

2125
M.Sc. (Bio-Informatics) Third Semester
MBIN-8016: Applications of Computational Biology

Time allowed: 3 Hours

Max. Marks: 60

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting atleast one question from each Unit.

x-x-x

I. Answer briefly:-

- a) TATA box
- b) Intron Exon boundaries
- c) Markov Chain
- d) S Fold
- e) Glimmer
- f) Genome Sequencing (6x2)

UNIT - I

- II. a) Discuss the first bacterial genome to be sequenced.
- b) Explain the significance of ORF finder in gene prediction. (2x6)
- III. a) Differential between functional and positional cloning.
- b) Write a note on Genscan. (2x6)

UNIT - II

- IV. a) Discuss the significance of compositional bias and emphasize on its role in gene prediction algorithms.
- b) How are Artificial Neural networks used for gene prediction? (2x6)
- V. a) Explain the basis of gene prediction by Hidden Markov Models.
- b) Write a note on Repeat finders. (2x6)

UNIT - III

- VI. a) Describe the thermodynamics of RNA secondary structure prediction.
- b) Explain the different types of RNA secondary structures with diagrams. (2x6)
- VII. a) Write the basis for prediction of RNA secondary structure in the prediction programs.
- b) Elaborate on the Vienna RNA package. (2x6)

x-x-x