



TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Applied and Health Sciences

DEPARTMENT OF MEDICAL SCIENCES

DIPLOMA IN MEDICAL LABORATORY SCIENCES
(DMLS 12J)

AML 2100 : MEDICAL BACTERIOLOGY I

SPECIAL/SUPPLEMENTARY: EXAMINATIONS

SERIES: OCTOBER 2013

TIME: 2 HOURS

INSTRUCTIONS:

You should have the following for this examination

- *Answer booklet*

This paper consists of **TWO** sections.

Answer all questions in **Section A** and **B**. ½ marks deducted for any wrong answer in **Section A**.

This paper consists of 8 PRINTED pages

SECTION A (40MARKS)

1. Eucaryotes multiply by

- a) Mitosis
- b) Binary fission
- c) Meiosis
- d) Wobbling
- e) Mitochondria

(1mark)

2. In most of the medically important bacteria generation time is

- a) 20 minutes
- b) 20 seconds
- c) 30 hours
- d) 40 hours
- e) None of the above

(1mark)

3. When bacteria are classified according to the pH we have

- a) Mesophiles
- b) Alkalophiles
- c) Psychrophiles
- d) Thermophiles
- e) Anaerobes

(1mark)

4. What is true about enriched media

- a) They inhibit the growth of a particular group of bacteria and favour all others
- b) They are media supplemented blood or tissue extracts
- c) They contain dyes and antibiotics

- d) Contain no blood
- e) They are mixed cultures

(1mark)

5. The following happens in the stationary phase of bacteria growth curve except

- a) Depletion of nutrients
- b) Formation of spores
- c) Reduction in oxygen
- d) Production of toxins
- e) Rate of growth and death are the same

(1mark)

6. Which of the following sugars is present in macconkey's medium

- a) Sucrose
- b) Mannitol
- c) Lactose
- d) Galactose
- e) None of the above

(1mark)

7. Giemsa stain is widely used in

- a) Virology
- b) Bacteriology
- c) Parasitology
- d) Haematology
- e) Biotechnology

(1mark)

8. The primary stain in gram staining technique is

- a) Gram's iodine

- b) Lugol's Iodine
- c) Crystal violet
- d) Methylene
- e) Malachite green

(1mark)

9. The following is an example of an identification media ?

- a) Dorset egg
- b) Blood agar
- c) Kligler iron agar
- d) Carry blair
- e) Amies agar

(1mark)

10. In which phase of bacteria growth curve do bacteria start to form spores

- a) Exponential phase
- b) Lag phase
- c) Death phase /decline phase
- d) Stationary phase
- e) Reproduction phase

(1mark)

11. Louis Pasteur was involved in the discovery of ?

- a) Algae
- b) Koch's postulate
- c) Fermentation and anthrax bacille
- d) DNA and RNA
- e) Mitosis

(1mark)

12. Which of the following is about agar

- a) A transport media
- b) A differential media
- c) A selective media
- d) An extract from algae (diatoms)
- e) A stock media

(1mark)

13. One of the following reagents is used as a decolouriser in gram staining technique

- a) Acetone
- b) Acid alcohol
- c) Neutral red
- d) Malachite green
- e) Lugol's iodine

(1mark)

14. A strict aerobe is one which

- a) Can live with or without free oxygen
- b) Survives only in the absence of oxygen
- c) Requires an atmosphere which contains CO₂
- d) Requires free oxygen to survive
- e) Requires a smaller amount of free oxygen

(1mark)

15. In gram staining technique gram -ve bacteria will stain

- a) Dark
- b) Purple
- c) Green
- d) Red

e) Yellow

(1mark)

16. Two of the following is true about personal hygienic practice in the laboratory

- a) Eating in the laboratory is allowed
- b) Applying cosmetics in the laboratory is allowed
- c) Always wash your hands after handling infectious materials
- d) Un authorized personnel are prohibited in the laboratory
- e) More of the above

(1mark)

17. The optimum temperature for most of the pathogenic bacteria is

- a) 45°C
- b) 37°C
- c) 60°C
- d) 20°C
- e) 27°C

(1mark)

18. The following are transport except

- a) Cled media
- b) Stuart media
- c) Carry blair media
- d) Amies media

e) Stuart and amies media

(1mark)

19. Peptone is included as a constituent of bacterial culture media because it is the best source of

a) Organic carbon

b) Organic nitrogen

c) Vitamin B

d) Vitamin A

e) None of the above

(1mark)

