Duration:2hrs   Max. Marks:80

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Graph paper will be provided on request.
4. Use of calculators is allowed.

Q1 a. Define population, sample, variable and attribute.   3

b   (i)   The mean height of 25 male workers in a factory is 61cms, and the   3
mean height of 35 female workers in the same factory is 58cms. Find
the mean height of 60 workers.

(ii)   You are given the following information: Skewness =0.8, mean=40   3
and mode = 36. Find the value of standard deviation.

c   Represent the following data by suitable diagram: 7

Items	Food	Clothing	Education	Misc.
Family A(Rs)	15000	12500	2500	19000
Family B (Rs)	15000	6000	5000	7000

OR

QI x   Explain the importance of Statistics with respect to business and industry.   3

y   (i)   If the mean and median of a moderately asymmetrical series are 26.8   2
and 27.9 respectively, what would be its probable value of mode?

(ii)   Compute co-efficient of quartile deviation from the following data:

4

Marks	10	20	30	40	50	60
No. of students	4	7	15	8	7	2

z   The distribution of the total finance charges, to the nearest Rupees, which 240   7
customers paid as their budget accounts at a departmental store is as follows :

Amount (in Rs.) :   0-19 20-39 40-59 60-79 80-89
Frequency   :   16   78   77   54   15
Draw a histogram of this distribution.

Q2a For the following Marks in English prepare a frequency distribution with the   3
starting classes 5-9 and all classes with the same width 5.

12	36	40	16	10	30	37	17	11	20
26	37	6	5	20	10	19	20	28	30
19	27	15	21	33	45	7	19	20	26

b Calculate weighted aggregative price index from the following data using 6

    (i)   Laspeyre's method and (ii) Paasche's method

Commodities	Base Period		Current Period	
A	2	10	4	5
B	5	12	6	10
C	4	20	5	15
D	2	15	3	10

c The size of land holdings of 380 families in a village is given below. Find the 7
median size of land holdings:

Size of Land holdings(in acres)	Less than 100	100-200	200-300	300-400	400 and above
Number of families	40	89	148	64	39

OR

QII x The following is the distribution of weights of 70 students: 3

Weights(x) kgs	60-69	70-79	80-89	90-99	100-109	110-119
Students(f)	5	11	14	18	16	6

Obtain (i) Less than cumulative frequency distribution
(ii) Class boundaries for 80-89.
(iii) Class mark for 100-109.
(iv) Width of the class intervals.
(v) Number of students whose weight is more than 99 kgs.
(vi) Type of class intervals-exclusive or inclusive?

y From the following data compute the cost of living index for the year 2013: 6

Item	Food	Clothing	Rent	Fuel	Miscellaneous
Weight	8	3	2	2	3
GroupIndex	160	140	120	130	140

z Following information pertains to the daily income of 150 families. Calculate the 7
arithmetic mean.

Income (in Rs.)	75-85	85-95	95-105	105-115	115-125	125-135	135-145	145-155
No.of families	10	25	20	25	10	20	15	25

Q3a. Are the following variables discrete or continuous? Give your answer with 3
reason.
    (i)   Age on last birthday
    (ii)   Length of a room
    (iii)   Temperature of the patient.

b   (i)   If the salary of a person in the base year is Rs. 4,000 per annum and 3
the current year salary is Rs. 6,000 by how much should his salary rise
to maintain the same standard of living if the cost pf living index of
the current year is 400?

(ii) From the folloing data construct price index of 1995 taking 1990 as base year by using simple aggregate of price method: 3

Commodities	A	B	C	D
Prices in 1990(Rs.)	60	45	80	25
Prices in 1995(Rs.)	75	55	70	40

c For the following distribution of marks scored by a class of 40 students, calculate the range and quartile deviation. 7

Class intervals	0-10	10-20	20-30	30-40	40-50
No. of students	5	8	16	7	4

OR

QIIIx With the help of suitable examples , distinguish between: 3
Exclusive and Inclusive class intervals.

y The following are two series A and B of the index numbers of a commodity taking 1991 and 1994 as the base years 6

Years	1991	1992	1993	1994	1995	1996	1997	1998
Index series A	100	90	125	150	---	---	---	---
Index series B	---	---	----	100	120	150	200	225

(i) Splice the index series A to B.
(ii) Splice the index series B to A.

z Calculate the standard deviation for the following distribution giving 300 telephone calls according to their duration in seconds. 7

Duration in seconds	0-30	30-60	60-90	90-120	120-150	150-180	180-210
No. of calls	9	17	43	82	81	44	24

