

**M. Sc. (Biotechnology) Sem-IV (2012 Course)(Choice Based Credit  
System) : SUMMER - 2019  
SUBJECT: BIOSTATISTICS**

Day : **Sunday**  
Date : **21/04/2019**

**S-2019-1420**

Time : **10.00 AM TO 01.00 PM**  
Max. Marks : **60**

**N.B.**

- 1) Q.1 and Q.5 are **COMPULSORY**.
- 2) Attempt any **TWO** questions from Section – I and any **TWO** questions from Section – II.
- 3) Figures to the right indicate **FULL** marks.
- 4) Answers to both the sections should be written in **SAME** answer book.
- 5) Draw neat and labelled diagram **WHEREVER** necessary.

**SECTION – I**

**Q.1** Describe importance of designed experiments and inference in Biotechnology. (10)

**Q.2 a)** Find mean, mode, median of diameters of fruits. Observations in cm are as under: (05)

3.0	3.0	3.2	3.1	3.5	3.0	3.0	2.1	3.1	3.2
3.4	3.3	3.3	3.2	3.2	3.3	3.2	3.2	3.0	3.1

**b)** Define probability, find the probability that, when a Dice is thrown twice, total score of the two throws is equal to 10. (05)

**Q.3** Write short notes on any **TWO**: (10)

- a) Normal distribution
- b) Binomial distribution
- c) Scatter plots of bivariate relations

**Q.4** In each of the following cases use the given information to find the simple correlation, coefficient, slope and intercept: (10)

Case 1 : Mean ( $x$ ) = 2.24, Mean ( $y$ ) = 5.356

Var ( $x$ ) = 1.0, Var( $y$ ) = 16.0 Cov ( $x, y$ ) = 5.0

Case 2 : Mean ( $x$ ) = 1.23, Mean ( $y$ ) = 12.0

Var ( $x$ ) = 2.5, Var ( $y$ ) = 1.6. Cov ( $x, y$ ) = -0.31

**SECTION – II**

**Q.5** Explain following concepts in brief: (10)

- a) Histogram
- b) Level of significance
- c) Standard deviation
- d) Random variable
- e) Alternate hypothesis

**Q.6** Clearly state the steps in process of testing of hypothesis and describe them. (10)

**Q.7** A crop performance trial was conducted with 4 variables soil being homogeneous, 6 replications were used so that total plots were 24. crop yield was the variate. Total sum of squares was 34.5 and varietal sum of squares was 23.2. Prepare appropriate ANOVA table, and compute the relevant F-Statistics. Write your inference to the extent possible, on the basis of the values you see in the ANOVA table (10)

**Q.8** Explain how one should go about drawing inference with  
A : TWO 'proportions'  
B : Two regression coefficients (10)

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