



*"Investing in Africa's Future"*

**COLLEGE OF HEALTH, AGRICULTURE & NATURAL SCIENCES  
DEPARTMENT OF HEALTH SCIENCES  
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS**

**SLS 204 BACTERIOLOGY THEORY EXAMINATION  
END OF SECOND SEMESTER EXAMINATIONS**

**APRIL/MAY 2019**

**LECTURER: Dr E. MUGOMERI**

**DURATION: 3 HOURS**

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***INSTRUCTIONS***

**The paper comprises of three sections (A, B and C).**

**Section A (20 marks)**

Answer all questions in this section.

Circle the correct answer

**Section B (20 marks)**

Answer all questions in this section.

**Section C (60 marks)**

Choose **three** questions. Credit will be given for logical, systematic and neat presentations.

## SECTION A: TRUE (T) OR FALSE (F) QUESTIONS [20 MARKS]

1. Which of the following bacteria has the lowest 50% infective dose (ID<sub>50</sub>)?  
T F A. *Campylobacter jejuni*  
T F B. *Salmonella typhi*  
T F C. *Vibrio cholerae*  
T F D. *Shigella sonnei*
2. Which of the following disease is best diagnosed by serologic means?  
T F A. Pulmonary tuberculosis  
T F B. Gonorrhea  
T F C. Actinomycosis  
T F D. Q Fever
3. The coagulase test is used to differentiate  
T F A. *Staphylococcus epidermidis* from *Neisseria meningitidis*  
T F B. *Staphylococcus aureus* from *Staphylococcus epidermidis*  
T F C. *Streptococcus pyogenes* from *Staphylococcus aureus*  
T F D. *Streptococcus pyogenes* from *Enterococcus faecalis*
4. The infectiveness of the organism responsible for this urinary tract infection is associated with specific,  
T F A. Exotoxins  
T F B. K antigens  
T F C. Fimbriae  
T F D. Plasmids
5. The role of bacterial capsules as virulence factors is usually related to their ability to interfere with  
T F A. Antibody binding  
T F B. Antibacterial penetration of bacterial cells  
T F C. Phagocytosis  
T F D. The release of interferon gamma and other macrophage activating cytokines
6. A mutation in DNA gyrase is likely to result in resistance to which one of the following antibiotics?  
T F A. Amphotericin B  
T F B. Ciprofloxacin  
T F C. Penicillin  
T F D. Rifampin

7. Resistance of *Staphylococcus aureus* to methicillin is most often caused by
- T F A. Alternation of the major target for the drug
  - T F B. cell membrane impermeability
  - T F C. decreased uptake of the antibiotic
  - T F D. Synthesis of a potent Beta Lactamase
8. The molecular basis for the effect of cholera toxin on duodenal mucosal cells is
- T F A. Activation of adenylate Cyclase
  - T F B. increased generation of cyclic adenosine monophosphate (cAMP)
  - T F C. Ribosylation of a guanosine triphosphate (GTP) binding protein.
9. Which one of the following factors, released by heating a suspension of sheep erythrocytes, is required for the growth of *Haemophilus Influenzae* in chocolate agar?
- T F A. Coagulase
  - T F B. Nicotinamide adenine dinucleotide (NAD)
  - T F C. Hemolysin
  - T F D. Protein A
10. Which one of the following bacteria is most likely to be relatively resistant to antibiotics as a result of the relative impermeability of its cell wall?
- T F A. *Haemophilus influenzae*
  - T F B. *Pseudomonas aeruginosa*
  - T F C. *Staphylococcus aureus*
  - T F D. *Streptococcus pyogenes*
11. A patient develops explosive, watery diarrhea 24 hours after eating seafood. What bacterium is most likely involved?
- T F A. *Campylobacter fetus*
  - T F B. *Salmonella typhimurium*
  - T F C. *Shigella flexneri*
  - T F D. *Vibrio cholera*
12. Which of the following bacteria is not a most common bacterial pathogen causing diarrhea?
- T F A. *Shigella* spp
  - T F B. *Salmonella* spp
  - T F C. *Enterococcus faecalis*
  - T F D. *Campylobacter* spp
13. Which of the following bacteria is rarely associated with urinary tract infections?
- T F A. *coli*
  - T F B. *Enterobacter* spp
  - T F C. *Proteus* spp
  - T F D. *Shigella* spp
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14. Which of the following statement regarding *Campylobacter jejuni* is not correct?
- T F A. It is commonly cultured in antibiotic containing media
  - T F B. Incubation temperature is 42°C
  - T F C. It is cultured in an atmosphere containing 5% O<sub>2</sub> and 10%CO<sub>2</sub>
  - T F D. It is a normal flora of intestines
15. Which of the following bacteria is not most important causes of acute bacterial meningitis?
- T F A. *Neisseria meningitidis*
  - T F B. *Streptococcus pneumoniae*
  - T F C. *Haemophilus influenzae*
  - T F D. *Streptococcus pyogenes*
16. Which of the following Gram negative rod is not a blood borne bacterial pathogen?
- T F A. *Shigella* spp
  - T F B. *Escherichia coli*
  - T F C. *Klebsiella pneumoniae*
  - T F D. *Pseudomonas aeruginosa*
17. Throat culture is not useful to diagnose
- T F A. Streptococcal sore throat
  - T F B. Diphtheria
  - T F C. Thrush
  - T F D. Pneumonia
18. Stool culture is primarily recommended when the complaint is
- T F A. bloody diarrhea (dysentery, enterocolitis)
  - T F B. watery diarrhea
  - T F C. for both bloody and watery diarrhea
  - T F D. an indication of anaerobic infection
19. Which of the following bacteria causing sexually transmitted disease cannot be grown on artificial media?
- T F A. *Neisseria gonorrhoeae*
  - T F B. *Chlamydia trachomatis*
  - T F C. *Treponema pallidum*
  - T F D. *Treponema pallidum* and *Chlamydia trachomatis*
20. Which of the following test is not recommended for the diagnosis of Syphilis?
- T F A. VDRL test
  - T F B. Culture
  - T F C. FTA-ABS test
  - T F D. MHA-TP test

## **SECTION B: SHORT ANSWERS [20 MARKS]**

**Answer all questions in this section**

- B1. Group A Strep infections are considered suppurative or pus-forming. Explain the source of the pus found in these infections
- (i). What does pus consist of? (2)
  - (ii). Explain what non-suppurative sequelae mean (2)
  - (iii). Identify and describe two of the non-suppurative sequelae (6)
- B2. Write principles of the following biochemical tests and give examples
- (i). Catalase test (2)
  - (ii). Indole test (3)
  - (iii). Citrate test (2)
  - (iv). Bound and free coagulase test (3)

## **SECTION C: SHORT ANSWERS [60 MARKS]**

**Choose three questions in this section**

- C1. Distinguish the structural differences between Gram positive and Gram negative bacteria (20)
- C2. Discuss the different media types with examples (20).
- C3. Describe the steps in the process of establishment of an infection from attachment to tissue damage (20).
- C4. Describe the bacterial aetiology of the pneumonia (20).
- C5. Describe the bacterial aetiology of meningitis (20).