Q4a. A age index for the staff of a company in the late 1990's is given below: 3

Year	1994	1995	1996	1997	1998
Index	97	99	100	106	114

Change the base year from 1996 to 1994 and calculate the new indices(to the nearest integer).

b Calculate Mode from the following frequency distribution: 6

Age in years	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Persons	16	25	32	28	31	25	16

c Fit a straight line trend on the following data and estimate the trend value for 2005: 7

QIVx Figures for milk production throughout Europe between 1986 and 1993 are given below: 3

Year	1986	1987	1988	1989	1990	1991
Total whole milk production (million tonnes)	133	127	124	122	122	126

Calculate a chain base index for these numbers, giving your answers to one decimal place.

y Find Karl Pearson's Coefficient of skewness and interpret the type of distribution 6
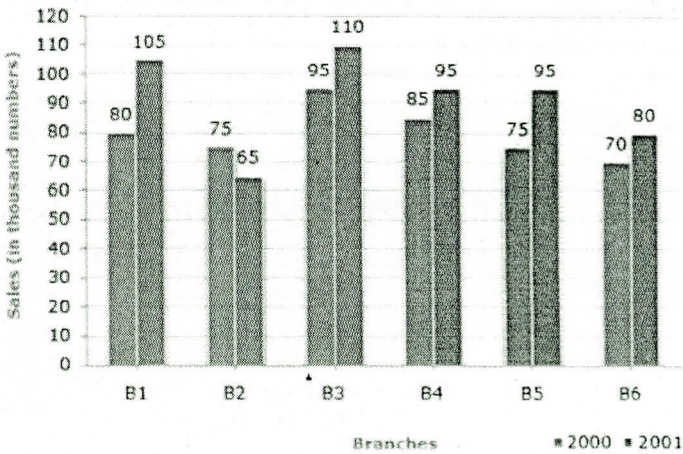
Size	1	2	3	4	5	6	7
frequency	10	18	30	25	12	3	2

7

z

The price of a commodity during 2000 – 2005 is given below. Fit a parabola

$Y = a + bX + cX^2$ to this data. Estimate the price of the commodity for the year 2010

Year	2000	2001	2002	2003	2004	2005
Price	100	107	128	140	181	192

Q5 a The bar graph given below shows the sales of books (in thousand numbers) from six branches of a publishing company during two consecutive years 2000 and 2001. 3

Sales of Books (in thousand numbers) from Six Branches - B1, B2, B3, B4, B5 and B6 of a publishing Company in 2000 and 2001.

In the above figure first bar represent year 2000 and second bar represent 2001.

(i) What is the ratio of the total sales of branch B2 for both years to the total sales of branch B4 for both years?

(ii) What are the average sales of all the branches (in thousand numbers) for the year 2000?

(iii) What is the total sale of branches B1, B3 and B5 together for both the years (in thousand numbers)?

b If the arithmetic mean of the data given below is 28, find the missing frequency 6

Profit per retail shop(Rs.)	0-10	10-20	20-30	30-40	40-50	50-60
No. of retail shops	12	18	27	f	17	6

c Fit a trend line by the method of three-yearly moving average to the following time series data. Represent the original data and trend values on the graph.
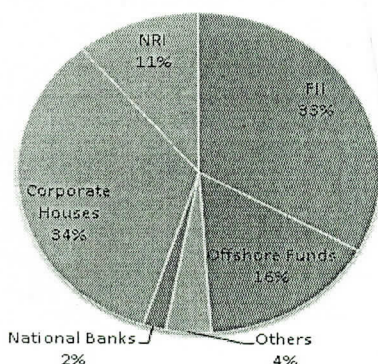
Years	1991	1992	1993	1994	1995	1996	1997
Sugar production (lakh tons)	68	62	61	63	65	68	67

OR

QVx The following pie chart shows the amount of subscriptions generated for India Bonds from different categories of investors.

3

Subscription Generated for India Bonds

(i) What percentage of the total investment is coming from either FIIs or NRIs?

(ii) If the investments by NRIs are Rs 4,000 crore, then find the investment by corporate houses and FIIs together?

(iii) If the total investment other than by FII and corporate houses is Rs 335,000 crore, then find the investment by NRIs and offshore funds ?

y Goals scored by two teams – Dare devil and FC - in a football season were as follows :

6

No. of Goals		0	1	2	3	4
No. of matches	Dare devil	5	4	3	2	1
	FC	6	5	4	3	2

Find which team is more consistent.

z Calculate four-yearly moving averages for the following data. Represent the original value and trend values on a graph.

7

Year:	1967	1968	1969	1970	1971	1972	1973	1974
Bank Clearances	8	10	13	9	10	11	10	15