TB252223T

Reg. No :.....

Name :.....

BACHELOR'S DEGREE (C.B.C.S) EXAMINATION, MARCH 2025

2023 ADMISSIONS SUPPLEMENTARY

SEMESTER II - COMPLEMENTARY COURSE 2

ST2B02B23 - Statistical Tools

Time : 3 Hours **Maximum Marks : 80**

Part A

I. Answer any Ten questions. Each question carries 2 marks **(10x2=20)**

1. Write down the best measure of dispersion and justify your answer.
2. Define coefficient of variation.
3. Calculate quartile deviation of the values given below. 250, 116, 200, 120, 150, 100, 110, 82, 170.
4. Calculate the Coefficient of variation of 8 observations if $\sum x = 336 and \sum x^2 = 25160$.
5. Define central moments.
6. Define skewness.
7. For a frequency distribution first four central moments are 0, 11.6, 0, 256.4 then find its moment measure of kurtosis.
8. The first four moments about 20 of a distribution are -1, 24, 18, 509 then find its mean and standard deviation.
9. Define simple regression.
10. Write the relation between correlation coefficient and regression coefficients.
11. Calculate Spearman's rank correlation coefficient, if n =10 and $\sum D^2 = 176.$
12. Find b_{xy} if r = 0.42, $\sigma_x = 6.72, \sigma_y = 4.$

Part B

II. Answer any Six questions. Each question carries 5 marks **(6x5=30)**

13. Explain the quartile deviation and its properties
14. Calculate coefficient of mean deviation about mean.

Scores	140-150	150-160	160-170	170-180	180-190	190-200
Frequency	4	6	10	18	9	3

15. Compute quartile deviation and its coefficient.

Wages	0-5	5-10	10-15	15-20	20-25	25-30
No. of workers	4	6	3	8	12	7

16. Write down the five conditions where a distribution is skewed.
17. Distinguish between skewness and kurtosis.
18. Compute the first four moments about mean directly.

Mark	0-10	10-20	20-30	30-40	40-50
No. of students	2	4	6	5	3

19. The first four raw moments are -1, 55, -62.5, 7750. Find β_1 and β_2.
20. Distinguish with examples, between partial and multiple correlation.
21. The two regression equations are 5x - 4y + 20 = 0 and 2x - 5y + 110 = 0 and $\sigma_x = 10.$ Compute (i) $\bar{x}$ and $\bar{y}$.

(ii) r.

(iii) σ_y.

Part C

III. Answer any Two questions. Each question carries 15 marks **(2x15=30)**

22. Calculate the standard deviation of profit from the following frequency table.

Profit	0-100	100-200	200-300	300-400	400-500	500-600
No. of shops	12	18	27	20	17	6

23. Compute β_1, γ_1, β_2 and γ_2. Comment on skewness and kurtosis.

Class	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	16	33	38	50	31	22	10

24. Find the kurtosis of the data given below

x	0-10	10-20	20-30	30-40
f	1	3	4	2

25. Obtain the regression equations. Hence find

(i) y when x = 45.

(ii) x when y = 65.

x	40	50	38	60	65	50	35
y	38	60	55	70	60	48	30