



**TECHNICAL UNIVERSITY OF MOMBASA**  
***Faculty of Applied & Health Sciences***  
DEPARTMENT OF MEDICAL SCIENCE

DIPLOMA IN PHARMACEUTICAL TECHNOLOGY  
(DPT 2014)

**AMD 2104: MEDICAL MICROBIOLOGY I**

SPECIAL/SUPPLEMENTARY EXAMINATIONS

**SERIES: FEBRUARY 2015**

**TIME: 2 HOURS**

**INSTRUCTIONS:**

- Section A Attempt all questions.
- Section B - short answer questions Attempt all 40 marks)
- Section C – Essay Attempt any **Two** 20 marks

***This paper consists of Eight printed pages.***

## SECTION A

1. With kingdom Monera; the following is true except:
  - A. Living things are minute and single celled
  - B. They lack membrane bound nuclei
  - C. They are also called Eukaryotes
  - D. Mode of nutrition is chemosynthesis, photosynthesis to absorption through cell wall.
2. Koch's postulates constitute the following except:
  - A. Micro organism must be isolated from diseased organism and growing in culture
  - B. Cultured micro organism should cause disease when introduced into healthy organism
  - C. Micro organism must be reisolated from inoculated, diseased experimental host
  - D. Microorganism must be found in healthy organisms and not in diseased organisms.
3. True concerning kingdom Animalia
  - A. Organisms include insects, worms, fish, reptiles, amphibians, birds and mammals
  - B. Kingdom Animalia is multicellular, eukaryotic and motile living things.
  - C. The mode of nutrition is by feeding on other organisms.
  - D. All of the above is true.
4. The first microbiologist to observe bacteria using a single-lens microscopes
  - A. Anton van leeuwenhoek
  - B. Loius Pasteur
  - C. Robert Koch
  - D. Ferdinard colin
5. The main difference between gram-positive bacterium and a gram positive is
  - A. A grain positive bacterium is thick, multilayered with peptidoglycan while gram negative bacteria is thin layered with peptidoglycan
  - B. A gram positive bacterium is thin layered with peptidoglycan while grain negative bacterium is thick multilayered.
  - C. The gram positive bacterium has flagellum while the gram negative bacterium has no flagellum.
  - D. None of the above.
6. Autotrophic bacteria share; the following characteristics except
  - A. The ability to synthesize their own organic food from inorganic substances
  - B. They use carbondioxide for obtaining carbon
  - C. They utilize Hydrogen Sulphide ( $H_2S$ ) or Ammonia ( $NH_3$ ) or Hydrogen to reduce carbon
  - D. Symbiotic parasitic bacteria are subclasses of Autotrophic bacteria

7. Symbiotic bacteria has mutual beneficial association with other organisms – the following example is not true of symbiotic bacteria:
- A. Nitrogen fixing bacteria is root nodule of leguminous plants.
  - B. Escherichia coli – bacteria found in human alimentary canal.
  - C. Cellulose digesting bacteria in alimentary canal of ruminant mammals.
  - D. A tick suckling blood from a cow.
8. During lag phase in the bacterial growth curve the following takes place except
- A. The bacteria adapts to growth conditions
  - B. Synthesize of RNA, enzymes and molecules occurs.
  - C. Individual bacteria matures and not yet able to divide
  - D. Growth rate and death rate are equal
9. In preparation for staining, the smear is heat fixed for the following reasons except:
- A. Kill the organisms
  - B. To enhance adherence to the slide.
  - C. Permits the organisms to accept stain
  - D. To accelerate the viewing process.
10. In gram staining, the gram positive bacteria differs from gram-negative bacteria in:
- A. Gram positive bacteria stains purple by crystal violet while gram negative bacteria do not stain purple
  - B. Gram negative bacteria stains purple by crystal violet while gram positive bacteria do not stain purple.
  - C. None of the above is correct.
11. The ideal disinfectant should meet the following criteria except:
- A. Resistant to inactivation
  - B. Broad spectrum in action
  - C. Expensive and not easily available
  - D. Not poisonous.
12. True about saprophytic bacteria
- A. Obtain nutritional requirements from dead organs matter
  - B. The bacteria is insignificant in the ecosystem
  - C. Do not breakdown complex organic matter into simpler mater
  - D. Answer A and C is correct
13. True of parasitic bacteria except
- A. Occur in the body of animals and plants
  - B. Most of these bacteria are pathogenic
  - C. They benefit the host organism
  - D. Cause serious diseases in host organisms by releasing toxins

14. The main reason for staining specimen is
- To kill them
  - To immobilize them
  - To improve viewing with light microscope
  - To make them large in size to be viewed.
15. True of differential stain technique except
- It distinguishes two kinds of organisms gram positive bacteria and gram negative bacteria
  - Acid fast technique to grain stain technique are the two main examples of differential staining
  - It employs use of crystal violet, mordant iodine, alcohol and safranin dye as reagents.
  - Differential stain technique is inferior to simple stain technique.
16. About preservation culture media; the following is true except:
- The preservation culture media is composed of all the basic nutrients required for microbial growth.
  - The main purpose of the culture is to let organisms grow safely.
  - Preservation culture protect bacteria against any environmental damage.
  - None of the above
17. The following bacterial growth phase is characterized by cell doubling by binary fission
- Log phase/logarithmic/exponential phase
  - Lag phase
  - Stationary phase
  - Death phase
18. All the following bacteria are gram positive except which one
- Clostridium
  - Bacillus
  - Neisseria
  - Staphylococcus
19. Selective culture media
- Inhibits the growth of all bacteria
  - Fewer favours the growth of one bacteria while inhibits the other
  - Favours the growth of all bacteria
  - Best for fastidious organism
20. Antiseptic methods used in surgery was first established by
- John lister
  - Joseph lister
  - Edward Jenner
  - Robert Koch

