

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- Feb 2024

M.Sc.-II Semester (Biotechnology)

COURSE CODE (CREDITS): 20MS1BT215 (2)

MAX. MARKS: 15

COURSE NAME: **Molecular Diagnostics**

COURSE INSTRUCTOR: **Jitendraa Vashistt**

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in brackets.

- Q1. Is it possible to detect the disease of a person *in-vitro* using biomolecules like DNA or protein? Justify your answer with suitable example. (2 marks)
- Q2. How do you classify DNA in terms of its polarity; hydrophilic or hydrophobic? Justify your answer with suitable structural elucidations? (2 marks)
- Q3. How do you define mutation? Which of the condition show a severe effect if the mutation occur in a) DNA sequence, b) RNA sequence or c) protein sequence? Justify your answer with suitable example. (3 marks)
- Q4. How do you define a molecular event, if there is a base substitution which results in the generation of a codon that specifies a different amino acid and hence leads to a different polypeptide sequence? Also classify this on the basis of resulting polypeptide. (3 marks)
- Q5. A group of proteins is usually found associated with eukaryotic DNA and it is required for stability of the genome of eukaryotic organism.
- a) Identify this group of proteins and explain the biological significance of its unit structure with DNA? (2marks)
- b) Define the highest condensed/packing state of the above mentioned complex of DNA-proteins and also classify these structures based upon location of center. (3 marks)