



## BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – DMLT-2023

Course Name – Systemic & Clinical Bacteriology

Course Code - DMLT203

( Semester II )

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) What is the primary habitat of Staphylococcus aureus in humans
  - a) Skin and mucous membranes
  - b) Intestinal tract
  - c) Respiratory tract
  - d) Bloodstream
- (ii) What is the name of the enzyme produced by Staphylococcus aureus that promotes the coagulation of blood plasma
  - a) Catalase
  - b) Hyaluronidase
  - c) Coagulase
  - d) Lipase
- (iii) What is the primary purpose of pure culture technique in microbiology
  - a) To study microbial interactions
  - b) To isolate and study individual microorganisms
  - c) To enhance microbial growth
  - d) To create complex microbial communities
- (iv) Which test is commonly used to differentiate between Streptococcus pneumoniae and other alpha hemolytic streptococci
  - a) Optochin sensitivity test
  - b) Bacitracin sensitivity test
  - c) Catalase test
  - d) Coagulase test
- (v) Which of the following is NOT a common antibiotic resistant bacteria
  - a) MRSA (Methicillin-resistant Staphylococcus aureus)
  - b) VRSA (Vancomycin-resistant Staphylococcus aureus)
  - c) E. coli (Escherichia coli)
  - d) VRE (Vancomycin-resistant Enterococcus)
- (vi) Which of the following culture media is used as selective media for salmonella
  - a) Wilson Blair and bismuth sulphite media
  - b) Bile salt agar
  - c) potassium tellurite blood agar
  - d) None of the above
- (vii) A positive tuberculin skin test is indicated by an area of induration of
  - a) <5 mm in diameter
  - b) 6–9 mm in diameter
  - c) No induration
  - d) ≥10 mm in diameter

- (viii) Choose the correct option of Mycobacterium tuberculosis
- a) Gram positive ,non motile,acid fast bacilli      b) Gram negative ,non motile,acid fast bacilli  
c) Gram positive , motile,acid fast bacilli      d) Gram negative , motile,acid fast bacilli
- (ix) Most common cause of infantile diarrhea in developing country is
- a) EHEC      b) ETEC  
c) EPEC      d) EIEC
- (x) Production of early metachromatic granules can be seen best in which of the following media
- a) Nutrient agar      b) Chocolate agar  
c) Loeffler's serum slope      d) Potassium tellurite agar
- (xi) Metachromatic granules of Corynebacterium diphtheriae can be stained by all of the following special stains except
- a) Neisser stain      b) Ziehl-Neelsen stain  
c) Albert stain      d) Ponder stain
- (xii) Drug used in Pseudomonas treatment
- a) Cefixime      b) Ceftazidime  
c) Ampicillin      d) Cotrimoxazole
- (xiii) Which of the following is the most common etiological agent of UTI
- a) Escherichia coli      b) Klebsiella  
c) Proteus      d) Enterobacter
- (xiv) Recommended transport medium for stool specimen suspected to contain Vibrio cholerae is
- a) Buffered glycerol saline medium      b) Venkatraman-Ramakrishnan medium  
c) Nutrient broth      d) Blood agar
- (xv) Which of the following is NOT a typical characteristic of Salmonella typhi on Gram stain
- a) Gram-negative bacilli      b) Single organisms or pairs  
c) Capsule formation      d) Flagellar motility

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. Compare and Contrast between somatic and flagellar antigen (3)
3. Classify nontuberculous mycobacteria based on pigment production (3)
4. Discuss the mechanism of Action of cholera toxin (3)
5. Define inoculation in microbiology. (3)
6. Outline the step-by-step process of isolating a pure culture from a mixed microbial population discussing the importance of streak plate technique and aseptic technique in achieving microbiological purity. (3)

OR

- Compare and Contrast between lepromatous leprosy and tuberculoid leprosy. (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain the procedure of coagulase test and interpret the result. (5)
8. Explain the procedure of Catalase test and interpret the result. (5)
9. Evaluate current diagnostic methods for identifying Staphylococcus infections including culture based techniques molecular assays and antigen detection tests . (5)
10. Discuss the unique features of acid fast bacteria. (5)
11. Write a short note on Widal test (5)

12. Analyze the impact of pre-analytical variables, such as specimen collection, transport, and storage conditions, on the accuracy and reliability of laboratory diagnosis of E. coli infections. (5)

OR

A 28 year old male was admitted to the hospital with complaints of low grade fever loss of weight and chronic cough with expectoration. for past 6 months Sputum examination revealed long slender and beaded acid fast bacilli What is your provisional diagnosis and Mention the laboratory diagnosis in detail (5)

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