

Q.C.

A 1284

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Industrial Biotechnology

IB 341 – BIOINFORMATICS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is HTTP ? Write the utility of HTTP.
2. How do computers on the internet communicate with each other?
3. Name at least four nucleotide information resources.
4. What is parametric sequence alignment?
5. Differentiate sensitivity and specificity of database searches.
6. Write the significance of PSI- BLAST
7. Differentiate orthologs from paralogs
8. Brief on shotgun DNA sequencing.
9. What is STS mapping? Where do you use this technique?
10. What is rational drug design?

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is FTP? Explain how do you transfer files from remote computer using FTP? (10)
- (ii) How does data transfer take place over the internet? Explain with client-server architecture. (6)

Or

- (b) What is the significance of creating secondary databases? Mention different types of secondary databases available and explain any two. (16)

12. (a) How do you calculate the edit distance of two strings using dynamic programming approach? (16)

Or

- (b) What is multiple sequence alignment? What are the methods and applications of multiple sequence alignment? (16)
13. (a) Explain the following amino acid substitution matrices :
- (i) PAM 250 (8)
 - (ii) BLOSUM 62. (8)

Or

- (b) Describe how do the following programs work in database searches?
- (i) BLAST (8)
 - (ii) FASTA. (8)
14. (a) How are the characters or traits used for the construction of phylogenetic trees? Discuss the perfect phylogeny problem. (16)

Or

- (b) Write notes on :
- (i) Ultrametric trees (8)
 - (ii) UPGMA method for phylogenetic tree construction. (8)
15. (a) Discuss the following :
- (i) Gene finding in eukaryotes (8)
 - (ii) Genetic maps constructed for the human genome. (8)

Or

- (b) (i) Explain the steps involved in the process of sequence assembly. (12)
- (ii) What are HMMs? Write the significance of HMMs. (4)