

SARASWAT VIDYALAYA'S
SRIDORA CACULO COLLEGE OF COMMERCE & MANAGEMENT STUDIES
KHORLIM, MAPUSA, GOA

B.Com - Honors / B.Com - General (w. e. f. 2017-18)

S.Y.B.COM. SEMESTER END EXAMINATION, APRIL 2024

REGULAR SEMESTER IV (Offline Mode)

Subject:- BUSINESS STATISTICS -II (GE-5 , CC : UCAG102)

M.Marks:- 80 .

(CBCS- Revised Course)

Duration:- 2 hrs.

Instructions:- 1. Attempt all the questions.

2. Attempt each question on a new page and sub-questions together.

3. No internal choice for sub-questions.

4. Use of non-programmable calculator is allowed.

5. Each question carries equal marks (3 + 6 + 7 =) 16

Q.1. a) Differentiate between Rank Correlation and Coefficient of Correlation.

b) If for a binomial distribution $n = 6$ and $P(2) = P(4)$, then find mean and standard deviation of Binomial distribution.

c) What is the probability that the month July 2025 will have -

i. five Sundays

ii. five Sundays or five Mondays ?

.OR.

Q.I. x) Differentiate between Positive correlation and Negative correlation.

y) If 5% of the electric bulbs are manufactured by a company are defective, use Poisson distribution to find the probability that in a sample of 100 bulbs:

i) none is defective

ii) five bulbs are defectives. (Given: $e^{-5} = 0.007$)

z) For a random variable x , Probability mass function is defined as:

$$P(x) = \frac{1}{2} \quad \text{when } x = 1, 3$$

$$= \frac{3}{10} \quad \text{when } x = 2$$

$$= \frac{1}{5} \quad \text{when } x = 4$$

$$= 0 \quad \text{otherwise}$$

Find i) $P(2)$

ii) $P(x = 0)$

iii) $P(x \neq 0)$

Q.2. a) Write short note on multistage sampling.

b) Is there a correlation between heights and weights of six children?
Comment.

Ht in cms	120	125	127	130	134	144
Wt in kg	42	47	48	46	50	49

c) Consider the function, $U_x = 7 - 5x + x^2$. Prepare a difference table for argument values of $x(=)$ 0, 1, 2, 3, 4, 5. Comment on the difference table.

.OR.

Q.II. x) Write short note on Stratified Random Sampling.

y) Find coefficient of correlation for the following data and comment on it.

Number of pairs of observations = 10

Total deviation of the x series from the mean = - 170

Total deviation of the y series from the mean = - 20

Total square deviations of the x series from the mean = 8288

Total square deviations of the y series from the mean = 2264

z) Interpolate the missing figure from the following figures by using Binomial method of Interpolation

X	1970	1971	1972	1973	1974	1975
U_x	141	131	145	-	149	173

Q.3. a) State Addition theorem on Probability for two mutually exclusive events A and B, associated with an experiment.

b) Calculate coefficient of correlation from the following result.

$n=10$, $\Sigma x = 100$, $\Sigma y = 150$, $\Sigma(x-10)^2 = 180$, $\Sigma(y-15)^2 = 215$, $\Sigma(x-10)(y-15) = 60$.

c) A coin is tossed 900 times and heads appears 490 times. Does it support the hypothesis that the coin is unbiased?

.OR.

Q.III.x) Define the term "Probability". What is the probability of certain and impossible events?

y) Find regression line of y on x given the following data with three number of observations:

$$\sum x = 9, \sum y = 15, \sum xy = 49, \sum x^2 = 29, \sum y^2 = 83$$

Also estimate y when x = 5.

z) The mean life time of a 100 fluorescent tubes produce by a company is computed to be 1570 hours with a standard deviation of 120 hours. The company claims that the average life of the tubes produced by the company is 1600 hours. Using a level of significance of 0.05, is the claim acceptable?

Q.4. a) What are the requirements of Binomial distribution?

b) In a partially destroyed laboratory record of correlation data, only the following data is legible:

i) Variance of x = 9,

ii) Regression equations are: $8x - 10y + 66 = 0$ and $40x - 18y = 214$.

Find the mean values of x and y and standard deviation of y.

c) Find the value of U_{12} from the below table, Newton's Forward method of Interpolation

X	5	10	15	20
U_x	9.6	12.9	17.1	23.2

.OR.

Q.IV.x) Give three examples where Poisson distribution is applicable

y) Find the value of y when x = 38 and the value of x when y = 83 for the following data if coefficient of correlation is +0.7

	x	y
Mean	52	12
Variance	49	144

z) Given: $f(1) = 2, f(2) = 4, f(3) = 8$ and $f(4) = 16$, find $f(5)$ using Lagrange's formula

Q.5. a) Define the following terms:

i) Level of significance

ii) Type I error

iii) Hypothesis

ii) $z = 1.2$ is 0.3849.)

c) Calculate rank correlation coefficient for the following data and hence comment on it.

Judge I	2	1	4	6	3	7	6	5
Judge II	2	1	3	6	4	8	5	6

.OR.

Q.V. x) Answer the following.

- Write down the 95% confidence interval for Sample proportion.
- Write down the confidence limits for population mean for almost certainty.

- y) For a normal distribution, mean is 50 and standard deviation is 1.5. Find Median and the limits of middle 50% of the observations.

- z) An urn contains four white and five black balls, a second urn contains five white and four black balls. One ball is transferred from the first to the second urn, then a ball is drawn from the second urn. What is the probability that it is white?

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