



# Technical University of Mombasa

*Faculty of Applied and Health Sciences*

DEPARTMENT OF **MEDICAL SCIENCES**

DIPLOMA IN PHARMACEUTICAL TECHNOLOGY  
(DPT 13M)

**AMD 2103 : MEDICAL MICROBIOLOGY I**

**SPECIAL/SUPPLEMENTARY: EXAMINATIONS**

**SERIES: OCTOBER 2014**

**TIME: 2 HOURS**

## **INSTRUCTIONS:**

You should have the following for this examination

- *Answer booklet*

This paper consists of **THREE sections A, B and C.**

**Section A : Multiple Answer Questions Answer All**

**Section B. Short Essay Questions. Answer ALL**

**Section C has TWO essay Questions Answer BOTH questions**

This paper consists of **8 PRINTED** pages

**SECTION A (40MARKS)**

1. Who among the following scientists who deleted disease and the causal organisms and isolated bacteria in pure culture
  - a) John Lister
  - b) Louis Pasteur
  - c) Robert Koch
  - d) Alexander Flemming
  
2. \_\_\_\_\_ are prokaryotes devoid of cell wall and lack definite shape
  - a) Pathogens
  - b) Pleomorphic
  - c) Normal Microbiota
  - d) Dimorphic
  
3. The ‘grape-like’ appearance is the characteristic arrangement of \_\_\_\_ cells
  - a) Streptococcus
  - b) Pneumococci
  - c) Diplococcus
  - d) Staphylococcus
  
4. \_\_\_\_\_ is a shorter bacterial cell filamentous appendages involved in genetic exchange between is acteric
  - a) Pili
  - b) Fimbriae
  - c) Capsule
  - d) Flagella
  
5. Which one of the following statements is true about normal microbiota?
  - a) Are disease causing organisms
  - b) Does not cause any harm to the host
  - c) They inhabit mainly the skin
  - d) Employ some mechanism to evade host's defense system
  
6. Which one of the following structures never present in prokaryotic cell?
  - a) Cell membrane
  - b) Ribosomes
  - c) Membrane-bound nucleus
  - d) Flagellum
  
7. All these reagents can be used in gram staining except
  - a) Crystal violet
  - b) Carbol-fuchsin

- c) Safranin
  - d) Iodine
8. Bacterial capsules interferes with?
- a) Antibody binding
  - b)  $\beta$ -lymphocyte Activation
  - c) Cell membrane synthesis
  - d) Phagocytosis
9. The rigidity and shape of bacterial cell is due to :-
- a) Peptidoglycan
  - b) Cell membrane
  - c) Membrane proteins
  - d) Lipopolysaccharides
10. Bacterial plasmid that enhances its pathogenicity is called
- a) F-plasmid
  - b) Col plasmid
  - c) V-plasmid
  - d) C-plasmid
11. Which type of media can be used to cultivate fastidious microorganisms?
- a) Enrichment media
  - b) Enriched media
  - c) Selective media
  - d) Simple media
12. The process by which genetic material in bacteria are transferred from one bacteria to another through contact is called:-
- a) Transduction
  - b) Conjugation
  - c) Transformation
  - d) Transinfection
13. Which one of the following bacteria genera that forms endospore
- a) Clostridium
  - b) Mycobacterium
  - c) Staphylococcus
  - d) Spirochetes
14. All the following statements are true about nucleus in bacteria except ?
- a) Used for attachment of the cell to its host
  - b) It is associated with mesosomes
  - c) Made up of single continuous circular molecules
  - d) Composed of DNA and small amounts of RNA molecules
15. Which one of the following staining procedure is appropriate for mucobacterium species
- a) Gram staining
  - b) Gemsa staining

- c) Acid fast staining
  - d) Simple staining
16. Nutrient broth /agar media which one of the following is the chief source of nitrogen
- a) Agar
  - b) Peptones
  - c) Yeast tract
  - d) NaCl
17. All the following are the compositions of gram negative bacteria except
- a) To choic Acid
  - b) Lipopolysacchandes
  - c) Peptidoghylan
  - d) Cytoplasmic membrane
18. The common mode of prokaryotes reproduction is termed as:-
- a) Binary fusion
  - b) Mating
  - c) Binary fission
  - d) Biosynthesis
19. Which phase of bacterial growth curve where the death rate is equal to multiplication rate?
- a) Lag phase
  - b) Decline phase
  - c) Logarithm phase
  - d) Stationary phase
20. Who among the following discovered the antimicrobial action of penicillin
- a) Robert Koch
  - b) Richard Peltry
  - c) Alexander Fleming
  - d) Louis Pasteur
21. In culture media Agar is used as:-
- a) Nutrition addition
  - b) Mordant
  - c) Solidifying agent
  - d) Alkalizing agent
22. Which one of the following is an example of Acidic dye used in staining
- a) Rose Bengal
  - b) Safranin
  - c) Malachite green
  - d) Methylene blue
23. All the following reagents are used in Acid fast staining Except?
- a) Carbofuchsin
  - b) Acid alcohol

