



# **MAASAI MARA UNIVERSITY**

## **REGULAR UNIVERSITY EXAMINATIONS 2018/2019 ACADEMIC YEAR FIRST YEAR END OF THIRD TRIMESTER**

### **SCHOOL OF NURSING BACHELOR OF SCIENCE IN NURSING**

**COURSE CODE: NUR 1303  
COURSE TITLE: MICROBIOLOGY I**

**DATE: 21<sup>ST</sup> AUGUST, 2019**

**TIME: 0830 – 1130 HRS**

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#### **INSTRUCTIONS TO CANDIDATES**

- a) Answer **ALL** Multiple questions in Section A and **All** short Essay questions in Section B and **ANY two** Questions in **SECTION C**
- b) Illustrate your answers with suitable diagrams and give examples wherever necessary.

## SECTION A MULTIPLE CHOICE QUESTIONS (20 MARKS)

### ALL QUESTIONS ARE COMPULSORY

- Which of the following structures contains genes for enzyme and antibiotic resistance?
  - Plasmid
  - Pilus
  - Capsule
  - Plasma Membrane
- Which of the following is the most important structure related to microbial attachment to cells?
  - Flagellum
  - Plasmid
  - Peptidoglycan
  - Glycocalix
- Which of the following is not True related to endotoxins
  - Endotoxins are secreted from cells
  - Can be linked to Meningococemia
  - Produced by gram negative microorganisms
  - Can cause fever
- Which of the following is not a group of modes of reproduction found in microorganisms?
  - oviparity
  - viviparity
  - ovoviviparity
  - oviparous
- Which of the following method can be used to determine the number of bacteria quantitatively?
  - Streak-plate
  - Spread-plate
  - Pour plate
  - Pour-plate and spread plate
- What is the temperature of liquid nitrogen?
  - 120 degree C
  - 0 degree C
  - 150 degree C
  - 196 degree C
- Nichrome loop wire loop is used in which of the following techniques?
  - Pour-plate
  - Streak-plate
  - Spread-plate
  - Roll-tube technique
- Which device is used to pick a single bacterial cell from a mixed culture?
  - Microscope
  - Micropipette

- (c) Microprobe
  - (d) Micromanipulator
9. The common yeast *Schizosaccharomyces* follows which of the following asexual reproduction method?
- (a) binary fission
  - (b) budding
  - (c) fragmentation
  - (d) spore formation
10. Which of the following is the most accurate method for microbial assay of antibiotics?
- (a) Physical assay
  - (b) Chemical assay
  - (c) Biological assay
  - (d) Chemical and biological assay
11. Zone of inhibition is observed in tube-dilution method
- (a) True
  - (b) False
12. Which of the following antibiotic have a sparing effect on B 12 in the diet?
- (a) Streptomycin
  - (b) Tetracycline
  - (c) Anthramycin
  - (d) Chloramphenicol
13. Which of the following terminologies is not related to microbial pathogenesis in the context of the damage framework
- (a) Colonization
  - (b) carrier state
  - (c) chronicity
  - (d) transmissibility
14. What is the correct order of staining reagents in Gram-Staining?
- (a) Crystal violet, alcohol, iodine solution, Safranin
  - (b) Crystal violet, iodine solution, alcohol, Safranin
  - (c) Crystal violet, Safranin, alcohol, iodine solution
  - (d) Iodine solution, crystal violet, alcohol, Safranin
15. Which bacteria appears purple-violet color after staining?
- (a) Gram-positive
  - (b) Gram-negative
  - (c) Both Gram-positive and Gram-negative
  - (d) Neither Gram-positive nor gram negative
16. Which of the following is an example of Gram-negative bacteria?
- (a) *Lactobacillus*
  - (b) *Escherichia coli*
  - (c) *Staphylococcus aureus*
  - (d) *Bacillus subtilis*
17. Who among the following is termed as the father of Antiseptic surgery?
- (a) Robert Koch

- (b) Lord Joseph Lister
  - (c) Paul Erlich
  - (d) Louis Pasteur
18. Which of the following disease is correctly matched as per its classification?
- (a) GROUP III Double stranded RNA-POLIO
  - (b) GROUP IV Positive Sense Single Stranded RNA viruses- MEASLES
  - (c) Reverse Transcribing, Diploid Single Stranded RNA-POLYMARITIS
  - (d) Reverse Transcribing, Circular Double Stranded DNA viruses- HEPATITIS
19. In a routine diagnostic microbiology laboratory, the initial stage of bacteria identification involves:-
- (a) Genetic homology
  - (b) Growth characteristics
  - (c) Spore Formation
  - (d) morphology and staining
20. Fimbriae is a bacteria cell organelle for?
- (a) Motility
  - (b) Attachment
  - (c) Contains genetic material
  - (d) Ant phagocytic

## **SECTION B SHORT ANSWERS ASSAY QUESTIONS (40 MARKS)**

### **ALL QUESTIONS ARE COMPULSORY**

1. Describe Koch's Postulate (5 marks)
2. State five factors that will affect inhibition zone sizes during drug susceptibility (5 marks)
3. Describe the Ziel Nelseen stain ( 5 marks)
4. Write the differences between bacteria and viruses (10 marks)
5. Define the following terms:( 5 marks)
  - a) Thermopiles
  - b) Psychrophiles
  - c) Mesophiles
  - d) Chemotaxis
  - e) Motility
- 6) State the 5 ways of stopping proteus bacteria form swarming in culture media (10 marks)

## **SECTION C LONG ESSAY ANSWER QUESTIONS**

### **ANSWER ONLY TWO (40 MARKS)**

1. Explain various sterilization methods used in microbiology practices to control the multiplication of microorganisms (20 marks)
  
2. (a) Describe various ways on how you can collect a sample from a patient in a ward and preserve it under favorable microbial conditions for further examination (10 marks)  
b) Explain the five factors that contribute to microbial growth on aseptic wound (10 marks)
  
3. (a) Describe the sterile clinical procedures you will practice when collecting a sample for Gram staining (10 marks)  
b) Describe the media MacConkey (10 marks)
  
4. Discuss the structure, modes of reproduction and life cycle of bacteria (20 marks)

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