LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – NOVEMBER 2016

ST 3203 - BIOSTATISTICS

Date: 10-11-2016 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

PART - A

Answer all the questions **(2x10=20 Marks)**

1. Define biostatistics
2. Define probability
3. State the axioms of probability
4. Define independent events
5. Write the formula for calculating Spearman rank correlation
6. Define statistical hypothesis
7. Define Type I and Type II error
8. Provide any two assumptions of one way ANOVA.
9. Provide the test statistic for Kruskal-Wallis test.
10. Define simple linear regression model

PART - B

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

11. State and prove addition theorem on probability
12. Provide any four real life application of biosttaistics
13. Determine mean, median, standard deviation for the following data on bacterial growth 2.3, 3.5, 5.6, 4.1, 5.8, 3.9, 2.8, 4.5, 6.7, 8.7
14. Explain any four diagrammatic representations in detail with example
15. State the difference between correlation and regression.
16. Explain the steps involved in Mann-Whitney U test.
17. Explain the steps involved in Kruskal-Wallis test.
18. Provide the steps involved in testing of hypothesis.

PART - C

Answer any TWO questions **(2x20=40 Marks)**

19. i) State and prove Bayes' theorem

    ii) State and prove multiplication theorem on probability

20. Test the difference in mice growth across three different diet procedure using one way ANOVA

    Diet1: 12, 12.5, 13, 14.6, 15

    Diet2: 15, 14.6, 15.6, 9, 10.1

    Diet3: 12,15, 17 18, 13, 15

21. In a study of the effect of a dietary component on plasma lipid composition, the following ratios were obtained on a sample of experimental animals.

Dietary component:	1	5	3	2	1	1	7	3
Plasma lipid level:	6	1	0	0	1	2	1	5

    Obtain the regression equation for predicting Plasma lipid level using dietary components, Predict Plasma level for dietery component=7

22. A certain drug is claimed to be effective in curing cold. In an experiment on 170 people with cold, half of them were given the drug and half of them given sugar pills. The patient's reaction to the treatment is recorded in the following table:

	Recovered	Not Recovered
Drug	60	22
Sugar pill	52	36

    Test the hypothesis that the drug is no better than sugar pills for curing cold

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