

TEST -1 EXAMINATION- MARCH-2023

COURSE CODE (CREDITS): 20MS1BT215 (2)

MAX. MARKS: 15

COURSE NAME: MOLECULAR DIAGNOSTICS

COURSE INSTRUCTOR: Dr. Jitendraa Vashistt

MAX. TIME: 1 Hour

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*Note: All questions are compulsory. Marks are indicated against each question in brackets.*

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- Q1. Mutations may occur at different levels in an organism i.e. in DNA, RNA and protein. Which of the mutation has the chances to reach to next generation? Explain the phenomenon for justification of your answer. (3marks)
- Q2. Why molecular based identification is required for identification of disease causing pathogen even when the microbiological/culture based clinical diagnostic methods are available for organism identification? (3marks)
- Q3. What are the consequences of increase in number of 'trinucleotide repeats expansions' in humans? What will be the result if the expansion occurs at the exon region of DNA? Justify your answer with a suitable example. (3marks)
- Q4. What will be the result of a Polymerase chain reaction if a researcher had put the following conditions? (3marks)
- a) Forward and reverse primers had high concentrations than the optimum concentrations.
  - b) Annealing temperature was less than  $6^{\circ}\text{C}$  than the  $T_m$  of primers.
  - c) EDTA concentration was high and Taq buffer was not optimized.
- Q5. If you have amplified a gene responsible for disease and need to prove that amplicon is specifically amplified and it is not nonspecific amplification/artifact. Design a strategy for the proof using molecular methods. (3marks)