

**B. Sc. MEDICAL TECHNOLOGY (LABORATORY) (BMLT)
SEMESTER -VI EXAMINATION, SEPTEMBER- 2026**

APPLIED MICROBIOLOGY AND ADVANCE TECHNIQUES

[Time allotted: Three Hours]

[Max Marks: 100]

Note: Read all the instructions carefully

Answer all questions in serial order. Draw suitable diagrams wherever necessary

Q. 1. Objective type questions: (Attempt All)

(10 x 02 = 20)

(Very short/ short answer/ MCQ/ One liners/ Fill in the blanks/ True/False)

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| a. Which organism is the most common cause of urinary tract infection (UTI)? | (PO1, PO3, PO4; CO1, CO3) |
| b. Define nosocomial infection. Give one example. | (PO1, PO3; CO1, CO3) |
| c. The causative organism of typhoid fever is _____. | (PO1; CO1, CO3) |
| d. The Ziehl–Neelsen stain is used for which bacteria? | (PO1, PO3; CO1, CO4) |
| e. 'Urine colony count >10 ⁵ CFU/ml is considered significant bacteriuria. (True/False) | (PO1; CO1, CO3) |
| f. Name any two pathogen causing sore throat. | (PO1; CO1, CO3) |
| g. Indirect ELISA is used for detection of:..... | (PO1, PO4; CO1, CO6) |
| h. Write full form of RTPCR. | (PO1, PO4; CO2, CO6) |
| i. Name any two pathogen causing vaginal discharge. | (PO1, PO3; CO1, CO3) |
| j. State one difference between antiseptic and disinfectant. | (PO1, PO4; CO1, CO6) |

Q. 2. Short notes/ Short answer type questions (Attempt any Five)

(05 x 04 = 20)

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| a. Write short note on laboratory diagnosis of urinary tract infections (UTIs). | (PO1, PO3; CO1, CO6) |
| b. Explain the principle of Gram staining. | (PO1, PO4; CO4) |
| c. Write a short note on epidemic outbreak investigation. | (PO2, PO3, PO5; CO6) |
| d. Describe culture methods for bacteria. | (PO1, PO4; CO4) |
| e. Write a note on biosafety precautions in microbiology lab. | (PO2, PO5; CO2, CO6) |
| f. Briefly describe antibiotic susceptibility testing (AST) methods. | (PO1, PO3; CO6) |
| g. Write definition and 2 bacterial causes for Pyrexia of Unknown Origin (PUO). | (PO1; CO1, CO3) |

Q. 3. Structured questions (Attempt any Three)

(03 x 10 = 30)

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| a. (i) Describe the steps in laboratory diagnosis of tuberculosis. | (PO1, PO3; CO1, CO3, CO6) |
| (ii) Mention special stains used for Mycobacterium. | (PO1, PO4; CO4) |
| (iii) Write different methods for TB detection and drug resistance. | (PO1, PO4, PO5; CO6) |
| b. (i) Enumerate the pathogen causing pyogenic meningitis. | (PO1; CO1, CO3) |
| (ii) Explain the pathogenesis for pyogenic meningitis. | (PO1, PO3; CO1, CO3) |
| (iii) Write in detail about the lab diagnosis of meningitis. | (PO1, PO4; CO1, CO3, CO6) |
| c. (i) Explain the term antimicrobial resistance. | (PO1, PO5; CO1, CO6) |
| (ii) Mention common resistant bacteria in hospitals. | (PO1, PO5; CO1, CO6) |
| (iii) State measures to prevent resistance. | (PO2, PO5; CO6) |
| d. (i) List the common pathogen causing Sexually Transmitted Disease. | (PO1; CO1, CO3) |
| (ii) Describe in detail the lab work up for STD diagnosis. | (PO1, PO3; CO1, CO6) |
| (iii) Write in detail about the screening and confirmatory tests for syphilis. | (PO1, PO4; CO1, CO6) |

Q. 4. Long Answer/ Essay type questions (Attempt any Two)

(02 x 15 = 30)

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| a. (i) Discuss in detail the laboratory diagnosis of respiratory tract infections. | (PO1, PO3; CO1, CO6) |
| (ii) Write about role of culture and sensitivity testing. | (PO1, PO4; CO4, CO6) |
| b. (i) Describe the principle and various types of PCR. | (PO1, PO4; CO2, CO6) |
| (ii) Discuss their applications in the lab settings. | (PO1, PO3, PO4; CO2, CO6) |
| c. (i) Write in detail about laboratory diagnosis of enteric pathogens. | (PO1, PO3; CO1, CO6) |
| (ii) Discuss in detail about the culture media for stool sample processing. | (PO1, PO4; CO4, CO6) |