



**CII Institute of Logistics**  
PGDSCM & Certificate Programs  
Semester-end Examination – June 2009

**QUANTITATIVE TECHNIQUES**

Time : Three Hours

Marks : 100

**Part A**

Answer all questions

(20 x 1 = 20 Marks)

- Graphical representation of frequency distribution is  
(A) Ogive (B) Line diagram (C) Histogram (D) None of these
- Most extreme values that would be included in a class interval are  
(A) Class mark (B) Class interval (C) Class boundary  
(D) None of these
- The value of the variable which occurs most frequently is  
(A) Median (B) Mean (C) Mode (D) None of these
- The value divides the ordered set into two equal parts is  
(A) Median (B) Mean (C) Mode (D) None of these
- Standard deviation is the square root of  
(A) Coefficient of variation (B) Variance (C) Mean deviation  
(D) None of these
- The curve drawn for cumulative frequency distribution is  
(A) Histogram (B) Ogive (C) Frequency of polygon (D) Line diagram
- The algebraic sum of deviation of the values 7,11,9,14,19 about the arithmetic mean is  
(A) 1 (B) 0 (C) -1 (D) None
- The matrix obtained by interchanging the rows and columns of a matrix is called  
(A) Inverse (B) Transpose (C) Adjoint (D) None of these
- Given a square matrix A . the square matrix B which satisfies  $AB = BA = I$  , identify the matrix  
(A) Adjoint (B) Transpose (C) Inverse (D) None of these
- The correlation coefficient has value  
(A) Between 0 and 1 (B) Between -1 and 0 (C) Between -1 and 1  
(D) None of these
- The regression coefficients take values such that  
(A) They lie between 0 and 1 (B) Product is less than 1  
(C) Value is greater than 1 (D) None of these
- The regression coefficients are 0.4 and 1.6. The Correlation coefficient is  
(A) 0.8 (B) -0.8 (C) 0.16 (D) None of these
- The Laplace criterion is called  
(A) The Maximum criteria (B) Minimax criteria  
(C) Equally likely criteria (D) None of these
- Hexadecimal system has base  
(A) 2 (B) 10 (C) 16 (D) 8
- Two or more events which cannot occur simultaneously are  
(A) Mutually exclusive (B) Independent (C) Equally likely  
(D) None of these
- If the outcome of one event does not affect another event they are  
(A) Mutually exclusive (B) Independent (C) Exhaustive  
(D) None of these
- Addition theorem of probability is  
(A)  $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$   
(B)  $P(A \text{ or } B) = P(A) + P(B)$   
(C)  $P(A \text{ or } B) = P(A) + P(B) + P(A \text{ and } B)$   
(D) None of these
- When population is heterogeneous than the most appropriate sampling is  
(A) Strategic random sampling (B) Systematic sampling  
(C) Multistage sampling (D) None of these
- The value of the determinant  $\begin{vmatrix} 17 & 10 \\ 8 & 5 \end{vmatrix}$   
(A) 5 (B) 85 (C) 80 (D) 40
- When even units of the population has the same chance of being  
(A) Judgement sampling (B) Probability sampling (C) Quota sampling  
(D) Cluster sampling

**Part B**

*Answer any four (4 x 10 = 40 marks)*

- Find the Median age of a group of people who like a new brand of cosmetic  
 Age group:      0 – 15   15 – 25   25 – 35   35 – 45   45 and above  
 No. of customers: 20      45      80      35      20
- Calculate Quartile deviation for the data  
 153, 191, 220, 235, 139, 141, 166, 184
- Calculate Correlation coefficient for the following data  
  
 X : 17 19 21 26 20 28 26 27  
  
 Y: 23 27 25 26 27 25 30 33
- Briefly explain the principles of DBMS.
- Briefly explain the different price index numbers
- In a university 10 % students are married. Out of the 50 students selected in random. Find the probability that atleast two of them are married ( $e^{-5} = 0.006738$ )

**Part C**

*Answer any four (4 x 10 = 40 marks)*

- A pharmaceutical company claims that its medicine cures the disease in 95 % of cases. When it was administered to 400 patients it cured only 362 patients. Is the claim of the company valid?
- Find the two regression lines from the following data

X	57	58	59	59	60	61	62	64
Y	67	68	65	68	72	72	69	71

- Calculate Laspeyre’s and Paasche’s index no for the following data for 1990 On 1980

		A	B	C	D	E
Quantity	1980	50	15	20	10	40
	1990	60	10	25	8	1
Price	1980	8	2	1	2	1
	1990	20	6	2	5	5

- A car hire firm has two cars which it hires out day to day. Average demand is 1.5 cars and follows poisson distribution. Find the proportion of days when no car is used and also days in which demand is refused.
- A company claims that the battery for pacemakers produced by them have an average life of 900 days. A random sample of 100 batteries has an average of 875 days with a standard deviation of 40 days. Is the claim of the company valid at 5% level.
- A machine produces 20 defective items in a batch of 400. After overhauling, it produced 10 defectives in a batch of 300. Has the machine improved?

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