

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN NURSING**

**NURU 121: MEDICAL MICROBIOLOGY**

**STREAMS:**

**TIME: 2 HOURS**

**DAY/DATE: WEDNESDAY 4/12/2019**

**8.30 A.M – 10.30 A.M**

**INSTRUCTIONS**

**Answer all questions**

**SECTION A: MULTIPLE CHOICE QUESTIONS (35 MARKS)**

1. Karuru had a deep wound which had started changing colour to show flourishing green pigment. The wound is most likely infected with. [1 marks]

- (a) Sallmonella typhi
- (b) Staphylococcu epidermidis
- (c) Pseudomonas aeruginosa
- (d) Pseudomonas putida

2. Robert Koch working on ..... organism when he came up with the 4 postulates.

[1

marks]

- (a) Staphylococcus aureus
- (b) Bacillus anthracis
- (c) Treponema species
- (d) Streptococcus perfringens

3. Bacteria may be identified according to their shape. Which of the following corresponds with the shape of the organism that causes Neisseria Gonorrhoea? [1 mark]

- (a) Streptococcus

- (b) Spirilla  
(c) Diplococcus  
(d) Bacillus
4. To colonize the human system and cause diseases micro organisms multiply in multiples of. [1 mark]  
(a) 4  
(b) 2  
(c) 3  
(d) 8
5. A characteristic of Cephalosporins is that they? [1 marks]  
(a) Affects protozoal metabolism  
(b) Affects fungal nucleic acid synthesis  
(c) Inhibits cell wall synthesis  
(d) Inhibits RNA synthesis
6. Which of the following is true about acid fast Basilli? [1 mark]  
(a) Cell wall with mycolic acid  
(b) Exotoxin production  
(c) Skin infections that can lead to septicaemia  
(d) Diseases that come in stages
7. Answer true or false . Warm moist conditions favor the transmission off respiratory fungal disease. [½ mark]  
(a) True  
(b) False
8. Interferon has an innate ability to fight viral infections and is always circulating in the body. [½ mark]  
(a) True  
(b) False
9. Meningitis is an infection of ? [1 mark]  
(a) The peripheral nervous system  
(b) The spinal cord and the brain  
(c) The covering of the spinal cord and brain

- (d) The blood brain barrier
10. Pandemic refers to ? [1 mark]
- (a) Worldwide outbreak of disease
  - (b) Disease outbreak
  - (c) Disease that is easily spread
  - (d) Vector of infection
11. Why are pseudomonas infectious difficult to treat and prevent? [1 mark]
- (a) The bacteria is highly resistant to detergents and antibiotics
  - (b) Metabolically versatile
  - (c) It is found everywhere
  - (d) Causes nosocomial infections
12. Why do you think that antibiotics such as penicillin cannot be used with bacteria like mycobacterium tuberculosis, the causative agent of TB? [1 mark]
- (a) The cell walls of these organisms are not affected by penicillin
  - (b) The spores that are produced by TB cannot be killed by antibiotics
  - (c) The bacterium encysts within the body and cannot be killed with penicillin
  - (d) The bacterium is gram negative which are not killed as easily with penicillin
13. What is one of the biggest problems in preventing the spread of Gonorrhoea and chlamydia? [1 mark]
- (a) People hate condoms
  - (b) It is mainly spread by young irresponsible teenagers
  - (c) Asymptomatic people do not realize they have it
  - (d) Highly antibiotic resistant
14. Mumps is a viral infection that affects what part of the body? [1 mark]
- (a) My humps
  - (b) The ears
  - (c) The reproductive organs
  - (d) The parotid glands
15. Select the correct sequence of activities in the progression of mycobacterium Tuberculosis. [1 mark]
- (a) Macrophage attack bacteria

- (b) Bacteria spread through the rest of the body
- (c) Bacteria multiply within macrophage which form granuloma
- (d) Inhalation of bacteria
- (e) Macrophage form tuberculosis

Choices

- (a) EDCBA
- (b) DBCAE
- (c) DACEB
- (d) DECAB

16. Whitish discharge in vaginal infections may be a result of . [1 mark]
- (a) Gonorrhoea
  - (b) Candida albicans
  - (c) Aspergillus Niger
  - (d) Molds
17. An experiment began with 4 cells and ended with 128 cells. How many generations did the cells go through? [1 mark]
- (a) 64
  - (b) 32
  - (c) 6
  - (d) 5
18. Sterilization is defined as [1 mark]
- (a) Removal of microbial contamination
  - (b) Complete destruction of all forms of life
  - (c) Complete removal of vegetative cells
  - (d) Removal of most micro-organisms
19. A 45 year old construction site worker receives a deep puncture wound from a piece of sheet sticking out of the ground. The wound does not seem to be that bad and is not bleeding very much. Two days later, the wound is core and red and patient is having muscle cramps in legs, neck, back and arms. What advice would you give the person? [1 mark]
- (a) Move quickly in an emergency room for tetanus treatment

