

M. Sc. (Biotechnology) Sem-IV (2012 Course)(Choice Based Credit System) : WINTER - 2018

SUBJECT: BIostatISTICS

Day: Thursday
Date: 25/10/2018

W-2018-1218

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

N.B:

- 1) **Q. No.1 and Q. No.5 are COMPULSORY.** Out of the remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answer to both the sections should be written in **SEPARATE** answer book.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.
- 5) Use of non-programmable electronic **CALCULATOR** is allowed.
- 6) Assume suitable data if necessary.

SECTION-I

- Q.1 a)** Give examples of : **(02)**
- i) Two continuous variables
 - ii) Two nominal variables
 - iii) Two ordinal variables

- b)** Find mean, mode and median of plant height. Observations (plant height cm) **(05)**
are as under:

30	30	32	31	35	30	30	29	31	32
34	33	32	33	32	32	33	32	30	34

- c)** Draw a histogram of data in (b) above. **(03)**

- Q.2** Explain the following concepts in brief: (ANY TWO) **(10)**

- a) Pie chart
- b) Level of significance
- c) Scatter diagram
- d) Range
- e) Sample

- Q.3** Discuss the importance of linear and nonlinear curve fitting in biotechnology. **(10)**
Discuss the procedures.

- Q.4 a)** State the formula for compute r, b, a. **(02)**

- b)** In each of the following cases Use the given information to compute r,b,a. **(08)**
Case 1: Mean(X) = 3.24 Mean (Y) = 4.56 var(X) = 4.0 var (y) = 9.0
Cov (X,Y) = 5.0
Case 2: Mean(X) = 1.23 Mean (Y)= 12.0 var(X) = 2.5 var (y) = 1.6
Cov (X,Y) = -0.2

P.T.O.

SECTION-II

Q.5 Use the following data to test the hypothesis using t-test (independent samples) **(10)**

	n	mean	Variance
Sample 1	20	3.2	2.34
Sample 2	22	4.3	2.54

t value for 38df = 1.96, assume alpha = 0.05.

Q.6 A crop performance trial was conducted with 4 variables. Soil being homogenous, 6 replications each was used, so that total plots were 24. Crop yield was the variety. Total sum of Squares was 34.5 and Varietal sum of squares was 23.2. Prepare appropriate ANOVA table and compute the relevant F-statistic. Write your inference to the extent possible on the basis of the values you see in the ANOVA table. **(10)**

Q.7 Discuss the distribution given below with a typical drawing of PMF, cumulative PMF. **(10)**

Binomial Distribution

Q.8 Complete the following sentences and rewrite. **(10)**

- a) If Max= 40 and range is 23, value of Min. _____.
- b) Value of correlation coefficient can never be greater than _____.
- c) If value of std dev = 12, n =9, value of Std Err is _____.
- d) If Mean Y = 5, Slope = 1.0, Mean X = 2.0, value of Intercept is _____.
- e) If Cov (x,y) = 3.4 and Var (x) = 1.7, value of slope = _____.
- f) Mean of a Binomial distribution is _____, if n = 35, and p = 0.2.
- g) If a variable is normally distributed than percentage of observations included in the interval (mean – std. dev, mean + std. dev) are _____.
- h) The most common value of level of significance used in testing of hypothesis is _____.
- i) Value of the statistic R- square is always less than or equal to _____.
- j) Conditional probability P (A/B) is defined as _____.

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