

2019

Part – II

STATISTICS

(General)

Paper – III

(Practical)

Full Marks – 100

Time : 6 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.

GROUP – A

[Marks : 40]

1. The following data relate to the structure (x) and sitting height (y) both in centimeters for each of 15 people of a particular Indian caste.

<u>x</u>	<u>y</u>
172.8	83.9
166.0	83.6
164.1	81.3
164.4	85.4
168.8	83.9
165.2	81.1
170.0	84.9
163.5	81.1
169.4	84.9
159.1	79.6
157.7	77.7
146.7	76.4
153.2	77.2
155.3	80.1
151.5	76.9

- (i) Compute the correlation co-efficient between x and y. 5
- (ii) Represent the data by means of a scatter diagram and comment on it. 4

2. The following data shows the number of production of coal in India for a number of years

<u>Year</u>	<u>Production (1000 metric ton)</u>
1959	47800
1960	52593
1961	56065
1962	61370
1963	65956
1964	62440
1965	67172

Fit a linear trend equation to the above data. 5

3. You are given the following values for a function $f(x)$ of unknown form.

<u>x</u>	<u>f(x)</u>
1	4
2	6
3	23
4	24
5	17
9	11

Use an appropriate interpolation formula to calculate of (3.5) 4

4. Compute the area under the curve $y = \sin x - \ln(x) + e^x$ and the x-axis within $[0.2, 1.4]$ using Trapezoidal's rule. 6

5. From the following data on shoe prices and quantities, verify whether Laspeyre's price index number satisfies the factor reversal test. 6

Type of shoe	Price (in Rs.)		Quantity	
	1990	2000	1990	2000
Male	70	100	36	48
Female	50	90	50	80
Children	40	60	18	26

6. The following table shows for each of 14 cinchona plants, the yield of dry bark (in oz.) the height (in inches) and the girth (in inches) at a height of 6 ft. from ground.

<u>Plant No.</u>	<u>Yield of dry bark</u>	<u>Height</u>	<u>Girth</u>
1	19	8	4
2	51	15	5
3	30	11	3
4	42	21	3
5	25	7	2
6	18	5	1
7	44	10	4
8	56	13	6
9	38	12	3
10	32	13	4
11	25	5	2
12	10	6	3
13	20	4	4
14	27	8	4

Obtain the multiple regression equation to predict the yield of dry bark. 10

GROUP – B
[Marks : 40]

7. The following table gives the number of defects noted at final inspection of aircraft. Construct the appropriate control chart and comment on the state of control. 10

<u>Aircraft number</u>	<u>Number of defects</u>
1	7
2	15
3	13
4	18
5	10
6	14
7	7
8	10
9	20
10	11
11	22
12	15
13	8
14	24
15	14
16	8

8. The average income of earners in a town was obtained for the two years 1985 and 1990 on the basis of 1610 and 1423 persons respectively. The average and standard deviations of income for the two years are given below. 15

Year	Sample size	Avg. Income (Rs.)	S.D of Income (Rs.)
1985	1610	551	182
1990	1423	666	204

Test whether the two averages and two standard deviations are significantly different from each other. Set 95% confidence interval for the differences of the two population means and standard deviations.

9. Calculate (i) Crude Death Rate (CDR) (ii) Specific Death Rate (SDR) for each age group and (iii) standardised Death Rate (STDR) from the following data : 15

Age group	Population	No. of deaths in a year	Standard population (in 1000)
0 – 4	5000	150	110
5 – 14	7000	21	210
15 – 34	14000	63	360
35 – 59	16000	176	240
60 & above	8000	320	80

10. Practical Note Book and Viva-Voce. 20