

BACHELOR'S DEGREE (C.B.C.S) EXAMINATION, MARCH 2024
2023 ADMISSIONS REGULAR
SEMESTER II - COMPLEMENTARY COURSE 2 FOR PSYCHOLOGY
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 uses of range.
2. Define coefficient of variation.
3. Compare the variation of the two series using range.

Series 1	19	12	8	16	6	19	21	25	5
Series 2	30	25	30	40	35	45			

4. Calculate the standard deviation of 2, 3, 5, 4, 6, 8, 10, 2.
5. Define leptokurtic distribution.
6. Define skewness.
7. First four raw moments are 1, 16, 20 and 250. Then find μ_4 .
8. Obtain the third central moment if first three moments about the value 7 are 3, 11 and 15.
9. Define perfect correlation.
10. Define simple regression.
11. Compute b_{xy} if $\sum xy = 7623$, $\sum x = 300$, $\sum y = 250$, $\sum y^2 = 6414$ for 10 pairs of observations.
12. From the following regression equations find means of X and Y. $2Y - X - 50 = 0$ and $3Y - 2X - 10 = 0$.

Part B

II. Answer any Six questions. Each question carries 5 marks

(6x5=30)

13. Differentiate between absolute and relative measures of dispersion.
14. In a study on the effectiveness of a medicine over a group of patients, the following results were obtained :

Percentage of relief	0 -20	20 -40	40 -60	60 -80	80 -100
No. of patients	10	10	25	15	40

Find the variance and standard deviation.

15. Find the coefficient of quartile deviation of the following table.

Marks	0-20	20-40	40-60	60-80	80-100
No. of students	4	10	15	20	11

16. Explain a symmetric distribution.
17. Distinguish between skewness and kurtosis.



18. Decide whether the given distribution is leptokurtic or mesokurtic or platykurtic with reason.

Size	4	6	8	10
Frequency	2	4	3	1

19. If the first four moments about the value 10 are 1, 27, -68 and 209 respectively and the first four central moments are 0, 26, -146 and 639 respectively, then find its

- (i) mean.
- (ii) variance.
- (iii) γ_1 and γ_2 .
- (iv) β_1 and β_2 .

20. State the properties of regression lines and regression coefficients.

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 your result.

Age	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of persons	1	20	69	108	78	22	2

24. Calculate the moment measures of skewness and kurtosis as well as the coefficient of kurtosis for the following data

x	4.5	14.5	24.5	34.5	44.5	54.5	64.5	74.5	84.5	94.5
f	1	5	12	22	17	9	4	3	1	1

25. Obtain the regression equations. Hence find

(i) y when $x = 70$.

(ii) x when $y = 60$.

x	42	44	58	55	89	98	66
y	56	49	53	58	65	76	58

