

Roll No.

Total No. of Questions : 07]

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Paper ID [C0104]

(Please fill this Paper ID in OMR Sheet)

MBA (Sem. - 1st)

QUANTITATIVE TECHNIQUES (MB - 104)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.

Section - A

Q1)

(10 x 2 = 20)

- a) Discuss role of mathematics in business.
- b) Simplify $\log 12 - \log 2 - \log 3$.
- c) Are the following sets equal?
 $A = \{1, 2, 3\}$; $B = \{x \in \mathbb{R} : x^2 - 2x + 1 = 0\}$.
- d) Find median of the data : 20, 18, 22, 27, 25, 12 & 15.
- e) Define skewness.
- f) Estimate correlation coefficient from using
 $\sum x^2 = 5398$, $\sum y^2 = 2224$ & $\sum xy = 2704$
- g) Give the regression equations 'x on y' and 'y on x'.
- h) What are cyclic fluctuations in Time series analysis?
- i) In a class of 52 students, 5 are boys and rest are girls. Find the probability that a student selected will be a girl.
- j) Define null hypothesis.

Section - B

(4 x 10 = 40)

Q2) Find the compound interest on Rs. 12,000 for 10 years at a rate of 12% per annum compounded annually. (Use logarithms for calculation).

Q3) (a) How many terms of the series 54, 51, 48, be taken so that their sum is 513. Explain double answer.

(b) Calculate coefficient of correlation using Rank method,

x	78	89	97	69	59	79	68	57
y	125	137	156	112	107	136	123	108

Q4) Find mean and standard deviation from the following data :

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
No. of persons	5	10	20	40	30	20	10	4

Q5) Find Fisher's ideal index number from the following data using 1990 as base year

Commodity	1990		1995	
	Price	Value	Price	Value
A	4	80	10	15
B	8	32	16	5
C	2	20	4	12
D	10	50	20	6

Q6) (a) If θ is the acute angle between two regression lines, then show that

$$\tan \theta = \frac{1 - r^2}{r} \cdot \frac{\sigma_x \sigma_y}{\sigma_x^2 + \sigma_y^2}$$

Where r , σ_x , σ_y have usual meanings.

(b) Six dice are thrown 729 times. How many times do you expect at least three dice to show a five or six?

Q7) Ten individuals are chosen at random from a normal population and the heights are found to be in cm. as : 157.5, 157.5, 165, 167.5, 170, 172.5, 175, 175, 177.5, 177.5. If this data taken from a universe having mean height 165 cm? (Take for $\vartheta=9$; $t = 1.8$ Area = 0.974; $t = 1.9$ Area = 0.955).

