



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF MEDICAL SCIENCES

UNIVERSITY EXAMINATION FOR:

CERTIFICATE IN MEDICAL LABORATORY SCIENCES

AML 2012 : MEDICAL BACTERIOLOGY II

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

DATE: Pick Date Dec 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **TWO** Section(s). Attempt ALL questions.

Circle the correct answer in section A.

Section A

1. The reason why some H₂S producers may fail to do so in Triple Sugar Iron agar may be;
 - a) Because of the competitive fermentation of lactose and/or glucose
 - b) Absence of thiosulphatase in the subject organism
 - c) Sucrose fermentation affects enzymic reduction of thiosulphate
 - d) Increased acidity inhibits thiosulphate reduction

2. The indicator included in motility indole and lysine (MIL) media is
 - a) Bromothymol blue
 - b) Bromothymol green
 - c) Bromocresol purple
 - d) Thymol red

3. In TSI, the reaction ALK/ALK no gas nor hydrogen sulphide may be shown by
 - a) *Staphylococcus aureus*
 - b) *Pseudomonas aeruginosa*
 - c) *Vibrio cholera*

d) *Klebsiella pneumonia*

4. Which of the following tests detects the production of acetoin
 - a) Methyl red test
 - b) Voges-proskauer test
 - c) Indole test
 - d) Citrate test
5. Lactose fermentation requires which of the following enzymes
 - a) β -galactose
 - b) Galactoside permease
 - c) Galactoside Synthetase
 - d) Deaminase
6. Traveller's diarrhoea is caused by which strain/s of E. Coli
 - a) ETEC
 - b) EPEC
 - c) EIEC
 - d) EHEC
7. Toxic shock syndrome toxin is associated with the infection of
 - a) *Escherichia coli*
 - b) *Staphylococcus aureus*
 - c) *Neisseria gonorrhoea*
 - d) *Streptococcus agalactiae*
8. Cellwall protein of streptococcus pyogenes cross-reacts with human
 - a) Synovial fluid
 - b) Myocardium
 - c) Cardiac valves
 - d) Microglial cells
9. Susceptibility to streptococcal pyogenic exotoxin is demonstrated by
 - a) Dick test
 - b) Schick test
 - c) Antistreptolysine O test
 - d) Ascolis test
10. Streptolysin 'O' is
 - a) Oxygen labile
 - b) Antigenic
 - c) Heat resistant
 - d) Oxygen resistant
11. Quellung reaction is a form of
 - a) Routine diagnostic test for anthrax identification
 - b) Serotyping technique
 - c) Antigen – antibody technique
 - d) A quantitative technique
12. The term staphylococcus was introduced by
 - a. Sir. Alexander Ogston
 - b. Sir. Lous Pasteur

- c. Sir. Van leewenhoek
 - d. Sir. Arlie Metchnkoff
13. Most pathogenic bacteria are considered to fall in which of these group
- a. Psychrophiles
 - b. Mesophiles
 - c. Thermophiles
 - d. Mesophites
14. The bacterial cell wall is made up of?
- a. Glycolipids
 - b. Peptidoglycan
 - c. Lipopolysacharide
 - d. Mucopeptide
15. The following may aid in choosing the correct specimen for diagnosis
- a. Pathogen to be isolated
 - b. Availability of the specimen
 - c. Clinical history
 - d. Availability of the reagents for the test
16. Antony van Leeuwenhoek
- a. Introduced the term staphylococcus which was associated with pyogenic diseases
 - b. Discovered the importance of using antiseptics
 - c. Resolved bodies to x200
 - d. Demonstrated transmission of cholera
17. Capnophiles
- a. Grow well in the presence of 5-10% N₂
 - b. Grow well in the absence of 5-10% CO₂
 - c. Grow well the presence of 5-10% CO₂
 - d. Grow well with or without free O₂
18. The most active stage in the sigmoid curve of bacteria in which maximum growth is attained is
- a. Lag phase
 - b. Stationary phase
 - c. Decline phase
 - d. Log phase
19. Log-phase is also known as
- a. Death phase
 - b. Exponential phase
 - c. Lag-phase
 - d. Plateau phase
20. Bacteria are more sensitive to antibiotics at which phase of growth curve?
- a. Decline phase
 - b. Stationary phase