20. Which of the following culture media is used for the culture of mycobacterium tuberculosis?

a) Carry blair

b) Blood agar

c) Selenite .f. broth

d) Loweinstein Jensen media

e) Dorset egg

(1mark)

21. Which of the following is true about aero tolerant bacteria

a) They require free oxygen

b) They need lower oxygen

c) They are anaerobes which can grow in the presence of oxygen

d) They can tolerate high pressures

e) They can tolerate high pH

(1mark)

22. Susceptibility testing media is used for

a) Preserving micro-organism

b) Transport media

- c) Sensitivity media
- d) Differential media
- e) Selective media

(1mark)

23. The following is true about prokaryotes except

- a) Use mitochondria for respiration
- b) Simple cell structure
- c) Genetic material is not organized
- d) Include bacteria and rickettsion
- e) Multiply binary fission

(1mark)

24. What is nomenclature ?

- a) Study of micro-organisms
- b) Study of viruses
- c) Naming and giving names to micro-organisms according to published standards
- d) Study of the DNA and RNA
- e) The study of how close the bacteria are to each other genetically.

(1mark)

25. Which of the following is a major constituent of the gram –ve (negative) cell wall

- a) Peptidoglycan
- b) Techoic acid
- c) Protein
- d) Lipopolysaccharide
- e) Lipids

(1mark)

26. Which of the following bacteria is damaged by the presence of oxygen

- a) Pseudomonas spp (species)
- b) Campylobacter
- c) Helicobacter pylori
- d) Bacteroides species
- e) None of the above

(1mark)

27. The following is true about taxonomy except

- a) It allows organization of huge amounts of knowledge about organisms which share the same characteristics
- b) How close the bacteria are to each other genetically
- c) Similar organisms can easily be identified and characterized
- d) It enhances communication between microbiologists in various parts of the world
- e) Makes the identification of organisms significantly easy

(1mark)

28. The bacteria that can grow optimally at low temperature between 0°C – 30°C are called

- a) Mesophiles
- b) Thermophiles
- c) Archaea
- d) Alkalophiles
- e) Psychrophiles

(1mark)

29. Halophiles are

- a) Bacteria that grow in low oxygen
- b) Bacteria that grow in high salt concentrations
- c) Bacteria that grow under high pH concentration
- d) Bacteria that grow at temperatures
- e) None of the above

(1mark)

30. An example of a bacteria that has Rhizoidal colonies after culture is

- a) Pseudomonas species
- b) Clostridium difficile
- c) Escherichia coli
- d) Klebsiella species
- e) Bacteriodes species

(1mark)

31. What is biotyping?

- a) Bacterial reproduction
- b) The biochemical identification of micro-organisms based on enzymatic profile of the microbes
- c) Gene coding
- d) Antibody /antigen reactions
- e) Agar plate culture

(1mark)

32. The generation time of a bacteria is

- a) The duration of lag phase in batch culture
- b) The time required for doubling the number by binary fission
- c) The time required for a bacteria to complete a sexual cycle
- d) Serotyping

f) Biotyping

(1mark)

33. Two of the following are phases of the bacterial growth curve

- a) Mitosis
- b) Serotyping
- c) Death phase
- d) Meiosis
- e) Lag phase

(2marks)

34. The methods of lyophilization is done by:-

- a) Preparation of pure broth culture at -50°C
- b) Mixed culture
- c) Biotyping
- d) Serotyping
- e) Gene coding

(1mark)

35. The bacterial growth phase best suited for sensitivity test is

- a) Lag phase
- b) Death phase
- c) Stationary phase
- d) Exponential phase
- e) Decline phase

(1mark)

36. What is pure culture?

- a) Mixture of two (2) or more organisms

- b) One that originate from single bacterium
- c) Two different types of bacteria
- d) Two bacteria colonies in equal volume ratio
- e) None of the above

(1mark)

37. Two of the following happens during the lag phase of bacterial growth curve

- a) There is formation of spores
- b) Production of toxins
- c) Bacteria start to take in nutrients
- d) There is reduction of oxygen
- e) Bacteria produce new enzymes

(2marks)

SECTION B
Answer ALL questions in this section

- 1. Discuss the main types of culture media **(20marks)**
- 2. Describe the procedure of the Zn staining technique and give out the expected results.

(20marks)

- 3. (a) Bacteria can be classified on the basis of oxygen requirements discuss **(15marks)**
- (b) Briefly discuss extremophile bacteria **(5marks)**