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M.A Semester Examinations

Quantitative Techniques for Economics

Course Code: MEM23503T

Full Marks – 50   **Time – 2 hours**

The figure in the margin indicates full marks for the questions.

Q1. Choose the correct option: **10x1=10**

i) A matrix is said to be a …………… matrix when the diagonal element are equal to one and all off diagonal elements are zero.

A) Null Matrix

B) Identity Matrix

C) Symmetric Matrix

D) Square Matrix

ii) Matrix addition or subtraction is not possible when the two matrices are of ……….

A) Same order

B) Different order

C) Same order but different elements.

D) Different order with similar elements

iii) If a set contains no element than it is represented as

A) {}

B) 0

C) {0}

D) None

iv) If $y = C.x$ then dy/dx is

A) 0

B) C

C) Cx

D) All A, B AND C

v) Karl Pearson's Coefficient of Correlation is based on the assumption that

    A) The random variables X and Y are normally distributed.

    B) The random variables X and Y are not normally distributed

    C) There is no cause and effect relationship between X and Y.

    D) All A, B & C

vi) Ideal index number satisfies

    A) Time Reversal Test

    B) Factor Reversal Test

    C) Both A) & B)

    D) None

vii) The value of Skewness and Kurtosis under normal distribution curve is

    A) 0 and 0

    B) 0 and 1

    C) 1 and 0

    D) -1 and 1

viii) If U={ 11, 21,31, 41, 51, W,X,Y}and A ={ 11,21,W, X} then the elements of A^C are

    A) 11, 21, 31, X, W

    B) 31, 41, 51, Y

    C) 31, 41, 51, W, X, Y

    D) 11, 21, 31, 41, 51, W, X, Y

ix) Income and Expenditure of a family falls under

    A) Zero Correlation

    B) Negative Correlation

    C) Positive Correlation

    D) Both Positive and Negative Correlation

x) Two matrices A and B are said to be equal if and only if.

    A) They are of same size and the corresponding elements of A and B are equal.

    B) They are of different size and the corresponding elements of A and B are equal.

    C) They are of same size and the corresponding elements of A and B are not equal.

    D) They are of different size and the corresponding elements of A and B are not equal.

Q2. Short questions: (Any 2 out of 4)   **5x2=10**

  i) Find the differentiation of   2.5+2.5=5

a) $y = \frac{2x+5}{7x}$ b) $y = (x+1)(5x^2 + 7)$

ii) Write a short note on   2.5+2.5=5
a) Scatter diagram
b) Bayes' Theorem

iii) Write the properties of Normal distribution. Define 'level of significance'.   3+2=5

iv) What is a Index Number? State about the uses of Index number in economics and business decision making.   2+3=5

3. Questions (Answer any 3 out of 5)   10x3=30

i) . Find out x, y and z from the following set of equations using inverse of the matrix   10 .

4x-5y-11z=12

x- 3y+z =1

2x+3y-7z=2

ii) Find the coefficient of correlation between X and Y by taking deviations from actual means: 10

X	2	3	4	5	6	7	8
Y	4	5	6	8	9	7	10

iii) A financial analyst computed the return on stockholder's equity for all companies listed on the BSE. She found that the mean of this distribution is 10 percent with a standard deviation of 5 percent. She is interested in examining further those companies whose return on stockholder's equity is between 16 and 22 percent. Of the approximately 1300 companies listed on the exchange how many are of interest to her?   10

iv) Write short note on   5+5=10
a) Coefficient of differentiation
b) Relationship between AR , MR and Elasticity.

v) a) Given the following data:

Commodity	Base Year		Current Year	
	Price(in Rs)	Quantity (in kg/litre)	Price(in Rs)	Quantity (in kg)
Rice	40	12	65	14
Wheat	72	14	78	20
Sugar	36	10	36	15
Vegetable Oil	20	6	42	4
Others	46	8	52	6

Calculate price index number using Fisher's formula.   5

b) Describe the hypotheses testing procedure in detail.   5

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