

Commodities	2006		2007	
	Price	Quantity	Price	Quantity
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

2608/M15/A15/D14

OCTOBER 2011

QUANTITATIVE METHODS

(For those who joined in July 2000 and after)

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. (a) Which term of the sequence 5, 7, 9, 11..... is 65?

- (b) Verify whether the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \\ 3 & 4 & 5 \end{bmatrix}$ is singular.

2. (a) Find the AM for the following frequency distribution:

Class limits : 10-19 20-29 30-39 40-49 50-59

Frequency : 5 9 14 20 25

- (b) Calculate the mean deviation about the mean for the following frequency distribution:

Maths : 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100

No. of students : 3 8 9 15 20 13 8 4

3. (a) The odds are 9 to 5 against a person who is 50 years living till he is 70 and 8 to 6 against a person who is 60 living till he is 80. Find the probability that atleast one of them will live after 20 years.

(b) Determine binomial distribution for which the mean is 4 and variance is 3. Also find $P(X = 15)$.

4. (a) The weight of a number of packages are given as follows :

16.1, 16.3, 15.9, 15.8, 16.2, 16.0, 15.9,
16.0, 16.1, 16.0, 15.9, 16.1, 16.0, 16.0.
Form a frequency table. Find the standard deviation and the variance.

(b) Explain the various sampling techniques used for selection of samples.

5. (a) Calculate the coefficient of correlation by Karl Pearson method.

x : 6 2 10 4 8

y : 9 11 5 8 7

(b) The lines of regression of a bi-variate distribution are as follows :

$$5X - 145 = -10Y \quad Y - 208 = -8X$$

It is given that variance of $X = 4$. You are required to find out standard deviation of Y . Find co-efficient of correlation between X and Y .

6. (a) The annual production of a commodity is given as follows :

Year :	1990	1991	1992	1993	1994	1995	1996
Production (in tons) :	70	80	90	95	102	110	180

Fit a straight line trend by the method of least squares.

(b) In a sample of 500 people in Kerala 280 are tea drinkers and the rest are coffee drinkers. Can we assume that both coffee and tea are equally popular in the state at 5% level of significance?

7. (a) Discuss the characteristics of F-Test.

(b) What are the uses and limitation of Time series analysis?

8. (a) Prepare index number (1998 = 100) for the link relative given below :

Year :	1999	2000	2001	2002	2003	2004	2005
Link relative :	105	75	71	105	95	90	90

(b) Construct index numbers of price from the following data by applying.

(i) Laspeyre's method

(ii) Paasche's method

(iii) Bowley's method

(iv) Fisher's ideal method and

(v) Marshall Edge worth method.

RESEARCH METHODOLOGY

(For those who joined in July 2000 and after)

Time : Three hours

Maximum : 100 marks

Part A which carry 20 marks each.

Part B is compulsory and carries 40 marks.

PART A — (3 × 20 = 60 marks)

Answer any THREE questions.

1. What is objectivity? Is it possible to achieve objectivity in social science research?
2. What are the characteristics of a good hypothesis? Differentiate between Type I error and Type II error in tests of hypotheses.
3. Describe process if interviewing a respondent.
4. Define 'data'. Differentiate primary sources of data from secondary sources.
5. What is sampling? What are the major considerations in deciding to sample?

PART B — (1 × 40 = 40 marks)

6. (a) Explain the points to be considered in the process of identifying a research problem.
- (b) If you were asked to sample 500 house holds in a city with 10,000 house holds for a study of consumer durables, explain how would you go about determining which house hold to include if the following schemes are used:
 - (i) Simple random sampling
 - (ii) Stratified random sampling on household annual income: upto Rs. 20,000, Rs. 20,001, to 35,000 Rs. 35,001 to Rs. 50,000 and over, Rs. 50,000
 - (iii) Convenient sample.
 - (iv) Judgement sample.

