

Question Paper 2013

Time : 3 Hours Marks: 100

Note: Attempt any five questions. All questions carry equal marks. Attempt at least two Questions from each section.

SECTION - I

Question No. 1

Weights of 175 male students at a university are given in the following frequency table:

Weight	118-126	127-135	136-144	145-153	154-162	163-171
Frequency	20	35	49	32	25	14

Calculate: Karl Pearson's and Bowley's Coefficient of skewness.

Question No. 2

Compute index number for 2012 from the following taking 2008 as the base and using formulae recommended by:

(i) Laspeyres's

(ii) Paasche's

(iii) Marshall's and

(iv) Fisher's

Year	A		B		C	
	Price	Qty	Price	Qty	Price	Qty
2008	5.0	80	3.6	90	3.1	20
2012	8.7	100	5.7	95	4.6	30

Question No. 3

A survey of 1600 families was conducted to observe that high and low income people send their children to private and government school. The following results were obtained:

Income	School		Total
	Private	Government	
High	494	506	1000
Low	162	438	600
Total	656	944	1600

Test whether income and type of school are independent at 5% level of significance. (Table value is 3.84)

Question No. 4

Given the six elements Population 0,3,6,12,15 and 8 now many samples of size $n = 3$ can be drawn without replacement from this population. Form sampling distribution of sample means. Hence state and verify the relation between:

- (i) Mean of the sampling distribution of the means and the population mean.
- (ii) Variance of the sampling distribution of the mean and population variance.

SECTION 2**Question No. 5**

5. If

$$A = \begin{bmatrix} 1 & 3 & 5 \\ 4 & -2 & 7 \\ 3 & 2 & -4 \end{bmatrix} \text{ then obtain } A^{-1} \text{ (Inverse of A).}$$

Question No. 6

- (a) Solve for x and y :

$$4x - 3y = 10$$

$$5x - 7y = 6$$

- (b) The area of a rectangular plot of land fenced all round is 2000 sq. yards and the total length of fencing is 180 yards.

Find the length and width of plot.

Question No. 7 (a)

7.(a) Show that the sum of the Geometric series of 10 terms:

$$1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \frac{1}{16}, -\frac{1}{32}, \dots \text{ is } \frac{341}{512}$$

- (b) A company offers two alternatives for the payment of salary for the post of a high executive. Either one may receive Rs.2,40,000 per year or Rs. 100 in the first month, Rs.200 in the second month, Rs.400 in the third month and so on. Which of the two alternatives should he prefer?

Question No. 8

- (a) Find the compound interest on Rs.4500 in 3 years.

If the rate of interest is 4% for the 1st year, 5% for the 2nd year and 6% for the 3rd year

- (b) Find the accumulated value of Rs. 5,000 invested at the end of each quarter for 5 years at 8% compounded quarterly.