

# Paper ID [CS519]

(Please fill this Paper ID in OMR Sheet)

**M.Tech.**

## FUNDAMENTAL CONCEPTS OF BIOINFORMATICS (CS - 519)

**Time : 03 Hours**

**Maximum Marks : 100**

### **Instruction to Candidates:**

- 1) Attempt any **Five** questions.
- 2) All questions carry equal marks.

**Q1)** What are the important components of DNA? Write the different types of DNA. Discuss in detail about the double helical structure of DNA.

**Q2)** Define proteins. What are polypeptides? Write detailed note on the classification of proteins. Give suitable examples.

**Q3)** (a) State the differences between DNA and RNA.

(b) Write note on the role of molecular biology in bioinformatics.

**Q4)** (a) What do you understand by protein folding? Write the techniques used in studying protein folding.

(b) Explain the concept of gene expression.

**Q5)** Describe the concept of molecular phylogenetics. What are phylogenetic trees? Write their significance.

**Q6)** (a) Define gene. What are genomes? Write their importance.

(b) What do you understand by data base? What is its importance? Write note on the DNA sequence data bases.

- Q7)** (a) What do you understand by local alignment and discuss the concept of the Smith-Waterman algorithm.
- (b) What do you understand by central dogma of molecular biology?

**Q8)** Write note on the followings :

- (a) Post-translational modifications.
- (b) Dot plots.