

U.G. 4th Semester Examination - 2020**Molecular Biology and Biotechnology****[HONOURS]****[Bioinformatics]****Course Code : MBBT(H)403-T-CCR-10**

Full Marks : 40

Time : $2\frac{1}{2}$ Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **five** questions: $2 \times 5 = 10$
- What are the different situations to use local and global alignment?
 - Differentiate between phylogram and cladogram.
 - Write down the disadvantages of molecular clock hypothesis.
 - How Swiss-Prot database is supported by EMBL?
 - What are the features of GenBank format?
 - What is the significance of e-value in context of FASTA search tool?

- Differentiate between homology and similarity.
- What is meant by iterative refinement method in MSA?

2. Answer any **two** questions: $5 \times 2 = 10$

- How will you convert an unrooted tree into rooted tree?
- Write a short note on DOT matrix plot mentioning pros and cons.
- Justify the statement with an example: "Gap opening penalty is greater than gap extension penalty".
- What are the situations to use different phylogenetic tree generation methodologies?

3. Answer any **two** questions: $10 \times 2 = 20$

- Fill in the blanks:

Programe	Query Sequence	Database Used
T Blast n	—	—
T Blast x	—	—

Which search tool is faster and more sensitive between BLAST and FASTA? Give explanation in support of your answer. What is the purpose to make BLAST against PDB database?

$(1 \times 4) + 4 + 2 = 10$

- b) What is dynamic programming algorithm? Write a short note on NW algorithm with example of nucleotide sequences comprising of at least 8 characters. $3+7=10$
- c) What series values of PAM and BLOSUM will be used for the closely and distantly related sequences and why? What is the gene finding algorithm? $7+3=10$
- d) How many rooted and unrooted trees are possible using 8 taxa? Write about significance of multiple sequence alignment in context of phylogeny analysis. $(3 \times 2)+4=10$
-