LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIFTH SEMESTER – **NOVEMBER 2014**

PB 5413 - BIOINSTRUMENTATION & BIOSTATISTICS

Date : 12/11/2014   Dept. No.   Max. : 100 Marks
Time : 09:00-12:00

PART A

Answer the following, each within about 50 words only   *(10 x 2 = 20)*

1. State *Beer – Lambert's* law.
2. Mention the types of rotors.
3. Write notes on luminometry.
4. What is spectroscopy?
5. Write notes on paper chromatography.
6. What are ampholytes?
7. Define probability.
8. Mention the types of data.
9. Calculate the *coefficient of variation* for the following data: $s = 25$; $x = 53$.
10. What is normal distribution?

PART B

Answer the following, each answer within 500 words; draw diagrams and flowcharts wherever necessary
        (5 x 7 = 35)

11. (a) Write short notes on differential centrifugation.

    Or

    (b) Explain the principle and process of freeze drying.

12. (a) Write notes on infrared spectroscopy.

    Or

    (b) Describe the components and working of a mass spectrometer.

13. (a) Give a brief account on thin layer-chromatography.

    Or

    (b) Discuss the principle and applications of electrophoretic techniques.

14. (a) Calculate the arithmetic mean of the following.

Plant height (cms)	0-10	10-20	20-30	30-40	40-50	50-60
No. of varieties	5	10	25	30	20	10

    Or

    (b) Find out the correlation coefficient of the following.

Height (inches)	65	68	62	70	65	72	67	66	68	70
Weight (lbs)	128	140	120	152	138	160	135	130	125	165

15. (a) Write short notes on methods of sampling.

    Or

    (b) Discuss the types and significance of ANOVA.

PART C

Answer any THREE of The following, each within 1200 words; draw diagrams and flowcharts wherever necessary **(3 X 15 = 45)**

16. Give an account on the working principle and applications of the pH meter.

17. Write in detail on single and double beam spectrophotometer.

18. Describe the working principle and applications of HPLC.

19. Calculate the standard deviation from the data recorded on the number of pods per plant in mothbean.

No. of pods/ plant	15-17	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	42-44
No. of plants	2	2	4	5	7	9	6	4	3	2

20. Write in detail on applications of MS Excel and SPSS in biostatistics.

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