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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 x 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 node as measure of central condency.

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 x 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) $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+--------\alpha$.

(ii) $3 + 7 + 11 + - - - 43$.

(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.

Factory	Av. weekly wages	Standard deviation	No. of Workers.
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.

	Quarter			
Year	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