



WEST BENGAL STATE UNIVERSITY
B.Sc. Programme 6th Semester Examination, 2022



BOTGDSE03T-BOTANY (DSE2)

BIOINFORMATICS

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.
Candidates should answer in their own words and adhere to the word limit as practicable.
All symbols are of usual significance.*

1. Answer **all** the questions briefly: 1×16 = 16
- (a) What is PIR?
 - (b) What is CLUSTAL W?
 - (c) What is FASTA?
 - (d) Define paralogs.
 - (e) What is proteomics?
 - (f) Define accession number.
 - (g) Expand PAM.
 - (h) What is consensus sequence?
 - (i) What are primary databases?
 - (j) Name two tools used in phylogenetic analysis.
 - (k) Which of the following accumulate mutation at higher rate: Noncoding or Coding DNA?
 - (l) What is an outgroup?
 - (m) What does EMBL stand for?
 - (n) Draw a rooted phylogenetic tree.
 - (o) What is meant by gap penalty?
 - (p) What is the full form of NCBI?
2. Answer any **eight** questions from the following: 3×8 = 24
- (a) Briefly state the application of bioinformatics. 3
 - (b) What is the difference between structural and functional genomics? 3
 - (c) What do you understand by sequence alignment? Differentiate between global and local alignment. 1+2

- (d) Name the tools (at least two) used for pairwise sequence alignment and multiple sequence alignment. 3
- (e) Compare the advantages and disadvantages of pairwise and multiple sequence alignment using DNA. 3
- (f) Define the different parameters obtained after running BLAST. 3
- (g) Name the two methods based on which phylogenetic trees can be constructed. What is the difference between UPGMA and NJ method? 1+2
- (h) Explain monophyletic group, paraphyletic group and polyphyletic group with the help of a diagram. 1+1+1
- (i) What is bootstrap test? What are its application and limitation? 1+2
- (j) Compare PAM and BLOSUM matrices. 3
- (k) Define the following terms:
- (i) Target in drug designing
 - (ii) Virtual screening
 - (iii) Lead optimization.
- (l) What is genomics? How does bioinformatics support genomic research?

N.B. : *Students have to complete submission of their Answer Scripts through E-mail / Whatsapp to their own respective colleges on the same day / date of examination within 1 hour after end of exam. University / College authorities will not be held responsible for wrong submission (at in proper address). Students are strongly advised not to submit multiple copies of the same answer script.*

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