

2019

Part – II

STATISTICS

(Honours)

Paper – VA

(Practical)

Full Marks – 50

Time : 4 Hours

*The figures in the right hand margin indicate marks.
Candidates are required to give their answers in
their own words as far as practicable.*

Answer all questions.

1. The statues of 8 pairs of brothers and sisters in a certain investigation are found as follows :

Hight of brother : 68.5 90.1 61.6 72.8 82.9
66.7 76.5 79.2

Hight of sister : 63.5 74.2 60.0 68.2 79.2
57.6 64.1 74.8

Apply suitable tests to judge whether the variability of heights for two groups viz. brothers and sisters can be taken as equal when

- (i) correlation co-efficient ρ is unknown 5
 (ii) correlation co-efficient ρ is known to be 0.75. 4

Also in (i), find a confidence interval with confidence co-efficient 0.95. 3

2. The age specific death rates of two countries are given below. Which country would you consider to be more healthy and why? 6

Age Group (Years)	Death rate (Per 1000)		Standard Population (lakh)
	Country-I	Country-II	
0 – 4	20.0	15.0	100
5 – 14	1.2	1.1	200
15 – 24	1.4	1.0	190
25 – 34	2.0	1.6	180
35 – 44	3.3	2.8	120
45 – 54	7.5	8.3	100
55 – 64	15.0	16.0	70
65 – 74	40.3	55.6	30
75 & above	120.0	134.7	10

3. The following table shows the average per capita consumption on cereals and prices of cereals in rural India for the four different time periods say T_1, T_2, T_3 and T_4 .

Commodities	Consumption (in Kg) Per 30 days				Prices (in Rs/Kg)			
	T ₁	T ₂	T ₃	T ₄	T ₁	T ₂	T ₃	T ₄
Rice	8.69	7.94	7.58	8.28	3.7	3.9	5.2	5.2
Wheat	1.51	2.73	2.43	2.78	3.7	3.2	4.1	4.4
Other Cereals	7.66	8.19	7.75	7.71	2.2	2.0	3.1	3.6

Calculate price indices of cereals for the period T₄ taking T₁ as base adopting chain base rule and using Laspeyre's index number formula at each stage. If you find after calculation that the consumption figures in T₄ are in one percent error, would you then think that your computed figure is going to be affected by this? Give reasons for your answer. 6

4. The IQ's of 10 teenagers belonging to one ethnic group are 98, 114, 105, 101, 123, 117, 106, 92, 110 and 108 whereas those of six teenagers belonging to another ethnic group are 122, 105, 99, 126, 114 and 108.

Assuming that these data can be looked upon as independent random samples from normal populations with means μ_1 , μ_2 and common variance σ^2 , estimate the parameters by the method of maximum likelihood estimation. 6

5. The following data relate to the revenue expenditure, Government of India, during the years 1953 – 54 to 1958 – 59 for the four quarters.

<u>Year</u>	<u>Quarter 1</u>	<u>Quarter 2</u>	<u>Quarter 3</u>	<u>Quarter 4</u>
1953 – 54	3575	4342	4435	10191
1954 – 55	3867	4404	5726	9816
1955 – 56	4669	5327	5811	10350
1956 – 57	4693	5640	5957	12961
1957 – 58	5518	6887	7782	19718
1958 – 59	6523	9808	10149	25510

Calculate the indices of seasonal variation within a quarter by ratio to trend method. 10

6. Practical Note Book and Viva voce. 5+5