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GIET UNIVERSITY, GUNUPUR – 765022
M. Sc. (First Semester) Examinations, May – 2021
20LSPC104 – BIOINFORMATICS AND BIOSTATISTICS
(Life Science)

Time: 2 hrs

Maximum: 50 Marks

(The figures in the right hand margin indicate marks.)

PART – A**(2 x 10 = 20 Marks)**Q.1. Answer *ALL* questions

- What is NCBI ? Name the nucleotide database of NCBI.
- What does EMBL stand for? What type of resource EMBL database store.
- State the concept of Bioinformatics
- What is BLAST? Where it is available to use?
- What is the significance of Sequence Alignment?
- Write down two important software's used for homology modelling
- State the role of threading in bioinformatics?
- Which method is usually used for studying correlation?
- Find the mean of these numbers: 3, -7, 5, 13, -2
- Find the mode for the given data {1, 3, 3, 3, 4, 4, 6, 6, 6, 9}

PART – B**(6 x 5 = 30 Marks)**Answer *ANY FIVE* questions

Marks

- Explain the essential aspects of primary and secondary databases. (6)
- What is FASTA? How to carry out FASTA?
- The original 250 PAM substitution matrix scores a substitution of Gly by Arg by negative score -3 (assume : decimal logarithms and scaling factor 10 are used, with rounding to the nearest integer). The average frequency of Arg in the protein sequence database is 0.041. Using the data, estimate the probability that *Gly* will be substituted by *Arg* after a 250 PAM time period. (6)

Given Formula:

$$s_{ij} = \left[10 \lg \frac{P(i \rightarrow j \text{ in } 250 \text{ PAM})}{q_j} \right]$$

- How protein structure models are represented using threading model. (6)
- Calculate the standard deviation of the following frequency distribution: (6)

Classes	1-10	10-20	20-30	30-40	40-50	50-60
Frequency	11	29	18	4	5	3

- Calculate the ANOVA coefficient for the following given data : (6)

Types of Animals	Number of animals	Average Domestic animals	Standard Deviation
Dogs	5	12	2
Cats	5	16	1
Hamsters	5	20	4

- What is Biostatistics? Write down the application of statistics in biological search? (6)

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