

Roll No.....

**P. G. Diploma in Bioinformatics  
Annual Examination – 2010  
Biostatistics  
PBID – 102**

Time allowed : 2½ Hours

Max Marks:70

Use of calculator and statistical tables are allowed.

**Section – I**

Attempt all questions. Each question carries one (1) mark.

[1x10]

1. Write 'true' or 'false' for the following statements?
  - (i) When data are classified according to geographied location or region, it is called a spatial classification.
  - (ii) Values that divide a set of observations into 100 equal parts are known as deciles.
  - (iii) The square root of standard deviation is the variance.
  - (iv) The standard deviation is always positive.
  - (v) If A and B are dependent events,  $P(A \text{ and } B) = P(A) \cdot P(B/A)$
  - (vi) Poisson distribution has only one parameter.
  - (vii) ANOVA stands as Analysis of variance.
  - (viii) The degrees of freedom is defined as the number of independent random variables.
  - (ix) BLUE stands for Best Linear Unbiased Estimation.
  - (x) The type II error is considered to be more serious.

**Section – II**

Answer any six of the following:

[6 x 5 = 30]

1. What do you know about central tendency? Name the various measures of central tendency? Explain any one of them.
2. Draw a histogram for the data given below:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency	8	10	12	16	22	35	20	18	14	10

3. Define student's t-test.
4. What is the classical definition of Probability?
5. Explain Null and alternative hypothesis.
6. What is sampling? Discuss various types of sampling.
7. If X is a random variate which is distributed normally with mean 60 and standard deviation 5, find the probability of the events  $60 \leq X \leq 70$
8. A random sample of heights of 20 students gave a mean of 68 inches with S.D. of 3 inches. Test the hypothesis that mean height in population is 70 inches under the assumption that the heights are normally distributed. (Given that table value of t at 5% level of significance for 19 d.f. Ps 2.093).

P.T.O.

### Section – III

Answer any **THREE** questions of the following

[3 x 10 = 30]

1. Calculate mean, median and mode from protein intake of 400 families:

Protein intake Per day (in gm)	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No. of families	30	40	100	110	80	30	10

2. (a) What is ANOVA? Describe difference between one-way and two-way ANOVA.  
(b) What is frequency distribution. Discuss types of frequency distribution.
3. (a) Explain standard deviation. State the uses of standard deviation in biostatistical analysis.  
(b) A certain drug was administered to 500 people out of a total of 800 included in the sample to test its efficacy against typhoid. The results are on the basis of these data, can it be concluded that the drug is effective in preventing typhoid (Given that  $\chi^2$  for 1d.f. at 50% level of significance is 3.841)
4. (a) Define the binomial distribution. Write down the main properties of binomial distribution.  
(b) What are the conditions of normality?