# BRAINWARE UNIVERSITY

### Term End Examination 2024-2025
### Programme – DMLT-2021/DMLT-2023/DMLT-2024
### Course Name – Microbiology & General Bacteriology
### Course Code - DMLT103
### ( Semester I )

**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)  Gram-positive bacteria are usually more susceptible to?

a) streptomycin
b) tetracyclin
c) penicillin
d) ampicillin

(ii)  Which of the following bacteria is commonly detected using acid-fast staining?

a) Escherichia col
b) Staphylococcus aureus
c) Mycobacterium tuberculosis
d) Streptococcus pyogenes

(iii)  Which test is used to differentiate between Escherichia coli and other members of the Enterobacteriaceae family?

a) Citrate utilization test
b) Urease test
c) Methyl red test
d) Indole test

(iv)  Which test is used to detect the presence of urease-producing bacteria, such as Proteus species?

a) Simmons citrate test
b) Catalase test
c) Urease test
d) Indole test

(v)  Which test is used to determine whether a bacterium can reduce nitrate to nitrite?

a) Catalase test
b) Lysine decarboxylase test
c) Nitrate reduction test
d) Urease test

(vi)  What is the primary characteristic used in Gram staining for bacterial identification?

a) Cell size
b) Cell shape
c) Cell wall composition
d) Cell motility

(vii)  Acid-fast staining is used to identify bacteria in which genus known for causing tuberculosis?

a) Streptococcus
b) Mycobacterium
c) Listeria
d) Salmonella

(viii)  What is the primary purpose of antibiotic susceptibility testing?

a) Identifying the species of bacteria

b) Determining the source of infection

c) Assessing the susceptibility of bacteria to antibiotics

d) Measuring bacterial growth rate

(ix) Which method is commonly used to perform antibiotic susceptibility testing in the clinical laboratory?

a) PCR

b) ELISA

c) Kirby-Bauer disk diffusion

d) Gram staining

(x) What is the CLSI?

a) Clinical Laboratory Science Institute

b) Center for Laboratory Safety and Innovation

c) Clinical and Laboratory Standards Institute

d) Comprehensive Laboratory Services International

(xi) Which of the following structures is not typically found in all bacteria?

a) Capsule

b) Flagella

c) Cell Wall

d) Endospore

(xii) Which of the following is a commonly used negative stain?

a) Crystal violet

b) Gram's iodine

c) India ink

d) Safranin

(xiii) What is the effect of urease production on the pH of the medium?

a) Decreases the pH

b) Increases the pH

c) No effect on pH

d) Fluctuates the pH

(xiv) What by-product of urea hydrolysis raises the pH of the medium?

a) Hydrogen gas

b) Carbon dioxide

c) Ammonia

d) Methane

(xv) Which indicator is used in TSI agar?

a) Phenol red

b) Methyl red

c) Bromothymol blue

d) Litmus

## Group-B
### (Short Answer Type Questions)                                     3 x 5=15

2. Define the function of capsule in bacteria?                                    (3)
3. Explain the significance of flagella in bacterial motility.                    (3)
4. If any bacterium is citrate test negative- what will be your interpretation?   (3)
5. Define is the principle of indole test?                                        (3)
6. Compare and contrast between Selective and Enrichment culture medium           (3)

### OR

How will you conclude Corynebacterium diphtheriae is presence in the smear by Albert Stain                                                                          (3)

## Group-C
### (Long Answer Type Questions)                                      5 x 6=30

7. Explain the function of capsule in bacteria?                                    (5)
8. Illustrate briefly about catalase test.                                        (5)
9. Compare Gram Negative and Gram Positive bacteria with proper diagram           (5)
10. Writedown the Classification of bacteria depending on arrangements and position of flagella.                                                                   (5)
11. How do you differentiate between members of the family Enterobacteriaceae and non-fermentative Gram-negative bacteria?                                           (5)
12. Illustrate that how will you discriminate Acid Fast Bacilli from non Acid Fast Bacilli.   (5)

### OR

Classify bacteria depending on Oxygen requirements                                (5)