

**T. Y. B. SC. (BIOTECHNOLOGY) SEM – V (CBCS - 2015  
COURSE) : SUMMER - 2018  
SUBJECT : BIOSTATISTICS**

Day: **Monday**  
Date: **02/04/2018**

Time: **10.00 am to 01.00 pm**  
Max. Marks: 60

**S-2018-1058**

**N.B.:**

- 1) Question No. 1 and Question No. 5 are **COMPULSORY**. Out of the remaining attempt **ANY TWO** from each section.
- 2) Both the sections should be solved in **SEPARATE** answer books.
- 3) Use of programmable **CALCULATOR** is allowed.
- 4) Figures to the right indicate **FULL** marks.

**SECTION – I**

**Q.1** Answer the following: (10)

- a) Given  $A = \{a, b, c, d, e, f\}$        $B = \{c, e, x, y\}$   
Find  $A \cap B$  and  $A \cup B$ .
- b) State the formula for standard deviation.
- c) In a paired t-test, mean ( $d_i$ ) = 3.2 and standard error ( $d_i$ ) = 0.4. What is the computed value of t-statistic?
- d) If Covariance ( $x, y$ ) = -3.5, Variance ( $x$ ) = 4, Variance ( $y$ ) = 25. Find correlation coefficient.
- e) Mr. X sleeps in a day for 8 hours, works for 8 hours, and spends rest of the time on personal chores. Draw a pie-diagram to show the distribution.

**Q.2** Answer the following: (10)

- a) Find the mean and standard deviation.

2.3	3.3	4.3	5.5	6.7	8.9	10	2.2	3.3	4.3
6.7	8.9	10	11.2	11.2	3.3	10	4.3	5.5	6.7

- b) Fruits were classified as under when consignment was received.

	Large	Medium	Small
Hard	15	35	5
Soft	20	20	5

Use the information to find all marginal probabilities and conditional probabilities.

**Q.3** What is scatter diagram? Explain how to get the exponential, power-law and linear fits to a set of paired observations ( $x, y$ ) using the ADD TRENDLINE tool, on a spread sheet. (10)

**OR**

Explain the applications of Binomial distribution and Normal distribution in biology.

**Q.4** Write short notes on: (10)

- a) Karl Pearson's coefficient of correlation.
- b) Z distribution.

**P.T.O.**

## SECTION - II

**Q.5** Answer the following: (10)

- a) Complete ANOVA table. Given that there are 5 treatments, 3 replications per treatment, Total SS = 45.6, Treat SS = 32.3. Use F-table = 3.05.
- b) Find correlation for the following data:

X	15	18	22	17	12
Y	20	15	20	15	10

**Q.6** Answer the following: (10)

- a) Define rank correlation. Give an illustration of its use.
- b) Define a random variable and its expected value.

**Q.7** Answer the following: (10)

- a) Why we need to give Data-Names to selected data ranges on a spread sheet. Discuss the process of naming and how to use the named data in functions.
- b) Discuss how to prepare simple Quality control charts on spread sheet.

**Q.8** Discuss the objectives and steps in computation of Chi-Square test. (10)

OR

Discuss the objectives and steps in computation of Multiple linear regressions.

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