LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTHSEMESTER – APRIL 2018

PB 5413- BIOINSTRUMENTATION & BIOSTATISTICS

Date: 08-05-2018 Dept. No. Max. : 100 Marks
Time: 09:00-12:00

PART – A **(10 x 2 = 20 Marks)**

Answer the following, each within 50 words.

1. Define pH.
2. Write notes on sonication.
3. State Beer – Lambert's law.
4. What is electromagnetic radiation?
5. Write notes on chromatography.
6. What is electrophoresis?
7. Differentiate primary and secondary data.
8. Find the range of the following data: 67, 34, 55, 72, 88, 66, 54, 46, 92.
9. Define population.
10. Name any 2 primary databases.

PART – B **(5 X 7 = 35 Marks)**

Answer the following, each within 500 words; Draw diagrams and flowcharts wherever necessary

11. (a) Describe the working principle of pH meter.

(or)

(b) Write short notes on lyophilization.

12. (a) Describe the principle of infrared spectroscopy.

(or)

(b) Explain briefly the phenomenon of luminometry.

13. (a) Write short notes on paper chromatography.

(or)

(b) Explain the principle of ion – exchange chromatography.

14. (a) Give a brief account on the presentation of data.

(or)

(b) Calculate the mean, variance, standard deviation and the coefficient of variation from the following data, recorded on the number of clusters in a variety of black gram:

No. of clusters = 8, 10, 10, 10, 12, 13, 15, 15, 17, 20.

15. (a) Write notes on the different types of population distributions.

(or)

(b) Give a brief account on the applications of computers in biostatistics.

PART – C **(3 X 15 = 45 Marks)**

*Answer **any three** of the following, each within 1200 words. Draw diagrams and flowcharts wherever necessary*

16. Give a detailed account on density gradient centrifugation.
17. Write in detail on the principle and applications of mass spectroscopy.
18. Explain the principle and applications of HPLC.
19. The following data were recorded on a number of fertile branches per plant and a number of pods per plant in one of the varieties of lentil. Calculate the correlation coefficient and test its significance (t value at 5% is 2.31)

No. of fertile branches	8	10	15	11	12	9	13	14	10	9
No. of pods	45	55	70	80	65	70	90	90	76	67

20. Discuss in detail on the different types of sampling methods.

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