counting of
   A. Only living cell
   B. Only non living cell
   C. Both living & non living cells
   D. None of above

10. One of the following is a Gram Positive bacterium.
   A. Escherichia coli
   B. Salmonella typhi
   C. Streptococcus pneumoniae
   D. All of the above

11. Mycobacterium tuberculosis is resistant to acid-alcohol once stained by carbol-fuchsin due to
   A. N-acetyl murein on the cell wall
   B. N-acetyl muramic acid on the cell wall
   C. N-acetoyl muramic acid on the cell wall
   D. Mycolic acid on the cell wall

12. One of the following is a Gram negative bacterium

   A. *Corynebacterium diphtheriae*
   B. Escherichia coli
   C. Staphylococcus aureus
   D. All of the above.

13. After the heat fixation step when preparing a bacterial smear:

   A. Cell proteins coagulate
   B. Bacterial cells are fixed to the slide
   C. Most bacteria are killed
   D. All of the above are true

14. Group A Streptococcus growing on a blood agar plate, shows which of the following:
   A. Alpha hemolysis, a clear zone surrounding the colonies
   B. Alpha hemolysis, a green zone surrounding the colonies
   C. Beta-hemolysis, a clear zone surrounding the colonies
   D. Beta-hemolysis, a green zone surrounding the colonies
15. Colonies of Pseudomonas turn purple when a redox dye is applied. The color change is
   Indicative of the activity of the enzyme:
   A. Beta-galactosidase
   B. Oxidase
   C. Urease
   D. DNase
16. Once isolated in the laboratory, *Staphylococcus* can be easily distinguished from
   Streptococcus on the basis of:
   A. The catalase reaction
   B. The oxidase reaction
   C. The lactose fermentation reaction
   D. The glucose fermentation reaction

17. The following biochemical test is used to differentiate *Streptococcus* pnuemoniae from *Streptococcus viridans*
    A. CAMP test
    B. Voges proskauer test
    C. Bacitracin test
    D. Bile solubility test
18. The following bacteria is an obligate anaerobe
    A *Bacillus anthracis*
    B *Clostridium tetani*
    C *Haemophilus influenzae*
    D *Corynebacterium diphtheriae*
19. The following microorganism causes bubonic plague
    A. *Brucella melitensis*
    B. *Bordetella pertusis*
    C. *Yersinia pestis*
    D. *Pasteurella multocida*
20. Which of the following microorganism when grown on blood agar plate produces V factor that forms the basis of satellitism test for *Haemophilus* species
    A. *Steptococcus agalactiae*
    B. *Staphylococcus aureus*
    C. *Clostridium botulinum*
    D. *Neisseria meningitides*

SECTION B: SHORT ANSWER QUESTIONS (40 MARKS)

1. List any five(5) enzymes produced by *Staphylococcus aureus* **(5 Marks)**
2. State five(5) differences between *Streptococcus pneumoniae* and *Streptococcus viridans* **(5 Marks**

3. State any five(5) diseases caused by Pneumococci **(5 Marks)**
4. Describe CAMP test used to identify Streptococcus agalactiae **(5 Marks)**
5. State any five (5) differences between Klebsiella and Salmonella**(5 Marks)**
6. State any five selective media used for the isolation of Shigella **(5 marks)**
7. Mention any five diseases that are frequently caused by *Pseudomonas aeruginosa (***5Marks)**
8. Outline the procedure for Ziehl-Neelsen staining for *Mycobacterium tuberculosis* **(5 Marks)**

SESTION C: LONG ANSWER QUESTIONS (**60 marks**)

1. State the principle of Gram stain reaction and outline its procedure. Give 5 examples of Gram positive Bacteria and 5 examples of Gram negative Bacteria. **(20 Marks)**
2. Discuss the Laboratory diagnosis of Staphylococcus aureus in clinical microbiology laboratory **(20 Marks)**
3. Discuss the pathogenicity of *Vibrio cholerae* 01**(20 Marks)**