- c. Lag phase
 - d. Log phase
21. Pus-forming forms are called as
- a. Pyoderm
 - b. Pyogenic
 - c. Pyrogen
 - d. Antigenic
22. Toxic shock syndrome is caused by
- a. *Staphylococcus albus*
 - b. *Staphylococcus aureus*
 - c. *Streptococci viridans*
 - d. *Streptococci agalactiae*
23. *Escherichia coli* produces the following toxins
- a. Enterotoxins
 - b. Exotoxins
 - c. Verocytotoxins
 - d. Neurolysins
24. The following infections are caused by *Escherichia coli*, except
- a. Urinary tract infections
 - b. Boils
 - c. Diarrhoea
 - d. Dysentery
25. In humans *Streptococcus pneumoniae* causes
- a. Septicaemia
 - b. Dysentery
 - c. Pneumonia
 - d. Impetigo
26. Causative agent of Scarlet fever is
- a. *Staphylococcus aureus*
 - b. *Streptococcus viridans*
 - c. *Streptococcus pyogenes*
 - d. All of the above
27. "Toxic shock syndrome" is caused by the toxin of
- a. *Staphylococcus aureus*
 - b. *Streptococcus pyogenes*
 - c. *Vibrio cholerae*
 - d. *Candida albicans*
28. Enterotoxin responsible for food poisoning is secreted by
- a. Enterococci
 - b. *Entamoeba histolytica*
 - c. Enterobacteriaceae
 - d. Staphylococci
29. Hanging drop method for motility study was first introduced by

- a. Robert Koch
 - b. Louis Pasteur
 - c. Jenner
 - d. Leeuwenhock
30. Disease that effects many people at different countries is termed as
- a. Sporadic
 - b. Pandemic
 - c. Epidemic
 - d. Endemic
31. Streptococcus pneumoniae was isolated by
- a. Robert Koch
 - b. Edward Jenner
 - c. Antony von Leewenhock
 - d. Louis Pasteur
32. Mordant used in Grams staining is
- a. Crystal violet
 - b. Iodine
 - c. Saffranin
 - d. All of these
33. Cholera occurs in _____ form
- a. Endemic
 - b. Epidemic
 - c. Sporadic
 - d. None of these
34. Which of the following induces dimerisation of thymine?
- a. X-rays
 - b. U.V. rays
 - c. Gamma-rays
 - d. None of these
35. Example of Anaerobic medium is
- a. Robertson cooked-meat medium
 - b. Nutrient agar
 - c. Nutrient broth
 - d. Mac-Conkey's agar
36. Culture medium for Mycobacterium tuberculosis
- a. Loweinstein Jensen medium
 - b. Mac Conkey's medium
 - c. Wilson blair medium
 - d. None of these
37. Causative agent of syphilis
- a. *Treponema pallidum*
 - b. *Treponema pertenuae*
 - c. *Treponema carateum*

- d. *Treponema endemicum*
38. Bacitracin sensitivity test is done for
- Pneumococci
 - Group 'A' Streptococci
 - Gonococci
 - Staphylococci
39. Amoxicillin is combined with clavulanic acid to inhibit
- DNA gyrase
 - Cell synthesis
 - Protein synthesis
 - β -lactamase enzymes
40. Blood agar medium is
- Enrichment medium
 - Enriched medium
 - Selective medium
 - Basic medium

Section B

- Describe;
 - Four (4) classes of media (10 marks)
 - How you would package and send a sample suspected to harbour methicillin resistant *Staphylococcus aureus* (MRSA) from Mombasa to KEMRI's Centre for Microbiology research (CMR) in Nairobi. (10 marks).
- Outline and give significance of;
 - Indole test (5 marks)
 - Catalase test (5 marks)
 - Coagulase test (5 marks)
 - Optochin test (5 marks)
- Outline how you would isolate and identify *Escherichia coli* from diarrheic stool from an infant suspected to suffer from gastro enteritis (20 marks)