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BRAINWARE UNIVERSITY

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Term End Examination 2025-2026

Programme – B.Sc.(CCT)-2022/B.Sc.(CCT)-2023/B.Sc.(CCT)-2024/B.Sc.(CCT)-2025

Course Name – Microbiology

Course Code - BCCTC201

(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) you have to visualize bacteria under a bright field light microscope using the Gram staining process, select the modant for the staining process
 - a) safranin
 - b) acid fuchsin
 - c) iodine
 - d) crystal violet
- (ii) Select the time required for the population to double in number
 - a) Growth time
 - b) Generation time
 - c) Growth rate
 - d) TDT
- (iii) Identify the correct morphological name of oval shaped bacteria with grapes bunch like arrangements
 - a) Streptococci
 - b) Pleomorphic
 - c) Sarcinae
 - d) Staphylococcus
- (iv) Identify by which AIDS virus spreads in the body
 - a) Suppressor T-cells
 - b) Carrier T-cells
 - c) Helper T-cells
 - d) Killer T-cells
- (v) Name term used to describe a cluster of spherical bacteria
 - a) Streptococci
 - b) Staphylococci
 - c) Diplococci
 - d) Bacilli
- (vi) Name the factor that can affect the efficacy of a disinfectant
 - a) The size of the microorganisms
 - b) The pH of the solution
 - c) The color of the material being disinfected
 - d) The ambient temperature of the room
- (vii) Identify the example of an bacterial infection
 - a) Influenza
 - b) Malaria
 - c) Tuberculosis
 - d) HIV/AIDS
- (viii) Select the factor Which is not a risk factor for acquiring a nosocomial infection
 - a) Prolonged hospital stay
 - b) Use of invasive medical devices
 - c) Antibiotic use
 - d) Having a strong immune system

- (ix) Choose among the following which is not a component of the innate immune system
- | | |
|-------------------------|----------------------|
| a) B cells | b) Macrophages |
| c) Natural killer cells | d) Complement system |
- (x) Name the test used to diagnose HIV
- | | |
|------------|------------------|
| a) ELISA | b) PCR |
| c) CT scan | d) None of these |
- (xi) Name the test which is used to diagnose COVID-19
- | | |
|---|------------------|
| a) Polymerase chain reaction (PCR) test | b) Antibody test |
| c) Chest X-ray | d) All of these |
- (xii) Choose the form of malaria which can result in organ failure and death
- | | |
|-------------------------|---------------------|
| a) Mild malaria | b) Cerebral malaria |
| c) Asymptomatic malaria | d) Chronic malaria |
- (xiii) In case of exponential phase of bacterial growth, $n = 3.3(\log N - \log N_0)$. Select correct option which denotes n
- | | |
|-------------------------|----------------------|
| a) Growth rate | b) Generation time |
| c) Number of generation | d) Log of generation |
- (xiv) Identify the type of flagella present in Salmonella typhi
- | | |
|------------------|------------------|
| a) Peritrichous | b) Lophotrichous |
| c) Amphitrichous | d) Monotrichous |
- (xv) Name the thermophilic bacteria
- | | |
|---------------------|------------------|
| a) Lactobacillus sp | b) E.coli |
| c) Vibrio cholerae | d) None of these |

Group-B

(Short Answer Type Questions)

3 x 5=15

- "Escherichia coli is monobacillus"- Briefly explain the statement. (3)
- "All immunogens are antigens, not all antigens are immunogens"-explain the statement (3)
- Name primary stain, counter stain and mordant name in case of AFB stain. (3)
- In laminar airflow chamber, UV rays are used as a disinfectant - interpret the statement with proper justification. (3)
- Penicillin is effective more in Gram positive bacteria but not in Gram negative bacteria- Explain the proper reason using suitable example of bacteria. (3)

OR

Streptomycin and tetracyclines both are protein synthesis inhibitor, but mode of action is different- focus on the statement to explain whether it is true or false. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

- Differentiate between active TB and latent TB. (5)
- Distinguish Gram positive bacterial cell wall and Gram negative bacterial cell wall concerning Gram stain character. (5)
- Bacteria A- Pinkish colour under microscopic view After doing Gram Stain and also need special supplement nutrient for growth. Write an interpretation of your observation point on Gram staining procedure and bacterial culture medium of said bacterium. (5)
- Discuss humoral immunity and cell-mediated immunity. (5)
- Erythroblastosis fetalis is type II hypersensitivity, not type I- interpret with your justification. (5)
- One patient is HIV positive, and another one is having AIDS. How can you compare between two patients. (5)

OR

Illustrate phagocytosis as an innate immunity parameter with a suitable diagram. (5)