Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.C.A.- SEMESTER – V • EXAMINATION – WINTER 2012

Subject code: 650015 **Date: 29-12-2012**

Subject Name: Bioinformatics (Bio-I)

Time: 10:30 am – 1:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Que: 1 (a)	Explain importance of bioinformatics and also discuss the challenges in information processing.	07
Que: 1 (b)	What is Bioinformatics? Which types of Database used in Bioinformatics and discuss any one in detail?	07
Que: 2 (a)	Discuss various data mining technique and also explain the role of data mining bioinformatics?	07
Que: 2 (b)	Describe phylogenetic tree with Distance, Parsimony and Likelihood based algorithm	07
	OR	
Que: 2 (b)	Write a short note:	
	1. Gen Bank	03
	2. X-RAY crystallography	04
Que: 3 (a)	Explain how Annotating and Analyzing whole genome sequence can be performed?	07
Que: 3 (b)	Describe Central Dogma of molecular biology in detail?	07
	OR	
Que: 3 (a)	1. Discuss BLAST algorithm?	04
	2. Explain Gap penalty?	03
Que: 3 (b)	Explain Database searching with dynamic programming method?	07
Que: 4 (a)	Describe what is Mutation ?Discuss various types of mutation	03
	Differentiate: Local alignment V/s Global alignment	04
Que: 4 (b)	Write Short Note: Watson and Crick's structure of DNA	07
	OR	
Que: 4 (a)	What is Multiple Sequence Alignment? Explain progressive methods of multiple alignment with example	07
Que: 4 (b)	Explain CATH, SCOP and Unique protein structure data sets.	07
Que: 5 (a)	Discuss UPGMA Algorithm	04
	Differentiate: BLOSUM V/s PAM	03
Que: 5 (b)	Give reasons why dynamic programming algorithm for pair wise sequence alignment problems is used.	07
	OR	
Que: 5 (a)	Describe Protein resource databases?	07
Que: 5 (b)	What is Neural Network? How they are useful in predicting a Gene structure	07