

- N.B. :1) Attempt all questions.**
2) Figures to the right indicate marks.
3) Use of calculator is allowed.

Q.1 a) Explain correlation. What are the measures of correlation ? State the important properties of correlation coefficient. 6

b) Calculate sperman's rank correlation coefficient for the following data

X :	35	37	38	42	44	46	51	
Y :	40	32	39	40	41	31	50	6

OR

Q.1 a) Explain regression. State and prove the relationship between correlation and regression coefficients. 6

b) The line of regression of y on x for a bivariate data is $5y + 3x = 42$ and the line of regression of x on y is $2x + y = 30$

- Find i) mean values of x and y.
 ii) the coefficient of correlation & between x and y.
 iii) the most probable value of x when $y = 15$. 6

Q.2 a) What is an index number? Explain the following tests of index number.
 i) Time reversal test ii) Factor reversal test. 7

b) Construct cost of living index number for the following data.

item	weight	Base year price (Rs.)	Current year price (Rs.)	
1	25	2.50	1.75	
2	50	1.30	2.10	
3	15	5.00	3.75	
4	10	0.75	1.50	6

OR

Q.2 a) What is an index number ? Why index numbers are called economic boro meters ?
 What are the the uses of index number. 7

b) Construct price index number for the following data by i) Fisher's method (Fisher's index number) ii) Bowley's method

Commodities	Base Year		Current year		
	price	quantity	price	quantity	
A	2	3	4	6	
B	5	10	6	5	
C	4	14	5	5	6

Q.3 a) Explain what is consistence of data in case of data on attributes. Also State crietia for consistency in case of three attributes. 6

b) 2000 candidates appeared for a competitive examination and of these 600 were successful 350 had attended a coaching class and of these 200 were successful. Obtain the coefficient of association Q and make your comments. 6

OR

Q.3 a) When do you say that two attributes A and B i) independent ii) completely associated. iii) completely dissociated. 6

b) Find the remaining class frequencies in the following case.
N = 1050 (A) = 800 (B) = 600 (C) = 550
(AB) = 400 (AC) = 400 (BC) = 200 (ABC) = 50. 6

Q.4 a) What do you understand by simple random sampling ? Explain Lottery method of drawing a simple random sample. 6

b) Fit a straight line y = a + bx to the following data.
x : 14 16 20 25 27
y: 20 18 21 30 35 7

OR

Q.4 a) Explain the method to fit a exponential curve y = a e^{bx} given n pairs of values. 6

b) A survey was conducted to study the relationship between expenditure on accommodation (x) and expenditure on food and entertainment (y).

Table with 2 columns: Variable, Mean, Standard deviation. Rows for x and y.

r = 0.57

Write down the equation of regression of y on x and estimate the expenditure on food and entertainment (y) if the expenditure on accommodation is 200. Also find regression line of x on y. 7
