

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

QUALITY ASSURANCE IN CLINICAL BIOCHEMISTRY AND MOLECULAR BIOLOGY

[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)**

PO1 CO6 CO7

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

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| <p>a. The bond formed between the sugar of one nucleotide and the phosphate group of the next is:</p> <ol style="list-style-type: none"> Glycosidic bond Hydrogen bond Peptide bond Phosphodiester bond <p>b. Which RNA carries amino acids to the ribosome during protein synthesis?</p> <ol style="list-style-type: none"> mRNA tRNA rRNA snRNA <p>c. Accuracy is:</p> <ol style="list-style-type: none"> Reproducibility of the result The ability to detect minute amounts of analyte Closeness of the result to the true value Same as precision <p>d. Molecule of genetic information is:</p> <ol style="list-style-type: none"> Protein DNA RNA Enzyme <p>e. Which base is NOT present in normal DNA or RNA?</p> <ol style="list-style-type: none"> Uracil Thymine Theophylline Guanine | <p>f. DNA is denatured by:</p> <ol style="list-style-type: none"> Heat Acid Alkali All of the above <p>g. What is the direction of translation :</p> <ol style="list-style-type: none"> 5' - 3' 3' - 5' 5' - 5' 3' - 3' <p>h. Which is an oncofoetal antigen?</p> <ol style="list-style-type: none"> CEA CA- 125 β- HCG ALP <p>i. The two DNA strands are held together by:</p> <ol style="list-style-type: none"> Covalent bonds Ionic interactions Hydrogen bonds Vander Waals forces <p>j. Which of the following is true about t-RNA?</p> <ol style="list-style-type: none"> No intra basal pairing Inverted T appearance Clover leaf pattern Each specific for one m-RNA |
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Q. 2. Short notes/ Short answer type questions (Attempt any Five)**(05 x 04 = 20)**

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| a. Define Standard deviation with one example | PO1CO6 |
| b. Define Coefficient of variation with one example | PO1CO6 |
| c. Write briefly on analytical errors | PO1CO6 |
| d. Write briefly on Westguard rules | PO1CO6 |
| e. Write short note on mutation | PO1CO6 |
| f. Write short note on genetic code | PO1CO6 |
| g. Define Standard error with one example | PO1CO6 |

Q. 3. Structured questions (Attempt any Three)**(03 x 10 = 30)**

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| a. Describe with diagram the structure of tRNA | PO1CO6 |
| b. Describe the application of polymerase chain reaction along with its principle. | PO1CO6 |
| c. What are tumor markers and describe their importance in cancer treatment with examples? | PO1CO6 |
| d. Write four differences between Internal and external quality control in Biochemistry laboratory | PO1CO6 |

Q. 4. Long Answer/ Essay type questions (Attempt any Two)**(02 x 15 = 30)**

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| a. What is transcription? Describe with example two post-transcriptional modifications. | PO1CO6 |
| b. What are the importance of quality control in Biochemistry Laboratory? Describe quality assurance in terms of Pre-analytical, analytical and post-analytical errors | PO1CO6, CO7 |
| c. Write a detailed note on recombinant DNA technology, explaining the process and highlighting useful examples of its applications. | PO1CO6 |