CT Inst. of Engg

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Roll No. ☐☐☐☐☐☐☐☐☐   Total No. of Pages : 03

Total No. of Questions : 07

MBA/MBA(IB) (Sem.–1)
QUANTITATIVE TECHNIQUES
Subject Code : MB-104 (2009 to 2011 Batch)
Paper ID : [C0167]
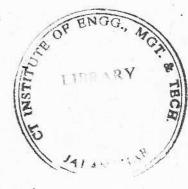
Time : 3 Hrs.   Max. Marks : 60

INSTRUCTION TO CANDIDATES :
1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains SIX questions carrying TEN marks each and students has to attempt any FOUR questions.

SECTION-A

I. **Write briefly :**

(a) Define complement of a set.

(b) Define Annuity.

(c) What do you understand by Coefficient of Variation?

(d) Explain the mathematical properties of Standard Deviation.

(e) Differentiate between Correlation and Regression.

(f) Briefly explain the uses of Index Numbers.

(g) What is Binomial distribution? What are its conditions?

(h) Distinguish between Type I error and Type II error.

(i) What do you understand by Time Series Analysis?

(j) Differentiate between Arithmetic Progression and Geometric Progression.

SECTION-B

2. Show that $\begin{pmatrix} a-b-c & 2a & 2a \\ 2b & b-c-a & 2b \\ 2c & 2c & c-a-b \end{pmatrix} = ($

Hence find the value of x from

$$\begin{pmatrix} 3-x & 2x & 2x \\ 2x-2 & 1-x & 2x-2 \\ 2x-4 & 2x-4 & -1-x \end{pmatrix} = 0$$

3. a) Which is the best measure of central tende

b) In a school 28 students were singers, players. Out of this population of 100 s play tabla, 20 could play tabla and flute, and 5 could do all the three. Find out ho playing all the three.

4. The following data (in Rs. Crores) gives exp and sales of a particular firm :

	Advertisement Expenditure (x)
Mean	10
Standard Deviation	3
Correlation Coefficient	

(a) Calculate the regression equation of y on

(b) Estimate the advertisement expenditure target of Rs.120 crores.

5. The following table gives data about prices and consumption of four commodities 'A', 'B', 'C' and 'D'. Find Laspeyre's, Paasche's and Fisher's Index Numbers. (10)

Commodities	Base Year		Current Year	
	Price (Rs.)	Quantity (Kg)	Price (Rs.)	Quantity (Kg)
A	2	7	6	6
B	3	6	2	3
C	4	5	8	5
D	5	4	2	4

6. A footwear company has launched a 100% leather shoe for both male and female customers. The company conducted a survey to understand the perceptions of customers about a 100% leather shoe. The company has taken a random sample of 130 male customers and 150 female customers. Out of 130 males, 50 responded that a 100% leather shoe matches their lifestyle. Out of 150 females, 90 females responded that a 100% leather shoe matches their lifestyle. Does this indicate that there is a significant difference in the proportion of male and female customers in the population stating that a 100% leather shoe matches with their lifestyle? Test the hypothesis by taking 95% as the confidence level. (10)

7. a) Explain various laws of probability.

   b) A salesman is known to sell a product in 3 out of 5 attempts while another salesman in 2 out of 5 attempts. Find the probability that

   (i) No sale will take place when they both try to sell the product.

   (ii) Either of them will succeed in selling the product. (5,5)