

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF  
SCIENCE IN NURSING

NURU 121: MEDICAL MICROBIOLOGY I

STREAMS: B.Sc Nursing Y2T2

TIME: 2 HOURS

DAY/DATE: FRIDAY 8/12/2017

8.30 A.M - 10.30 A.M.

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**INSTRUCTIONS:**

- Do not write anything on the question paper.
- Mobile phones and any other reference materials are NOT allowed in the examination room.
- The paper has THREE sections. Answer ALL Questions.
- All your Answers for section I (MCQs) should be on the first page of the answer booklet.
- Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the Examination answer booklet.

**SECTION I: [30 MARKS]**

1. Exotoxins are
  - A. Heat labile
  - B. Heat stable
  - C. Part of cell wall
  - D. Polymerized complexes
2. The following bacterial produce pigment, EXCEPT
  - A. Pseudomonas pyocyaneus
  - B. Serriata marcescens
  - C. Streptococcal pneumonia
  - D. Staphylococcus aureus
3. Influenza virus is identified by using
  - A. Haemogglutinin inhibition test
  - B. Tissue culture method
  - C. Embryonated eggs
  - D. Plaque formation

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4. Teichoic acid is
  - A. Found in the walls of Gram positive bacteria
  - B. Provide receptors for phages
  - C. Make up outer wall of Gram negative bacteria
  - D. Influence the permeability of the membrane
  
5. Which of the following statement(s) about Group B streptococci (*Streptococcus agalactiae*) is/are NOT correct?
  - A. They are important caused of toxic syndrome
  - B. They are frequent colonizers of the female genital tract
  - C. They are important causes of urinary tract infection in the elderly
  - D. They are  $\beta$ -hemolytic
  
6. *Treponema pallidum* can be best identified using
  - A. Fluorescence microscope
  - B. Bright field microscope
  - C. Dark field microscope
  - D. Counter-stain microscope
  
7. A 20 year old patient comes to the outpatient clinic with skin abscess on the right arm. A swab from the intact skin overlying this abscess grow coagulase negatively staphylococci. An aspirate obtained sterilely with a needle and syringe grows *Staphylococcus aureus*. About these 2 organisms in this patient you can say:
  - A. Both are normal flora and contaminated the specimens sent to the lab
  - B. The staph aureus is a pathogen and the coagulase negative staph is not
  - C. The coagulase negative staphylococcus is a pathogen
  - D. The coagulase negative staphylococcus is an opportunistic pathogen
  
8. Characteristics of a bacterial capsule include:
  - A. All bacteria have one
  - B. It is composed of peptidoglycan
  - C. It is an important mechanism for protecting a bacterial against ingestion by polymorph nuclear lymphocytes
  - D. It is what causes the gram stain reaction
  
9. While you are on your obstetrics rotation you deliver a healthy appearing bouncing baby boy to a 19 year old mother. Three days later the baby becomes lethargic, has a high temperature and vomits. A lumbar puncture shows that the infant has bacterial meningitis. A gram stain of spinal fluid shows short gram positive rods. This organism is:
  - A. *Listeria monocytogenes*
  - B. Group B streptococcus
  - C. *Neisseria meningitides*
  - D. *Clostridium tetani*

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10. You are interested in the microbiology cultures results on one of your patients and come the microbiology laboratory to get an update. The microbiology lab supervisor tells you that your patient is growing gram positive bacilli from both blood cultures you drew and from a urine sample. He volunteers that he doesn't think you ought to worry since these results aren't likely to be important. His rationale is:
- A. Gram positive bacilli are so rare that they aren't likely to cause disease
  - B. Gram positive bacilli do not cause urinary tract disease
  - C. Gram positive bacilli are common contaminants so cultures growing them are not of much value
  - D. Gram positive bacilli are infections that patients usually resolve without antibiotic therapy
11. The term facultative anaerobe refers to an organism that .....
12. In regard to temperature and oxygen requirements during growth, *Staphylococcus epidermidis* is best described as .....
13. Which of the staphylococcus is novobiocin resistant?
14. Of staphylococci and streptococcus, which get inhibited by crystal violet in blood agar?
15. Which bacteria is both catalase positive and oxidase negative?
- A. Streptococcus
  - B. Staphylococcus
  - C. Neisseria
  - D. Bacillus
16. *Streptococcus pyogenes* can be differentiated from other haemolytic Streptococci on the basis of .....
17. Bacterial sore throat is commonly caused by:
- A. *Staphylococcus aureus*
  - B. *Streptococcus pyogenes*
  - C. *Proteins mirabilis*
  - D. Viradins group of *Streptococcus*
18. Foods most often associated with the emetic type of food poisoning of *Bacillus cereus* is
- A. Meat
  - B. Rice
  - C. Fermented milk
  - D. Steamed beans
19. *Listeria monocytogenes* shows which of the following characteristics
- A. It can grow at refrigerator temperatures (4°C)
  - B. It is an extracellular pathogen
  - C. It is catalase-negative
  - D. It is strictly a human pathogen

