



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(MLT)-2022/B.Sc.(MLT)-2023/B.Sc.(MLT)-2024

Course Name – Clinical Microbiology & Bacteriology

Course Code - BMLTC402

(Semester IV)

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) Select from the following regarding structural components of LPS layer
 - a) Lipid A
 - b) Core polysaccharide
 - c) Polysaccharide-O- antigen
 - d) All of these
- (ii) In case of SEM, select the reason behind image formation Image
 - a) Secondary electron beam
 - b) Primary electron beam
 - c) Both primary and secondary electron beam
 - d) None of these
- (iii) In fluorescence microscopy, which of the following performs the function of removing all light except the blue light?
 - a) Exciter filter
 - b) Barrier filter
 - c) Dichroic mirror
 - d) Mercury arc lamp
- (iv) Identify the correct term to describe time required for the population to double in number
 - a) Growth time
 - b) Generation time
 - c) Growth rate
 - d) TDT
- (v) Which of these objectives should be used to first view the specimen?
 - a) 100X
 - b) 1000X
 - c) 40X
 - d) 10X
- (vi) Identify the term to describe a disinfectant that can prevent the growth of fungi
 - a) Fungicidal
 - b) Fungistatic
 - c) Microbicidal
 - d) Microbisatic
- (vii) Identify the correct name regarding the ability of bacteria to change their morphological form frequently
 - a) Pleomorphism
 - b) Lysogeny
 - c) Log growth
 - d) None of these
- (viii) What is the approximate size of the bacterial cell?

- Barasa, R.
- a) 2mm in diameter
b) 1mm in diameter
c) 2 micrometer in diameter
d) 0.5 to 1.0 micrometer in diameter
- (ix) Which of the following is not a Koch's postulate?
- a) The bacteria should be able to be isolated from a diseased tissue
b) When inoculated in experimental animals bacteria may or may not cause disease
c) Bacteria should be able to be isolated from the diseased tissue in the experimental animals
d) Pure cultures can be obtained
- (x) Which phase shows the reproduction rate equal to the equivalent death rate?
- a) Log phase
b) Stationary phase
c) Death phase
d) Lag phase
- (xi) Which class of antibiotics acts by inhibiting bacterial protein synthesis?
- a) Macrolides
b) Penicillins
c) Quinolones
d) Sulfonamides
- (xii) A stool sample is cultured on a medium containing bile salts and crystal violet to inhibit the growth of Gram positive bacteria. Identify the type of medium
- a) Enriched
b) Selective
c) Differential
d) Differential and selective
- (xiii) How do yeasts differ from molds in terms of growth habit?
- a) Yeasts grow as multicellular structures
b) Molds grow as unicellular organisms
c) Yeasts reproduce sexually
d) Molds reproduce asexually
- (xiv) Identify the purpose of using MacConkey agar in bacterial culture
- a) To differentiate between Gram-positive and Gram-negative bacteria
b) To select for lactose-fermenting bacteria
c) To isolate anaerobic bacteria
d) To isolate vibrio cholerae
- (xv) Select the chemical that is used for disinfection of the blood spillage area
- a) Phenol
b) Hypochlorite
c) Lysol
d) Formaldehyde

Group-B

(Short Answer Type Questions)

$$3 \times 5 = 15$$

2. Discuss the function of bacterial capsule (3)
3. In a laminar airflow chamber UV rays are used as a disinfectant - interpret the statement with proper justification (3)
4. Define plant like microbe and animal like microbe (3)
5. Differentiate between streptococcus and diplococcus (3)
6. Explain the reason behind not using neither methyl alcohol nor hexyl alcohol as an antimicrobial agent with proper justification (3)

OR

Penicillin is effective more in Gram positive bacteria but not in Gram negative bacteria- Explain (3) the proper reason using suitable example of bacteria

Group-C

(Long Answer Type Questions)

$$5 \times 6 = 30$$

7. Antibiotics are generally effective against bacterial infections and ineffective against viral infection. Analyze the possible reasons and explain in details (5)
8. Differentiate selective and differential culture media with the help of a suitable example (5)
9. If you can change all pyrimidine to purine bases in a DNA, UV rays are unable to act. What conclusion can you draw from the statement. (5)

10. Growth rate is reciprocal of generation time- interpret the statement (5)
11. Catalase and superoxide dismutase (SOD) enzymes are crucial for the growth of aerobic bacteria. Explain it briefly (5)
12. Dr. Das wants to prevent bacterial aminoacylation during protein synthesis and Dr. Chakraborty wants to inhibit the formation of 30S initiation complex. Analyze and explain the name and mode of action of antibiotics for their experiment. (5)

OR

Plan an experimental set up to isolate vibrio cholerae from stool sample (5)

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