

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Biostatistics and Bioinformatics

Subject Code: 5SC04BIB1

Branch: M.Sc. (Microbiology)

Semester: 4

Date: 24/04/2018

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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SECTION-I

- Q-1 Attempt the following questions: (7)**
- a) List any two protein databases
 - b) Mention the use of Chi square test
 - c) Give full forms: (i) BLAST, (ii) NCBI
 - d) Define Bioinformatics
 - e) Define correlation.
 - f) Expand EMBL
 - g) Define: Global alignment
- Q-2 Attempt all questions (14)**
- a) Explain the significance of correlations and variations in experimental research. (7)
 - b) Write a note on biological databases in detail (7)
- OR**
- Q-2 Attempt all questions (14)**
- a) Determine the mean, median and modal values for the set: (7)
{4.72, 4.71, 4.74, 4.73, 4.72, 4.71, 4.73, 4.72}
 - b) A large bakery regularly orders cartons of Maine blueberries. The average weight (7)
of the cartons is supposed to be 22 ounces. Random samples of cartons from two
suppliers were weighed. The weights in ounces of the cartons were
Supplier I: 17; 22; 22; 22; 27
Supplier II: 17; 19; 20; 27; 27
 - i) Compute the range of carton weights from each supplier.
 - ii) Compute the mean weight of cartons from each supplier.
- Q-3 Attempt all questions (14)**
- a) The mean of four numbers is 71.5. If three of the numbers are 58, 76, and 88, (7)
what is the value of the fourth number?
 - b) Write an essay on the scope and applications of Bioinformatics (7)



OR

- Q-3** **Attempt all questions** **(14)**
- a) Briefly describe various methods of protein structure prediction **(7)**
 - b) Explain briefly the application of BRENDA, AMENDA and FRENDA **(7)**

SECTION-II

- Q-4** **Attempt the Following questions** **(07)**

- a) Define phylogenetics analysis
- b) Expand DDBJ
- c) Define BLAST
- d) Which are the measures of central tendency?
- e) Give formula to find out Standard Deviation
- f) Give formula to find out range and mean deviation
- g) Give the formula for finding the arithmetic mean of a weighted data.

- Q-5** **Attempt all questions** **(14)**

- a) Write a short note on 2D and 3D protein modeling **(7)**
- b) Why Data presentation is important? Write a note on different types of data explaining the various methods data representation. **(7)**

OR

- Q-5** **Attempt all questions** **(14)**

- a) Calculate mean, variation and standard deviation of the following frequency distribution: **(7)**

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

- b) What is t-test and chi-test? Explain briefly **(7)**

- Q-6** **Attempt all questions** **(14)**

- a) Explain the working of BLAST based on your knowledge of sequence alignment. **(7)**
- b) Explain global and local alignment and classes of MSA **(7)**

OR

- Q-6** **Attempt all questions** **(14)**

- a) Find the variance and standard deviation for the following data **(7)**
57, 64, 43, 67, 49, 59, 44, 47, 61, 59
- b) Write a note on GenBank and explain general format followed by genbank **(7)**

