



KENYATTA UNIVERSITY
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN MEDICAL
LABORATORY SCIENCE
HML 117: BASIC BACTERIOLOGY

2ND SEMESTER 2022/2023

TIME: 2 HOURS

INSTRUCTIONS:

SECTION A: Answer all the questions (4 marks each)

1. Outline the biological sterilization controls 4 marks
2. Explain how bacteria growing in an aerobic environment cope with toxic molecules 4 marks
3. Describe the mechanisms of genetic elements exchange among bacteria 4 marks
4. Explain the principle of Zieh-Neelsen staining 4 marks
5. Explain why Gram staining technique is not applicable for the following bacteria;
 - a) *Chlamydia trachomatis* 1 mark
 - b) *Mycobacterium tuberculosis* 1 mark
 - c) *Legionella pneumophila* 1 mark
 - d) *Mycoplasma pneumoniae* 1 mark

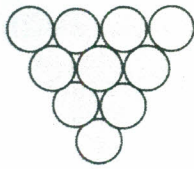
SECTION B: Answer ONE Question (20 marks)

6. Describe the classification and use of liquid bacterial culture 20 marks
 7. a) Describe urease test under the following;
 - i. Principle 4 marks
 - ii. Procedure 4 marks
 - iii. Results interpretation, giving one (1) bacteria example that show negative and positive reaction 4 marks
 - b) Discuss factors that influence performance of disinfectants 8 marks
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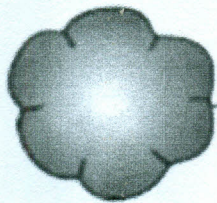
SECTION C: ANSWER ALL THE QUESTIONS ON THE ANSWER BOOKLET (0.5

MARK EACH)

1. Identify the following bacteria morphology;

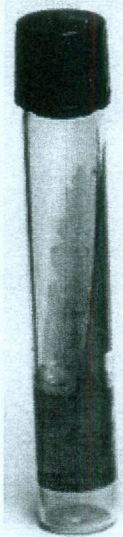


- a) Tetrads
 - b) Sarcina
 - c) Staphylococci
 - d) Streptococci
2. Which of the following is a spore forming bacteria:
- a) *Clostridium*
 - b) *Listeria*
 - c) *Corynebacterium*
 - d) *Nocardia*
3. Chinese letter-like bacteria cells arrangement is characteristic of:
- a) *Corynebacterium diphtheriae*
 - b) *Pseudomonas aeruginosa*
 - c) *Klebsiella pneumonia*
 - d) *Neisseria gonorrhoeae*
4. The colonial edges shown below is described as;



- a) Ciliated
- b) Undulate
- c) Lobate
- d) Crenated

5. Peptidoglycan in bacteria cell wall is composed of the following, except:
- a) Polysaccharide
 - b) *N*-acetyl glucosamine
 - c) *N*-acetyl muramic acid,
 - d) Peptide chains
6. Flash pasteurization is done at:
- a) 72°C for 15-20 sec
 - b) 60°C for 30 min
 - c) 132°C for 30 sec
 - d) 56°C for 60 min
7. Which one of the following is not found in gram-negative bacteria cell wall?
- a) Periplasmic region
 - b) Teichoic acid
 - c) Porin proteins
 - d) lipids
8. The following triple sugar iron (TSI) agar reaction is exhibited by:



- a) *Salmonella typhi*
- b) *Citrobacter freundii*
- c) *Escherichia coli*
- d) *Shigella flexneri*

9. *Vibrio cholerae* flagella arrangement is described as:
- a) Monotrichous
 - b) Peritrichous
 - c) Amphitrichous
 - d) Lophotrichous
10. The father of bacteriology is:
- a) Louis Pasteur
 - b) Paul Ehrlich
 - c) Robert Koch
 - d) Joseph Lister
11. The following bacteria produce cytochrome oxidase enzyme, except:
- a) *Neisseria*
 - b) *Vibrio*,
 - c) *Salmonella*
 - d) *Pseudomonas*
12. The principal site for respiratory enzymes in prokaryotes is:
- a) Mitochondria
 - b) Cytoplasm
 - c) Periplasmic space
 - d) Mesosome
13. Which of the following is an obligate anaerobe:
- a) *Clostridium tetani*
 - b) *Mycobacterium tuberculosis*
 - c) *Escherichia coli*
 - d) *Pseudomonas aeruginosa*
14. To obtain iron for growth, bacteria produce:
- a) Transferrin
 - b) Siderophores
 - c) plasmid
 - d) Pili

15. To ferment lactose, bacteria must have which one of the following enzymes?
- a) Phosphofructokinase-1
 - b) β -galactosidase
 - c) Hexokinase
 - d) Enose
16. Generation for *Escherichia coli* is:
- a) 18 hours
 - b) 20 seconds
 - c) 18 minutes
 - d) 20 minutes
17. The following are capsulated bacteria, except?
- a) *Klebsiella pneumoniae*,
 - b) *Haemophilus influenzae*
 - c) *Bacillus anthracis*
 - d) *Salmonella*
18. Which one of the following microbes contains either DNA or RNA but not both?
- a) Bacteria
 - b) Viruses
 - c) Molds
 - d) Protozoa
19. Destruction or removal of vegetative pathogens, but not bacterial spores is:
- a) Disinfection
 - b) Sterilization
 - c) Antisepsis
 - d) decontamination
20. Differentiation of *Staphylococcus* from *Streptococcus* is done by which of the following tests?
- a) Catalase
 - b) Coagulase
 - c) Oxidase
 - d) Indole