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(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Com.Honours - END SEMESTER EXAMINATIONS - APRIL 2025
SEMESTER - I
23UBHCT1003 - Business Statistics

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. In a sample of 500 from a town, 280 are tea drinkers and the rest are coffee drinkers. Can we assume that coffee and tea are equally popular in the town at 1% level of significance? Frame Null and Alternative Hypothesis for the above data.

2. Calculate Karl Pearson's Coefficient of Correlation from the following data relating to the age of employees and the number of days they were reported sick in a month:

Age	30	32	35	40	48	50	52	55	57	61
Sick days	1	0	2	5	2	4	6	5	7	8

3. Calculate the rank correlation between the ranks given for X and Y series:

X	10	8	1	2	6	9	3	5	4	7
Y	6	10	5	4	3	1	2	9	8	7

4. A random sample of 20 tyres from a large consignment gave the average life of the tyres as 36,000 km and standard deviation of 4,500 km. Could the sample come from the population with a mean life of 40,000 km? (t-value at 5% level for 19 d.f. is 1.73).

5. Two salesman X and Y are working in a certain district. From a sample survey the following results were obtained:

Details	**X**	**Y**
No. of Sales	20	18
Average sales (Rs.)	170	205
Standard Deviation (Rs.)	20	25

State whether there is any significant difference in the average sales between the two salesmen. (Two tailed test table value at 5% level of significance is 1.96)

6. Out of 8,000 graduates in a town 800 are females, out of 1600 graduate employees, 120 are females. Use Chi-Square Test to determine if any distinction is made in appointment on the basis of sex. Value of Chi-Square for 5% level for one degree of freedom is 3.4.

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7. Fit a trend line to the following data by the freehand method:

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Production	40	44	48	42	46	50	46	52	50

8. Using the three year moving averages determine the trend and short-term fluctuations:

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Production in tonnes	21	22	23	25	24	22	25	26	27	26

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Calculate the regression equations from the following data:

X	6	2	10	4	8
Y	9	11	5	8	7

10. A group of seven week old chicken reared on a high protein diet weigh 12, 15, 11, 16, 14 and 16 ounces. A second group of five chickens similarly treated except that they are treated on a low protein diet weigh 8, 10, 14, 10 and 13 ounces. Test whether there is significant evidence that additional protein has increased the weight of the chickens. (Table value at 5% level of significance at 10 degree of freedom is 1.81)

11. Two researchers adopted different sampling techniques while investigating the same group of students to find the number of students falling in different intelligence level. The results are as follows:
No. of students in each level

Researcher	**Below Average**	**Average**	**Above Average**	**Genius**
A	86	60	44	10
B	40	33	25	2

Would you say that the sampling techniques adopted by the two researchers are significantly different?
NOTE: Tabulated value at 5% level of significance and given d.f. is 7.82.

12. Fit a straight line trend by the method of least squares for the following data:

Year end March	2018	2019	2020	2021	2022	2023	2024	2025
Earnings (in Lakhs)	38	40	65	72	69	60	87	95

Assuming that the same rate of change continues, what would be the predicted earnings for March 31, 2026.

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. Draw the different types of sampling and list out the merits and demerits of each type.

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