20. Which one of the following is characteristic of *N.meningitidis* but not *N.gonorrhoeae*?
- A. Ferments glucose
  - B. Contains a polysaccharide capsule
  - C. Is oxidase-positive
  - D. Most isolates show resistance to penicillin
21. The motile bacteria is a
- A. *S. typhi*
  - B. *K. pneumonia*
  - C. *Brucella anthracis*
  - D. *Shigella*
22. Main causative organism of gas gangrene is
- A. *Clostridium botulinum*
  - B. *Clostridium tetani*
  - C. *Clostridium deficile*
  - D. *Clostridium perfringens*
23. A Biological false reaction in VDRL is related to
- Lepra bacilli
  - Corynebacterium diphtheria*
  - Clostridium welchi*
  - None of these
24. A diagnosis of diphtheria is confirmed by
- A. Microscopic appearance of organism stained with methylene blue
  - B. Isolation of typical organism form materials such as blood, showing invasiveness
  - C. Detection of  $\beta$  phage plaques in cultures of suspicious isolated
  - D. Demonstration of toxin production by a suspicious isolate
25. Burn patients often develop nosocomial infection (exfoliatins) produced by:
- A. *Streptococcus epidermis*
  - B. *Staphylococcus aureus*
  - C. *Candida albicans*
  - D. *Pseudomonas aeruginosa*
26. Scalded skin syndrome is caused by exotoxin (exfoliatins) produced by:
- A. *Streptococcus pyogens*
  - B. *Pseudomonas auruginosa*
  - C. *Staphylococcus aureus*
  - D. *Propionibacterium acne*

27. A 70 year old woman with sever chronic lung disease presented in the OPD of Chuka Hospital with fever, productive cough with purulent sputum and worsening hypoxemia. Sputum sample was collected and sent to microbiology lab. Lab reported plenty of Polymorphonuclear leukocytes with both intracellular and extracellular gram negative diplococcic. This organism grows well on 5% Sheep Blood Agar and chocolate Agar. Later butyrate esterase test was done and was found to be positive. What is the most likely organism to be involved in this illness?
- A. *Haemophilus influenza*
  - B. *Moraxella catarrhalis*
  - C. *Neisseria gonorrhoeae*
  - D. *Neisseria meningitidis*
28. Which of the following species of Pasteurella species has been associated with infections of the female genital tract and of newborn?
- A. *Pasteurella multocida*
  - B. *Pasteurella pneumotropica*
  - C. *Pasteurella ureae*
  - D. *Pasteurella bettyae*
29. All of the following statements regarding etiologic agents of Chancroid are corret EXCEPT:
- A. The organism is a small gram negative rod
  - B. The organism requires X factor but not V factor
  - C. The organism grow well on Standard Chocolate Agar
  - D. Gram stain of lesions the organism occurs in strands

**SECTION B [20 MARKS]**

- 1. Differentiate between *Staphylococcus aureus* and *Staphylococcus epiermidis*. [5 Marks]
- 2. Describe the pathogenesis of choleraen. [5 Marks]
- 3. Outline classification of medically important Gram negative rods. [10 Marks]

**SECTION C [20 MARKS]**

A patient is suspected to be suffering from tuberculosis (TB).

- (a) State FIVE virulent factors of the causative organism. [5 Marks]
  - (b) Outline the pathogenesis of TB. [15 Marks]
- .....