21. Gram-negative bacteria cell wall contains all of the following components except which one?
- A. Peptidoglycan
  - B. Glycoprotein
  - C. Proteins
  - D. Teichoic acid
22. What will be the colour of gram negative cells after Gram-staining?
- A. Violet
  - B. Blue
  - C. Yellow
  - D. Pink
23. Which one of the following bacteria genera that forms spore?
- A. Streptococcus
  - B. Clostridium
  - C. Neisseria
  - D. Corynebacteria
24. Its gram positive cocci with cluster or grape-like arrangement of cells. Which one of the following genera matches the above description?
- A. Streptococcus
  - B. Diplococcus
  - C. Pneumococcus
  - D. Staphylococcus
25. Which one of the following structures used by bacteria for attachment?
- A. Fimbriae
  - B. Pili
  - C. Flagella
  - D. plasmid
26. All the following reagents are used in Ziehl-Neelsen staining except?
- A. Carbol-fuchsin
  - B. 20% H<sub>2</sub>SO<sub>4</sub>
  - C. Safranin
  - D. Methylene blue
27. The process by which bacteria transfers genetic material through contact is referred to as
- A. Conjugation
  - B. Transformation
  - C. Transduction
  - D.

28. Which one of the following is NOT the function of bacterial cell wall?
- A. Protection from osmotic pressure
  - B. Selective permeability
  - C. Conferring of shape
  - D. Attachment of plasmid
29. Which one of the following bacteria is a spirochetes
- A. Neisseria gonorrhoea
  - B. Clostridium tetani
  - C. Treponema pallidum
  - D. Corynebacterium diphtheria
30. All the following antibiotics are broad-spectrum except which one
- A. Erythromycin
  - B. Isoniazid
  - C. Ampicillin
  - D. Streptomycin
31. Which one of the following drugs is not an antibiotic?
- A. Celestamine
  - B. Chloramphenicol
  - C. Ampiclox
  - D. Amoxicillin
32. In case of suspected lower respiratory infections which among the following specimen is suitable
- A. Stool
  - B. CSF
  - C. Urine
  - D. Sputum
33. Which one of the following bacteria is weakly/family gram positive
- A. Mycobacterium
  - B. Clostridium
  - C. Chlamydia
  - D. Vibrio
34. How can dry heat sterilization be achieved
- A. By using autoclave
  - B. By using hot air oven
  - C. By using incubator
  - D. By using a centrifuge

35. The study of micro organisms using a laboratory animal is referred to as
- A. Invivo
  - B. Trivitro
  - C. Alleviannation
  - D. Refrigilation
36. The staining technique where only one stain is applied to stain the cells uniformly is referred to as
- A. Negative staining
  - B. Sproe staining
  - C. Simple staining
  - D. Differential staining
37. Which is the most suitable sterilization method for glassware
- A. Boiling
  - B. Heavy metal
  - C. Hot air oven
  - D. Radiation
38. How can milk sterilized without loosing its protein content?
- A. Autoclaving
  - B. Boiling
  - C. Pasteurilization
  - D. Steaming
39. Endospore are highly resistant to antibiotics and physical treatment which one of the following bacteria genera forms it
- A. Clostridium and bacillus
  - B. Neisseria and corynebacterium
  - C. Staphylococcus and treptococcus
  - D. Mycobacterium and pneucoccus
40. Which one of the following bacterial infections can be transmitted from animals to human beings
- A. Pneumonia
  - B. Brucellosis
  - C. Tuberculosis
  - D. Diphtheria

## SECTION B

41. Briefly highlight **FOUR** contributions made by Louis Pasteur (4 marks)
42. State **FOUR** characteristics of micro organisms. (4 marks)
43. What are **FOUR** methods used in physical sterilization. (4 marks)
44. Distinguish between antiseptics and disinfectants. (4 marks)
45. Give examples of **FOUR** basic dyes used in staining technique. (4 marks)
46. State **FOUR** antibiotics classified as bacteriostatic. (4 marks)
47. State **FOUR** groups of micro organisms on the basis of temperature. (4 marks)
48. Highlight **FOUR** functions of bacterial cell wall. (4 marks)
49. Distinguish between enrichment and selective culture media.
50. State **FOUR** mechanisms of action of chemical agents. (4 marks)
51. With examples, discuss **FIVE** kingdoms of classifications of living things. (20 marks)
52. Discuss the bacterial growth using growth curve. (20 marks)
53. Classify bacteria on the basis of
- i) Gram staining giving example. (12 marks)
  - ii) Morphology with examples. (8 marks)