0101N1171

Candidate's Seat No:____

B.Sc. Sem.-3 Examination
CC 202
Statistics
January-2026

Time : 2.30 Hours] [Max.Marks : 70

Q. 1 (A)	Explain the method of least square for fitting linear equation. Y =aX+b	7 Marks
(B)	Write a short note on scatter diagram and explain perfect correlation on it.	7 Marks
	OR	
Q1 (A)	Obtain the normal equations for fitting of the curve $y = ax^b$.	7 Marks
(B)	Derive the least square estimates for fitting the curve $y = ax + \frac{b}{x}$ to a set of n pairs of x and y.	7 Marks
Q 2 (A)	Obtain the regression equation for the regression of Y on X and explain why there are two lines of regression?	7 Marks
(B)	Prove that the correlation coefficient 'r' is unaffected by change of origin and scale. What is the value of correlation coefficient if two lines are perpendicular to each other?	7 Marks
	OR	
Q 2 (A)	State and prove properties of regression coefficient.	7 Marks
(B)	Prove that Spearman's rank correlation between two related variables X and Y is given by $= 1 - \frac{6\sum_{i=1}^{n} d_i^2}{n(n^2-1)}$	7 Marks
Q 3 (A)	Discuss Yule's notation. Obtain the equation for plane of regression of X_1 on X_2 and X_3.	7 Marks
(B)	In usual notation prove that $\sigma_{1.23}^2 = \sigma_1^2 \frac{\Delta}{\Delta_{11}}$	7 Marks
	OR	
Q 3 (A)	State and prove properties of residue	7 Marks
(B)	Obtain the formula for partial correlation coefficient $r_{12.3}$	7 Marks
Q. 4 (A)	Discuss two different methods of studying association of attributes	7 Marks
(B)	Obtain the relation between coefficient of association(Q) and coefficient of colligation (Y)	7 Marks
	OR	
Q 4 (A)	Discuss coefficient of Association. What do you mean by complete association and complete disassociation.	7 Marks
(B)	Discuss independence of attributes. What is the value of coefficient of association in case of independence? Explain.	7 Marks
Q. 5	Attempt any seven	14 Marks
(i)	State the normal equations for fitting an exponential curve.	
(ii)	What is the angle between two lines of regression?	
(iii)	State the principle of least squares in curve fitting.	
(iv)	If two variables are independent, then they are uncorrelated? True or False.	
(v)	Show that $b_{xy} = r\frac{S_x}{S_y}$.	

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(vi) What is probable error?

(vii) What are the limits of rank correlation coefficient?

(viii) State the formula of $R_{1.23}$.

(ix) State the relation between multiple and partial correlation coefficient.

(x) Under what condition one can say there is perfect negative association between two attributes.

(xi) What is an attribute?

(xii) If two attributes are having perfect association what is the value of coefficient of association?

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