Subject Code: 2930

M. Sc. Marine Science

Semester II Examination April-2017

PAPER – 6 [Tool, Techniques and Biostatistics]

Duration: $2\frac{1}{2}$ Hours Marks: 70

Instructions:

1. There are FIVE compulsory Questions in this paper. Each question carries 14 marks.
2. Statistical tables & Graph Papers will be provided on request.
3. Use of scientific calculator is allowed.

Q.1 Write essay on different types of chromatography. **14**

OR

Q.1 Write detailed essay on HPLC. **14**

Q.2

A. What is data? Describe various methods of data collection. **07**

B. The weight (in gram) of 30 lobsters from a fish market was recorded as in the following table. Summarize this raw data in a frequency distribution table that includes frequency, relative frequency, and percentage frequency. **07**

145	148	85	127	104	132	126	94	119	106
113	90	128	102	121	88	104	99	112	121
107	139	122	137	112	121	100	130	133	123

OR

Q.2

A. Describe various parts of a Graph. State merits of graphical representation of data. **07**

B. The number of persons with reference to different age groups who injured during kite festival in Bhavnagar city recorded in the following table. Compute the arithmetic mean and median of data. **07**

Age Group	5-14	15-24	25-34	35-44	45-54	55-64
No. of Person	14	38	20	12	7	5

Q.3

A. Write short note on Range and Quartile deviation. **07**

B. The number of fish with reference to different length groups was reported in a single visit from Veraval fish market in the following table. Calculate the quartile deviation of length group. **07**

length Group	15-24	25-34	35-44	45-54	55-64	65-74	75-84
No. of fish	25	35	75	105	85	95	45

OR

A. Write short note on mathematical average. **07**

B. Ten samples of a seaweed species from different localities were analyzed for their agar content. Find out standard deviation, variance, and standard error for obtained data. **07**

Seaweed sample	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	S-10
Agar content %	3.52	3.54	3.34	3.58	3.46	3.39	3.59	3.62	3.57	3.51

Q.4

A. What is scattered diagram? How does it help in studying the correlation between two variables? **07**

B. The ranks of ten students according to their performance in two subjects are given here. Find Coefficient of Rank correlation. **07**

Rank in Biology	8	3	9	2	7	10	4	6	1	5
Rank in Physics	9	5	10	1	8	7	3	4	2	6

OR

A. Explain Spearman's rank correlation method. **07**

B. Calculate coefficient of rank correlation by Spearman's method from the following data showing marks obtained by students in Biostatistics and Botany. **07**

Biostatistics	15	40	45	92	78	52	68	74	55	65
Botany	62	47	57	84	77	60	88	43	64	50

Q.5

A. Explain Wilcoxon signed rank test and Mann-Whitney test. **07**

B. A random sample of 25 plants was taken from crop field to determine the average height of the plants. Sample mean is 63 and S=4. Apply t-test. **07**

OR

A. Explain: Student t-test.

B. The data in the table below shows the duration of tolerance of pain by 11 victims of dog bite before and after the administration of a newly developed drug (dose of 0.04 mg/20 Kg body weight). Does the data provide sufficient evidence in support that drug increase the duration of endurance of pain? Apply – Wilcoxon's signed rank test.

Victim	1	2	3	4	5	6	7	8	9	10	11
Before drug	15	12	14	16	21	22	20	18	17	17	19
After drug	21	20	17	22	20	19	19	18	17	24	18

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