

SECOND TEST DECEMBER-2023

CLASS : I PUC

SUBJECT : STATISTICS (31)

Max. Marks : 40

TIME : 1 Hr. 30 Mins.

Instructions :

- 1) Statistical tables and graph sheets will be supplied on request.
- 2) Scientific calculators are allowed.
- 3) All working steps should be clearly shown.
- 4) Only the first written answers will be considered for Section-A

SECTION -A

I Choose the correct answer from the choices given :

2x1=2

- 1) The value of correlation co-efficient when the two regression lines are perpendicular to each other.
a) 0 b) +1 c) -1 d) 0.5
- 2) The numerical co-efficient of Y_1 in the expansion of $(Y-1)^4$ is
a) 1 b) -1 c) -4 d) +4

II Fill in the blanks by choosing the appropriate answers from those given in the brackets: (A.P., A.M., AB)

2x1=2

- 3) One of the second order frequencies when the two attributes are present is _____.
- 4) Under Binomial expansion method, the values of X should be in _____.

III Match the following :

3x1=3

- | A | B |
|--------------------------------|---------------------------------|
| 5) If $r = -1$ | a) + 1 |
| 6) If $Q = + 1$ | b) 0 |
| 7) If $n = 5$, then $(Y-1)^5$ | c) Perfect positive association |
| | d) Perfect negative correlation |

IV Answer the following questions:

2x1=2

- 8) Define Correlation.
- 9) Mention the limits of Association of Attributes.

SECTION- B

V Answer any THREE of the following questions :

3x2=6

- 10) In a bivariate data X and Y, if standard deviation of X and Y are 7 and 9 respectively, If $\text{Cov}(X,Y) = 10$. Find the co-efficient of Correlation.
- 11) If $b_{xy} = -\frac{3}{4}$, $b_{yx} = -\frac{1}{3}$, find r_{xy} .
- 12) Mention two methods of measuring the association of attributes.
- 13) Write the assumptions of Interpolation and Extrapolation.

SECTION -C

VI Answer any TWO of the following questions :

2x5=10

- 14) Calculate Karl-Pearson's co-efficient of Correlation.

X	12	9	8	10	11	13	7
Y	14	8	6	9	11	12	3

(P.T.O)

- 15) From the following data regarding the amount of rainfall (X) and the production of Rice (Y). Find the most likely production corresponding to the rainfall of 40 cms (Given $r = 0.8$)

	Rainfall	Production
Mean	35	50
Standard Deviation	5	8

- 16) Calculate Yule's co-efficient of Association for the following data and comment.

$$(AB) = 150, \quad N = 1000, \quad (A) = 200, \quad (B) = 300$$

- 17) Use Binomial expansion method to estimate the Index number for 2005.

Year	2001	2002	2003	2004	2005
Value	74	78	84	92	-

VII Answer any ONE of the following questions :

1x5=5

- 18) Calculate the co-efficient of Rank Correlation and Interpret the result

Marks in Accountancy	18	28	35	44	35	26	37	48
Marks in Statistics	83	51	34	34	34	28	46	47

- 19) If the two Regression equations are $2X - Y + 3 = 0$ and $X - 3Y + 6 = 0$. Find \bar{X} , \bar{Y} and r_{xy} .

SECTION -D

VIII Answer any ONE of the following questions :

1x10=10

- 20) Calculate the co-efficient of Correlation between the number of male children and the number of female children of 100 families from the following data.

No. of Male children	No. of female children				
	0	1	2	3	4
0	3	4	2	-	-
1	4	8	8	2	-
2	-	7	12	8	4
3	-	3	8	8	5
4	-	-	3	5	6

- 21) Obtain both the Regression equations for the following data.

X	3	6	5	4	4	6	7	5
Y	3	2	3	5	3	6	6	4

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