

Data Analysis and Quantitative Techniques

Duration: 3 hour

Max.Marks: 60

**INSTRUCTIONS:** - 1) All questions are compulsory.

2) Figures to the right indicate full marks.

**Q.1)** Attempt ANY ONE of the following:-

(12 x 1 = 12 marks)

a) Using the given data:

<b>X</b>	6	2	10	4	8
<b>Y</b>	9	11	5	8	7

- Compute the regression coefficients and the equations of lines.
- Calculate the correlation coefficient using the regression coefficients and discuss the type of correlation.

b) From the following data find:-

<b>X</b>	150	135	90	140	100
<b>Y</b>	60	50	100	80	90

- The Spearman's rank correlation co-efficient.
- Karl Pearson's Coefficient of correlation.
- Discuss the type of correlation between marks of X and Y.

**Q.2)** Attempt ANY TWO of the following :-

(6 x 2 = 12 marks)

- In a restaurant, 70% of the people order Chinese food and the rest 30% order Italian food. If a group of three persons enter the restaurant, then find the probability of at least two of them ordering for Italian food.
- Find the probability of drawing a King, a Queen and a Jack in order as in a deck of cards in three consecutive draws. The cards once drawn are not replaced.
- A Policeman's chance of shooting a murderer is  $\frac{2}{3}$ . If he fires 5 bullets then what is the probability of the bullet hitting the murderer at most three times.

**Q.3)** Solve ANY TWO the following :-

(6 x 2 = 12 marks)

a) The sales of a company are observed over the years as follows:-

<b>Years</b>	1994	1995	1996	1997	1998	1999
<b>Sales (in lakhs)</b>	86	106	180	209	214	201

Using the Method of Semi-averages:

- Calculate and discuss the semi-averages using a trend line.
- Estimate the sales for the year 2000 and its further scope based on it.

b) Calculate Spearman's Rank correlation co-efficient and state the type of correlation of the data:-

A	5	2	9	8	1	10	3	4	6	7
B	10	5	1	3	8	6	2	7	9	4

c) Using Rank method, find and discuss the correlation between the marks of two subjects of a group of students.

Subjects	Elena	Barry	Oliver	Hayley	Arya	Sara	Luke	Elliot	Dexter	Grace
English	56	75	45	71	62	64	58	80	76	61
Maths	66	70	40	60	65	56	59	77	67	63

Q.4) Answer **ANY THREE** of the following :-

(4 x 3 = 12 marks)

a) What is an index number? Explain the problems involved in the construction of an index number.

b) From the following data, calculate index numbers by Simple average of price relative method.

Commodity	A	B	C	D
Price in 2005 (Rs.)	162	256	257	132
Price in 2006	171	164	189	145

c) From the following data, calculate price index numbers for 2000 and 2010 as base by Laspeyre's method.

Commodity	Year 2000		Year 2010	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15

d) Construct Paasche's index numbers from the following data :

Commodity	Current year		Base year	
	Price	Quantity	Price	Quantity
A	12	4	9	8
B	11	10	12	7
C	7	9	6	10

Q.5) Answer ANY THREE of the following:-

(4 x 3 = 12 marks)

a) Based on the given data, discuss the trend pattern using Free-hand Curve Method.

<b>Year</b>	1996	1997	1998	1999	2000
<b>Income</b>	15000	17000	18000	20000	25000

b) What is Time Series? Explain the various components of time series..

c) Calculate the five-yearly moving average for the following data:-

<b>Year</b>	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>Sales(lakhs)</b>	4	6	5	8	9	5	4	3	7

d) Using the method of Semi-averages, find the semi-average and discuss the sale pattern for the given data:-

<b>Year</b>	2000	2001	2002	2003	2004	2005	2006
<b>Value</b>	2	4	6	8	10	12	14

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