

M.Sc. SEM -02

Paper no - 6

Subject Code: 21684

Subject Title – Instrumentation, Biostatistics and Research Methodology

Time : 2.30 Hours

Total Marks : 70

(All questions carry equal marks)

Q 1. Write in detail, the principal and different types of High pressure liquid chromatography (HPLC). **14**

OR

Q 1. Write an essay on Atomic absorption spectrophotometry (AAS). **14**

Q 2. Describe types of arithmetic mean. **14**

Ex., Production of fish liver oil taken during 5 consecutive days was recorded for 200 fishes and the frequency distribution is given below.

Liver oil (in litre)	2-4	4-6	6-8	8-10	10-12	12-14	14-16
No. of fishes	4	60	50	36	30	15	5

Calculate mean and median for this distribution.

OR

Q 2. Give a note on classification of collected biological data with specific examples. **14**

Q 3. A group of seven week old chickens reared on a high protein diet weigh 13, 16, 12, 17, 15, 15 and 17 ounces, a second group of 5 chickens similarly treated except that they receive low protein diet weigh 9, 11, 15, 11 and 14 ounces. Test whether there is significant evidence that additional protein has increased the weight of chickens (the table value of t for $v = 10$ at 5% level of significance is 2.23).

14

OR

Q 3. Explain tests of significance for attributes. **14**
 In a sample of 400 population from a village, 230 are found to be eaters of vegetarian items and the rest non-vegetarian items. Can we assume that both vegetarian food are equally popular?

Q 4. Give a note on yate's corrections and Chi-Square test for specified value of population variance. **14**

- 1) In an orchard of 60 trees, a record was taken of the number of shaded and unshaded trees, and in each of these classes the frequency of high and low yielding trees was noted below:

Yield type	Shaded	Un-shaded
Low yielding	12	26
High yielding	16	6

Calculate χ^2 and test whether shading on the trees has any effect on its yielding capacity. (5% value of χ^2 for one degree of freedom = 3.84.)

OR

Q 4. Explain one-way classification of ANOVA. **14**

- 1) A certain manure was used on four plots of land A, B, C and D. four beds were prepared in each plot and the manure used. The output of the crop in the beds of plots A, B, C and D is given below.

A	B	C	D
8	9	15	6
12	3	10	8
1	7	4	10
3	1	7	8

Find out whether the difference in the means of the production of crops of the plots is significant or not.

Q 5. Explain the method of scientific report writing in detail. **14**

OR

Q 5. How to design questionnaire for research data collection?

-----XXX-----