- (b) Emergency room for gangrene treatment
  - (c) Go for wound cleaning and may be stitches
  - (d) Take some antibiotics and rest for 1 day
20. Jenny, a 22 years old mother of two was at work and collapsed. She had been complaining of having periodic like symptoms with pain and cramping along with fever, headache and rashes. Doctors did a spinal tap and the fluid came out clear with no signs of Diplococcus. Jenny was rapidly deteriorating and experience multi organ shut down. Multiple antibiotics were given and she recovered in 6 weeks total, but with a permanent kidney damage. Jenny was most likely experiencing. [1 mark]
- (a) Scalded skin syndrome from staphylococcus aureus
  - (b) Folliculitis followed by septicemia from staphylococcus aureus
  - (c) Staphylococcus aureus toxic shock syndrome
  - (d) Anthrax
21. How are gram positive and gram negative cell walls different? [1 mark]
- (a) Gram negative cells have a single layer of peptidoglycan and an outer membrane and gram positive cells have a thick layer with teichoic acids.
  - (b) Gram positive cells have a single peptidoglycan and a periplasmic space while gram negative cells have a thick layer with teichoic acid
  - (c) Gram negative cell walls have a thick layer of peptidoglycan and gram positive cells have no peptidoglycan but have teichoic and mycoli acids
  - (d) Gram positive and gram negative bacteria take the crystal violet colour because of their peptidoglycan layers.
22. Most fungi grow best with oxygen, at room temperature and under ..... conditions
- (a) Slightly acidic conditions
  - (b) Slightly basic conditions
  - (c) Neutral Ph
  - (d) Dark environment
23. Hemorrhagic virus often kill by what mechanism? [1 mark]
- (a) Systemic shock
  - (b) Dehydration

- (c) Bleeding to death  
(d) Pneumoniae
24. Each of the following statements concerning the gram stain is correct except:[1 mark]  
(a) *Escherichia coli* stains pink because it has a thin peptidoglycan layer  
(b) *Streptococcus pygens* stains blue because it has a thick peptidoglycan layer  
(c) *Mycoplasma pneumonia* is not visible in the gram's stain because it does not have a cell wall.  
(d) *Mycobacterium tuberculosis* stains blue because it has a thick lipid layer
25. Each of the following organisms is an important cause of urinary track infections except; [1 mark]  
mark]  
(a) *Klebsiella pneumonia*  
(b) *Escherichia coli*  
(c) *Bacteriodes fragilis*  
(d) *Proteus mirabilis*
26. Each of the following statements about the classification of streptococci is correct except; [1 mark]  
mark]  
(a) Pneumococci (*streptococcus pneumonia*) are alpha haemolytic and can be serotyped on the basis of their polysaccharide capsule  
(b) Enterococci are group D streptococci and can be classified by their ability to grow 6.5% sodium chloride  
(c) Viridans streptococci are identified by lancefied grouping, which is based on the C carbohydrate in the cell wall  
(d) Although pneumococci and the viridans streptococci are alpha –haemolytic, they can be differentiated by the bile solubility test and their susceptibility to optochin.
27. An outbreak of sepsis caused by *staphylococcus aureus* has occurred in the newborn nursery . You are called upon to investigate. According to your knowledge of the normal flora, what is the most likely source of the organism? [1 mark]  
(a) Nose  
(b) Colon

- (c) Hand  
(d) Throat
28. Nosocomial infections can be termed as [1 mark]  
(a) Community acquired infections  
(b) Hospital acquired infections  
(c) Infectious diseases from the public sector  
(d) Environmental acquired infections
29. Gakeni is a mother 29 years old. She comes to the clinic with history of miscarriages. A high vaginal swab culture on blood agar culture medium revealed a whitish colony with hemolysis on the culture medium. Which organism could this possibly be; [1 mark]  
(a) Alpha hemolytic streptococcus viridans  
(b) Beta hemolytic staphylococcus aureus  
(c) Group B Beta hemolytic streptococcus agalactiae  
(d) Beta hemolytic streptococcus pyogenic
30. All the following antibiotics are broad spectrum except. [1 mark]  
(a) Cotromoxazole  
(b) Ciprofloxacin  
(c) Vancomycin  
(d) Chloramphenicol
31. Chocolate agar is an example of pure enriched medium used for culturing. [1 mark]  
(a) Hemophilus influenza  
(b) Enterococcus  
(c) Candida albicans  
(d) Salmonella species
32. Lowenstein –Jensen medium is used for culturing . [1 mark]  
(a) Enterobacteria  
(b) Tuberculosis  
(c) Salmonella  
(d) Eubacteria
33. Emergency of multi-drug resistant strains of bacteria could be a result of the following except one; [1 mark]

- (a) Drug sale over the counter
  - (b) Increased use of un-prescribed antibiotics
  - (c) Gene mutation
  - (d) Doctors prescribing antibiotics
34. Contaminated clothing after a surgical procedure may be rendered completely free of microbial contamination through. [1 mark]
- (a) Fumigation
  - (b) Burning on a Bunsen flame
  - (c) Autoclaving
  - (d) Disposing in the pit
35. Which of the following is used for culturing salmonella? [1 mark]
- (a) Saboroud dextrose agar
  - (b) MacConkey agar
  - (c) Blood agar
  - (d) Lowenstein –Jensen medium
36. Bacteria that is known to be a major cause of Boils and cellulitis. [1 mark]
- (a) Staphylococcus aureus
  - (b) Streptococcus pneumomiae
  - (c) Salmonella typhi
  - (d) Vibrio cholera

**SECTION B: SHORT ANSWER QUESTIONS (20 MARKS)**

1. Describe beneficial effects of normal flora. [5 marks]
2. Briefly describe three outcomes following microbial entry a human body. [3 marks]
3. Differentiate between the terms pathogenicity and virulence. [4 marks]
4. Describe four types of bacteria exotoxins. [4 marks]
5. Discuss difference between gram positive and gram negative bacteria. [4 marks]

**SECTION C; LONG ANSWER QUESTIONS**

1. Micro-organism may be identified in terms of their oxygen requirements. Giving examples discuss the statement. [8 marks]



2. Nosocomial infections are a major cause of deaths in developing countries. Giving possible sources of these infections, discuss the statement. [6 marks]
  3. Discuss ways through which micro-organisms manage to evade the immune system and cause disease in man. [6 marks]
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