

Total No. of Questions : 8]

SEAT No : **P1442****[5124]-203****[Total No. of Pages :3****M.Sc.****BIOCHEMISTRY****BCH-272 : Biostatistics, Computer and Bioinformatics  
( 2013 Pattern) ( Credit System) (Semester-II)****Time : 3 Hours]****[Max. Marks :50****Instructions to the candidates:**

- 1) Answer to both the sections should be written on separate answer sheet.
- 2) Question no. 4 and 8 are compulsory.
- 3) Attempt any two questions from Q.1 to Q.3 and any two from Q.5 to Q.7.
- 4) Figures to the right indicate full marks.
- 5) Supplementary will be provided for checking p-values.
- 6) Graph papers will be provided.

**SECTION-I****(Biostatistics and Computers)****Q1)** Answer the following:

- a) Give importance of biostatistics in life science. [2]
- b) Explain binary and decimal numbers. [3]
- c) Find the cumulative and relative frequencies of the following data. [5]

No.of pods	1-9	10-20	21-30	31-40	41-50
No.of plants	4	6	25	15	20

**Q2)** Attempt the following:

- a) Calculate the mean of the following data. [2]

10	13	14	9	10
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- b) Calculate the standard deviation and standard error of data. [4]

Waxy plants	15	17	7	9	11
No.of plants	18	12	18	15	14

- c) Calculate the value of median and also determine it graphically using Ogive. [4]

Variable	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	6	8	10	12	14	15

**P.T.O.**

**Q3)** Answer the following:

- a) The following data represents the number of productive tillers per plant of a wheat variety .

Draw a histogram of the following data

[3]

No.of plants	0-4	4-8	8-12	12-16	16-20	20-24
No.of productive tillers	10	11	12	15	20	12

- b) Data on hair colour and the eye colour are given in the table. Calculate the chi-square value. Determine the association between the hair colour and the eye colour.

[5]

		Fair	Brown	Black	Total
Eye colour	Blue	15	20	5	40
	Grey	20	20	10	50
	Brown	25	20	15	60
	Total	60	60	30	150

- c) What do you mean by flowchart. Give its uses.

[2]

**Q4)** Answer any one of the following:

[5]

- a) Explain the programming in BASIC.  
b) Explain input, output and format statements.

## **SECTION-II** **(Bioinformatics)**

**Q5)** Answer the following:

- a) Write a note on PAM matrices. [2]  
b) Explain nucleotide sequence database. [3]  
c) Explain and distinguish between global and local alignment. [5]

**Q6)** Attempt the following:

- a) Explain multiple sequence alignment. [2]  
b) Explain Needleman and Wunsch algorithm. [5]  
c) Explain Pub Med central. [3]

**Q7)** Answer the following:

- a) What do you mean by Hamming Distance. [2]
- b) What is Smith-Waterman algorithm. Explain. [5]
- c) State the salient features of any protein 3D structure visualization software. [3]

**Q8)** Answer any one of the following: [5]

- a) Explain how sequence data is generated for expressed sequence tags database division of NCBI.
- b) Explain why there is need of Heuristics approach in database sequence search. Explain any one heuristics approach in sequence similarity search.

