

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

T2 EXAMINATION-APRIL 2018

B.Tech (BT/BI) VIII Semester

COURSE CODE: 10B11BI614

MAX.MARKS: 25

COURSE NAME: Advanced Algorithms for Bioinformatics

MAX. TIME: 1.30 Hrs

COURSE CREDITS: 4

Note: All questions are compulsory. Carrying of mobile phone and calculator during examinations will be treated as case of unfair means.

1. Define motif search problem in your own words. What are various approaches for the identification and analysis of biological motifs. [3]

(CO-2)

2. Discuss the biological significance of motifs. Compare Gold bug problem with motif finding exercise. [3]

(CO-2)

3. Take any 5 nucleotide sequences of your choice with motif of length 7 with exact 2 mutations in each motif. Generate profile and consensus for the same. [4]

(CO-2)

4. Write algorithms for following motif finding algorithms: [2*2 = 4]

(a) Brute Force Motif Search (b) Median String Search

(CO-1,2)

5. Based upon Q.3, prove that distance between a real motif and the consensus sequence is less than or equal to that for two real motifs. [3]

(CO-2, 3)

6. Explain how linked lists and search trees could be utilized for the development of better motif finding solutions? [4]

(CO-3)

7. What are randomized algorithms? Provide their applications in biological motif search problems. Explain Greedy profile motif search algorithm with a suitable example. [4]

(CO-1, 3)