- c) Methylene blue
  - d) Crystal violet
24. \_\_\_\_\_ is the extrachromosomal DNA molecules present in prokaryotes
- a) Nucleoid
  - b) Plasmid
  - c) Nucleus
  - d) RNA
25. Which one of the following components is present to the gram positive cell wall but absent in Gram negative cell wall
- a) Lepopolysacchorides
  - b) Peptidoglycan
  - c) Techoic Acid
  - d) Both choice A &B
26. Which one of the following bacterial genera that forms spore?
- a) Weissenia
  - b) Clostridium
  - c) Staphyococcus
  - d) Salmorella
27. Which one of the following bacteria that causes traveler's diarrhea?
- a) Vibrio cholera
  - b) Staphylococcus aureu
  - c) Escheridia coli
  - d) Shigella dy sentriae
28. \_\_\_\_\_ are the organisms that use  $\text{CO}_2$  as a sole source of carbon
- a) Autotrophs
  - b) Phototrophs
  - c) Heterotrophs
  - d) Chemotrophs
29. Most pathogenic bacteria are
- a) Themophiles
  - b) Mesophiles
  - c) Psychrophiles
  - d) Both choices A &B
30. Blood agar is an example of:-
- a) Simple media
  - b) Selective media
  - c) Enriched media
  - d) Transport media
31. In bacteria growth curve, the phase where the rate at which cells divides is equal to the rate they dies is called:-

- a) Lag phase
  - b) Logarithm phase
  - c) Decline phase
  - d) Stationary phase
32. All the following are examples of physical sterilization except:-
- a) Chlorination
  - b) Radiation
  - c) Boiling
  - d) Pasteurization
33. Which one of the following instrument is used for moist heat sterilization?
- a) Hot air oven
  - b) Sterothermometer
  - c) Autoclave
  - d) Padiator
34. \_\_\_\_\_ is the usual disinfectant for municipal water supplies and swimming pools
- a) Iodine
  - b) Chlorine
  - c) Formaldehyde
  - d) Bromine
35. Which one of the following is an example of a Heavy metal which added to the eyes of infants to prevent ophthalmic gonorrhoea
- a) Silver nitrate
  - b) Zinc oxide
  - c) Zinc sulfate
  - d) Copper oxide
36. All the following antibiotics can be classified as broad spectrum except
- a) Penicillin
  - b) Tetracyclines
  - c) Cephalosporins
  - d) Vancomycin
37. Which one of the following antibiotics is effective to only gram positive bacteria?
- a) Penicillin
  - b) Tetracyclines
  - c) Chloramphenicol
  - d) Trimethoprim
38. \_\_\_\_\_ antibiotic is used for the treatment of tuberculosis
- a) Macrolides
  - b) Streptomycin
  - c) Isoniazid
  - d) Vancomycin
39. All the following are classified as narrow spectrum antibiotics except:-
- a) Dapsone
  - b) Quinolones

- c) Streptomycin
  - d) Cephalosporins
40. Which one of the following antibiotics interferes with the production of folic Acid in bacteria
- a) Quinolones
  - b) Trimethoprim
  - c) Chloromphencoi
  - d) Penicillin

### SECTION B (40 Marks)

**Answer ALL questions**

41. Differentiate between gram negative and gram positive cell walls. **(4marks)**
42. Describe the endospore formation **(4marks)**
43. Differentiate the following **(4marks)**
- (i) Conjugation
  - (ii) Transformation
  - (iii) Transduction
44. Distinguish between selective media and enriched media **(4marks)**
45. Highlight any four antibiotic that inhibit protein synthesis **(4marks)**
46. Highlight any FOUR anaerobic prokaryotes forms available **(4marks)**
47. Outline FOUR reagents used in Acid fast staining **(4marks)**
48. Highlight FOUR examples of narrow spectrum antibiotics **(4marks)**
49. Distinguish between solid and liquid media with examples **(4marks)**
50. Outline FOUR characteristics of an ideal disinfectant **(4marks)**

### SECTION C

**Answer TWO questions ONLY (40marks)**

51. Discuss the factors that influence antimicrobial drug effectiveness **(20marks)**
52. Discuss with examples the physical sterilization **(20marks)**
53. Discuss with examples the bacterial nutritional Requirements **(20marks)**
54. Discuss FOUR methods used for studying microorganisms **(20marks)**