

BUSINESS STATISTICS

Duration: 2 hours

Marks: 80

- INSTRUCTIONS :** i) Attempt all questions
ii) Figures to the right indicate full marks.
iii) Graph papers will be supplied on request.
iv) Use of non-programmable calculator is allowed.

Q 1 A. 'There is hardly any field which does not fall within the scope of Statistics'.
Comment. (3)

Q 1 B. Draw 'less than' and 'more than' cumulative frequency curves for the following data

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	3	9	15	30	18	5

(6)

Q 1 C. Calculate median for the following data giving the monthly sales of 250 salesmen of a pharmaceutical company

Sales (in ₹)	2500 - 5000	5000 - 7500	7500 - 10000	10000 - 15000
Number of salesmen	20	65	95	70

(7)

OR

Q 1 X. Explain the terms 'Population' and 'Sample' with an example. (3)

Q 1 Y. Represent the following data by a histogram

Age (in years)	0 - 10	10 - 20	20 - 40	40 - 50	50 - 70
Number of persons	4	6	10	12	16

(6)

Q 1 Z. If the arithmetic mean of the data given below is 28, find the missing frequency

Profit(₹ in lakh)	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Number of shops	12	18	27	?	17	6

(7)

Q 2 A. Explain two methods of collection of Primary data. (3)

Q 2 B. Goals scored by teams A and B are as follows

Number of goals scored	Number of matches	
	Team A	Team B
0	27	17
1	9	19
2	8	6
3	5	5
4	4	3

Calculate the coefficient of variation and find which team is better. (6)

Q 2 C. The following table gives the annual income of a worker and the price index during 1990 – 1996. Calculate real income of the worker.

Year	1990	1991	1992	1993	1994	1995	1996
Income	4000	4400	4800	5200	5600	6000	6400
Index	100	130	160	220	270	330	400

(7)

OR

Q 2 X. Give three points that should be kept in mind when designing a questionnaire (3)

Q 2 Y. For the following data, calculate the mean deviation from $a = 28$

Class Interval	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
Frequency	15	22	25	32	35	38

(6)

Q 2 Z. Splice the following Index Number Series

Year	1960	1961	1962	1963	1964	1965	1966	1967
Series X	100	120	140	165	180			
Series Y					100	103	110	107

(7)

Q 3 A. Represent the following data by a bar diagram (3)

Grade	A	B	C	D
Number of Students	4	12	10	2

Q 3 B. The following table relates to the tourist arrivals (in millions) from 1994 to 2000 in India

Year	1994	1995	1996	1997	1998	1999	2000
Tourist arrivals	18	20	23	25	24	28	30

Fit a straight line trend by the method of least squares and estimate the number of tourists that would arrive in 2004. (6)

Q 3 C. Calculate Karl Pearson's coefficient of skewness for the following data

x	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
f	5	12	15	18	10

(7)

OR

Q 3 X. Represent the following data by means of a sub-divided bar diagram

Year	Males	Females
2010	25	10
2011	30	20
2012	50	25

(3)

Q 3 Y. Use the method of least squares to fit a trend line to the following data and hence estimate the sales in 2010

Year	2004	2005	2006	2007	2008
Sales (₹ in '000)	18	21	23	27	16

(6)

Q 3 Z. Calculate Bowley's coefficient of skewness for the following data

Class Interval	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
f	8	16	14	12	10

(7)

Q 4 A. Explain in brief, the four phases of a business cycle

(3)

Q 4 B. Calculate D_8 and P_{90} for the following data

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Number of workers	10	20	30	50	40	30

(6)

Q 4 C. Calculate four yearly moving averages from the following data

Year	1980	1981	1982	1983	1984	1985	1986	1987
Trend	140	152	160	165	171	180	194	200

(7)

OR

Q 4 X. Explain the meaning of seasonal variation with examples

(3)

Q 4 Y. In a college having 70% girls, the average of students opting for Statistics is 25%.

If the average of boys opting for Statistics is 15%, find the average of girls opting for Statistics

(6)

Q 4 Z. Fit a trend line for the following data by the method of semi-averages and forecast the sales for the year 2002.

(7)

Year	1993	1994	1995	1996	1997	1998	1999
Sales	102	105	114	110	108	116	112

Q 5 A. In each of 20 homes, people were asked how many cars were registered to their households.

The data was recorded as follows:

1 2 1 0 3 4 0 1 1 1
2 2 3 2 3 2 1 4 0 0

Prepare a frequency table for the above data

-- (3)

Q 5 B. The following frequency distribution gives the daily commuting time (in minutes) from home to work for 25 employees of a company.

Time	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Number of employees	4	9	6	4	2

Calculate the standard deviation and variance.

(6)

Q 5 C Calculate Laspeyre's quantity index number and Paasche's price index number from the following data

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	2	7	4	8
B	5	4	6	10
C	4	10	5	14
D	2	13	2	19

OR

-- (7)

Q 5 X. Prepare a frequency table for the following data

Profit (in ₹)	Number of shops
Less than 1000	8
Less than 2000	22
Less than 3000	43
Less than 4000	60
Less than 5000	72
Less than 6000	80

Assume that no shop has registered a profit of less than ₹ 800.

(3)

Q 5 Y. Find the quartile deviation for the following data

Class Interval	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
f	4	15	28	16	7

(6)

Q 5 Z. Construct a cost of living index number with the help of the data given below

Item	Weight	Base year price	Current year price
I	25	2.50	1.75
II	50	1.30	2.10
III	15	5.00	3.75
IV	10	0.75	1.50

(7)

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