LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PLANT BIOLOGY AND PLANT BIOTECHNOLOGY**

THIRD SEMESTER – **APRIL 2016**

ST 3203 - BIOSTATISTICS

Date: 04-05-2016   Dept. No.   Max. : 100 Marks
Time: 09:00-12:00

PART – A

Answer ALL the questions   **(10x2=20 Marks)**

1. Provide any two applications of Biostatistics

2. Define Sample space and event.

3. Define Independent events.

4. Define Probability.

5. Define Random Variable with an example.

6. Define Conditional Probability.

7. What is the use of Chebyshev's Inequality.

8. Define Type I and Type II error.

9. Define Spearman Rank correlation and provide its use.

10. State the use of Wilcoxon signed rank test and provide the situation under which this test is preferred over paired t test.

PART – B

Answer any FIVE questions   **(5x8=40 Marks)**

11. Explain Nominal, Ordinal, Interval and Ratio data types in detail.

12. State and prove Addition theorem and Multiplication theorem on probability.

13. Provide the differences between Correlation and Regression.

14. State and prove Bayes theorem.

15. Consider two types of soil and the following data provides the yield in two independent sample obtained in the respective soil types, Test the difference in yield using two independent sample t test

    Soil type A   : 6, 7, 9, 3, 5, 9, 12

    Soil type B   : 8, 4, 7, 9, 6, 7, 7

16. Determine Pearson correlation coefficient and interpret the correlation coefficient based on the data given below:

    Days   : 12,11,13,14,15,16,13,14,15,9

    Bacteria Colony : 34,42,65,76,87,98,45,56,67,23

17. Expain the parametric test for single population proportion and two tpopulation proportion in detail.

18. Explain the steps involved in Kruskal Wallis test in detail.

PART – C

19. Test the difference in yield between fertilizers using one way ANOVA for the following

Fertilizer I : 23, 34, 54, 65, 67

Fertilizer II: 34, 31, 34, 45, 45

Fertilizer III: 23, 21, 19, 34, 21

20. i)Test the dependency between Asprin use and impact on Heart attack using Chi-square test of independence

	Heart Attack	
Aspirin	Yes	No
Used	234	1224
Not used	654	543

ii) Explain Spearman Rank correlation coefficient in detail

21. Construct simple linear regression model based on the following data and interpret the regression coefficients. Also determine the predicted values based on the model equation

X	7	9	11	12	10	13
Y	11	13	16	17	9	15

22. i) Provide the steps involved in Mann Whitney U test. (10 marks)

ii) Explain Chi-square test of independence in detail. (10 marks)

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