

Time: 3HRS

Max. Marks: 80

- N.B.:** 1) Question No.1 is **compulsory**.  
 2) Attempt any **three** from the remaining **five** questions.  
 3) Figures to the right indicate full marks  
 4) Scientific calculator is allowed.

- Q.1 A) For a moderately skewed frequency distribution of retail prices for men's shoes it is Found that the mean price is Rs. 20/- and median price is Rs. 17/-. If the coefficient of Variation is 20%. find the Pearson's coefficient of skewness of the distribution. [20]

- B) Find the Karl Pearson's coefficient of correlation for the data.

X	2	3	4	5	7
Y	3	4	4	6	8

- C) A bag contains 2 red, 5 white and 8 blue balls. Two balls are drawn at random from it. What is the probability that one is white and other is blue.  
 D) Suppose a random variable X takes the values -3, -1, 2 and 5 with probabilities  $(2k-3)/10$ ,  $(k-2)/10$ ,  $(k-1)/10$ ,  $(k+1)/10$ . Find  $E(X)$ .

- Q.2 A) Calculate the Karl Pearson coefficient of skewness.

Class	20-25	25-30	30-35	35-40	40-45	45-50	50-55
Frequency	8	12	20	25	15	12	8

- B) The marks Obtained by 9 students in OS and DS are given below. [10]

Marks in OS	35	47	23	6	17	10	43	9	28
Marks in DS	30	46	33	4	23	8	48	12	31

- Q.3 A) Compute regression coefficients of Y on X and X on Y. Also find regression lines. [10]

X	1	2	3
Y	6	5	10

- B) The following table gives the number of accidents in a city during 10 days of time. Find whether the accidents are Uniformly distributed over that period.

Day	1	2	3	4	5	6	7	8	9	10
No. of accidents	8	8	10	9	12	8	10	14	10	11

[Given 9 degrees of freedom at 5% level of significance the table value of  $\chi^2$  is 16.9]

- Q.4 A) Ten cards numbered from 1 to 10 are placed in a box and mixed up thoroughly. One card is Drawn randomly if it is known that the number on the card is more than 3. What is the Probability that the number is even number.  
 B) State Baye's Theorem. Given three identical Boxes I, II, III each containing two coins. In a box I both coins are gold coins, in box II both coins are silver coins and in box III One coin is gold and one coin is silver. A person choses a box at random and takes out a coin. If the coin is gold what is the probability that the other coin in the box is also Gold.

- Q. 5 A) A Box of 100 pens contains 10 defected pens. 5 pens are selected at random from the Box and sent to retail store. What is the Probability that the store will receive at least One is defective?  
 B) Let X be a random variable with following probability distribution

X	-3	6	9
P(X)	1/6	1/2	1/3

Find  $E(X)$ ,  $E(X^2)$  and Evaluate  $E(2X+1)^2$ .

- Q.6 A) Find Bowley's Coefficient of Skewness:

[10]

Class Interval	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	7	9	16	22	14	12	3

[10]

- B) Given the following what is bivariate probability distribution of X and Y obtain

- (i) Marginal distribution of X and Y  
 (ii) The conditional distribution of X given  $Y = 2$

X \ Y	-1	0	1
0	1/15	2/15	1/15
1	3/15	2/15	1/15
2	2/15	1/15	2/15

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