

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2024

M.Sc -II Semester (BT/MM/PhD)

COURSE CODE (CREDITS): 20MS1BT213 (2)

MAX. MARKS: 25

COURSE NAME: Bioinformatics

COURSE INSTRUCTORS: Dr. Shikha Mittal

MAX. TIME: 1 Hour 30 Minutes

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q1. Define BLAST. Explain BLAST variants and the steps involved in BLAST algorithm. (5 marks)

Q2. Calculate BLOSUM substitution matrix for the given sequences – (5 marks)

H	P	P	C	H
H	P	P	C	H
H	H	P	C	W
H	H	P	C	W
W	P	P	P	H

Q3. Explain the algorithm of local and global alignment. Differentiate between them with the help of an example. (4 marks)

Q4. Explain the following – (4 marks)

- Difference between PAM and BLOSUM
- Sequence similarity and sequence identity
- Paralogs and Orthologs
- Transition and Transversion

Q5. Describe the types of biological databases with example. (3 marks)

Q6. How to calculate score of an alignment in nucleotide and protein sequences. (4 marks)