

Roll No.

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MBA (Sem. - 1st)

QUANTITATIVE TECHNIQUES
SUBJECT CODE : MB - 104 (2K9)

Paper ID : [C0167]

[Note : Please fill subject code and paper ID on OMR]

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) Explain briefly the following terms/method procedure in the context of quantitative techniques. **(10 × 2 = 20)**

- a) Value of depreciation of good having value Rs. 400 at the rate of 15 percent.
- b) If $A = \begin{pmatrix} 0 & 1 \\ 2 & 3 \end{pmatrix}$, $B = \begin{pmatrix} 3 & 1 \\ 2 & 2 \end{pmatrix}$ and $C = \begin{pmatrix} 4 & 5 \\ 3 & 1 \end{pmatrix}$
then show that $A(B + C) = (A + B)C$
- c) Binomial Theorem.
- d) Mean v/s mode as measure of central tendency.
- e) Index Numbers.
- f) Correlation v/s Regression.
- g) Compare and contrast Trend Component v/s seasonal component of a time series.
- h) Additive Law v/s Multiplicative Law of Probability.
- i) Two kinds of errors in test of significance.
- j) Small sample v/s large sample tests.

Section - B

(4 × 10 = 40)

Q2) (a) (i) Prove that $A \cup (B \cap C) = (A \cup B) \cap A \cup C$.

(ii) Solve the following equation for x

$$\frac{1}{x+1} + \frac{1}{x+4} = \frac{1}{(x+2)} + \frac{1}{(x+3)}$$

(b) Find the inverse of $\begin{pmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{pmatrix}$, if it exists.

Q3) (a) Find the sum of the following series.

(i) $1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \dots + \alpha$.

(ii) $3 + 7 + 11 + \dots + 43$.

(b) Calculate mean, median and mode for the following data.

Groups :	5-7	7-9	9-11	11-13	13-15	15-17	17-19
No. of observations :	4	7	11	5	3	2	1

Q4) (a) Following table gives average daily per capita expenditure on food items (Y) and average per capita total daily expenditure (X) for different income classes.

Y:	11.7	7.8	6.3	13.7	15.2	18.1	24.2	30.8	52.9	50.2	54.0
X:	195	230	274	312	344	491	645	863	1175	1180	1500

Find linear Regression of Y on X and interpret the results.

(b) Also find correlation coefficient between X and Y and interpret.

Q5) (a) Calculate coefficient of variation for the information given below and interpret the results.

<u>Factory</u>	<u>Av. weekly wages</u>	<u>Standard deviation</u>	<u>No. of Workers.</u>
A	34.5	5.0	476
B	28.5	4.5	524

(b) Discuss Time Reversal Test and Factor Reversal Test for index numbers and show that Fisher's ideal index statistics these test using an example.

- Q6) (a)** Find out quarterly seasonal indices using moving average method for the following data of no. of defects per quarter for 2005 to 2008.

Year	Quarter			
	Q ₁	Q ₂	Q ₃	Q ₄
2005	25	20	22	18
2006	27	23	20	19
2007	18	19	18	17
2008	17	16	15	15

- (b) A coin is so biased to give head twice as likely as tail. It is tossed 3 times. What is the probability that it turned out at least one head?

- Q7) (a)** What is Baye's Theorem? Explain its application with an example.

- (b) Following is record of marks obtained in a I.Q. test before and after training to 9 students. Test the significance of the training using appropriate test.

Students :	A	B	C	D	E	F	G	H	I
I.Q. Score Before :	15	21	17	19	9	11	27	29	31
After :	18	23	15	14	15	21	16	22	25

