[Time: $2\frac{1}{2}$ Hours] **[Marks: 75]**

NOTE : i) All questions are compulsory
ii) In Q. 1 attempt both the sub-parts A and B
iii) Figures to the right indicate marks
iv) Use of non-programmable calculator is allowed
v) Graph paper will be provided on request

Q 1) A **Fill in the blanks with the correct alternative (Attempt any Eight)** **(8)**

a) The data collected for the first time is known as .....
(Information, Secondary data, Primary data)

b) The histogram can be used to locate graphically the value of .....
(Mean, Median, Mode)

c) The middle most observation that divides the entire distribution into two equal parts is known as ..... (Mean, Median, Mode)

d) If the value of coefficient of variation is more, then the consistency of the data is ..... (more, less, same)

e) The correlation is positive if .....
(x increases as y increases, x increases as y decreases, none of these)

f) A ..... is a sequence of values of a phenomenon arranged in order of their occurrence. (time series, index number, none of these)

g) The index number for base period is ..... taken as 100.
(Always, Sometimes, Never)

h) A variable X capable of taking discrete values $x_1, x_2, \ldots, x_n$ with respective probabilities $p_1, p_2, \ldots, p_n$ is called as .....random variable.
(discrete, continuous, none)

i) For a statistical experiment every possible outcome is called.....
(sample, sample point, space)

j) Maximin criterion is a decision making under .....
(risk, uncertainty, certainty)

Q1) B State whether the following statements are True or False. (Attempt any seven) **(7)**

a) A bivariate frequency distribution represents frequencies with reference to two variables at a time.

b) Pie diagram is represented by using circles.

c) Quartiles are measures of central tendency.

d) Standard deviation is denoted by r.

e) If events A and B are exhaustive events then AUB is a null set.

f) A symmetric distribution has the values of all measures of central tendency identical.

g) Each of the groups or selections which can be made by taking some or all of a number of things without reference to the order of the things in each group is called a permutation.

h) There are four components of time series.

i) If correlation coefficient is zero then the association between the two variables is perfect positive.

j) If the upper limits are excluded then it is called inclusive type of class intervals.

Q2) A i) Calculate Median and Mode for the following data **(8)**

Class	10-30	30-50	50-70	70-90	90-110	110-130
Frequency	4	10	14	12	8	6

ii) Draw a Multiple Bar Diagram for the regional percentage of viewers for a popular T.V. serial on D.D. Metro for 3 months. **(7)**

Month	North	South	West	East
April	40	45	32	25
May	50	55	40	30
June	45	49	38	38

(OR)

Q2) B i) Represent the following data by a Histogram and a Frequency Curve (plot on the same graph) **(8)**

Units	0-200	200-400	400-600	600-800	800-1000	1000-1200
No of Consumers	9	18	27	35	28	11

ii) Find the missing frequency if the mean is 21.9 **(7)**

Class	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	2	5	-	13	21	16	8	3

Q3) A i) Calculate Karl Pearson's Co-efficient of correlation for the following data: **(7)**

X	17	8	12	13	10	12
Y	13	7	10	11	8	9

ii) Calculate Mean Deviation from Mean and its co-efficient for the following data: **(8)**

Age	20-22	22-24	24-26	26-28	28-30	30-32	32-34
No of Employees	70	90	110	140	130	80	80

(OR)

Q3) B i) Find the regression equation of x on y for the following data and hence estimate x when y = 15 **(8)**

X	10	12	14	19	8	11	17
Y	20	24	25	21	16	22	20

(7)

ii) Calculate rank correlation co-efficient from the following data representing marks in Maths (X) and Accountancy (Y).

X	15	11	7	9	8	5	13
Y	12	10	5	7	6	4	9

Q4) A i) Fit a trend line by the method of least squares and estimate the trend for the year 2009. **(10)**

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007
Export in lakhs of Rupees	8	10	12	11	13	15	14	17	17

ii) Calculate Chain base Index Number for the following data **(5)**

Year	2002	2003	2004	2005	2006
Prices	35	39	27	32	41

(OR)

Q4) B i) Calculate Laspeyre's Paasche's, and Fishers' index number for the following data **(8)**

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
Rice	4	15	5	20
Pulses	8	20	12	30
Sugar	6	25	8	20
Oil	14	10	21	15

ii) Calculate 3 Yearly Moving Averages for the following time series. **(7)**

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Sales	53.6	48.4	45.6	51.2	46.8	42.5	40.7	45.1	39.6	38.8

Q5 A) i) A box contains 5 blue and 4 red balls. 4 balls are selected at random from the box. Find the probability that i) exactly 3 red balls are selected ii) at least three red balls are selected. **(5)**

ii) For the following payoff table, find the optimal decision using i) Maximin criterion ii) Maximax criterion iii) Laplace criterion iv) Minimax Regret Criterion. **(10)**

Course of Action	States of Nature		
	S1	S2	S3
A1	35	100	38
A2	58	95	105
A3	45	30	91

(OR)

Q5) B Attempt any three out of five. **(15)**

i) Distinguish between Primary and Secondary Data.
ii) Explain the following terms i) Experiment ii) Sample Space iii) Exhaustive Events iv) Independent Events v) Complementary Events.
iii) Write short notes on i) Wholesale Price Index ii) Family Budget Method
iv) Define for a random variable i) Expectation ii) Variance.
v) What is a time series? Describe the various components of a time series with suitable examples

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