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STATISTICAL TECHNIQUES

Duration: 2 hours

Max. Marks: 80

Instructions: 1) All questions are compulsory (choice is internal)

2) Start each new question on a fresh page

3) Figures to the right indicate full marks

4) Use of calculators allowed

5) Graph paper will be issued on request

Q.1 Attempt the following:

- a) Define Statistics and state its limitations (3)
 b) Construct the multiple bar diagram to represent India's imports and Exports for the following years: (6)

Year	2005-06	2006-07	2007-08	2008-09
Imports (in crores of Rs.)	18	30	45	51
Exports (In crores of Rs.)	20	25	30	55

- c) Find the mode and median for the following data: (7)

Class interval:	10-20	20-30	30-40	40-50	50-60
Frequency:	4	6	10	5	4

OR

Q.1 Attempt the following:

- x) Explain the utility of statistics (3)
 y) Represent the following data by a histogram: (6)

Weight (in kg):	35-40	40-45	45-50	50-55	55-60
No. of person:	12	30	22	30	18

- z) Calculate the 6th decile and 40th percentile for the following data: (7)

Marks:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency:	3	8	12	14	10	6	5	2

Q.2 Attempt the following:

- a) What is classification? What are its objectives? (3)
 b) Calculate the coefficient of variation for the following data: (6)

X:	0	1	2	3	4
F:	27	9	8	5	4

- c) From the data given below construct the index of simple price relative for the 2002, taking 2001 as the base year using Arithmetic mean: (7)

Company	Price in Rs./Quintal	
	Base Year, 2001	Current Year, 2002
Wheat	80	100
Rice	120	250
Gram	100	150
Pulses	200	300

OR

Q.II Attempt the following:

- x) Distinguish between primary and secondary data. (3)
 y) Find the value of x if the median for the data given below is 126 (6)

<i>Class:</i>	100 – 110	110 – 120	120 – 130	130 – 140	140 – 150
<i>Frequency:</i>	5	x	20	10	7

- z) Compute the Laspeyre's and Paasche's price index numbers for the following data: (7)

<i>Commodity</i>	2003		2004	
	p_0	q_0	p_1	q_1
<i>A</i>	25	3	38	2
<i>B</i>	9	5	12	4
<i>C</i>	12	2	15	3

Q.3 Attempt the following:

- a) What do you mean by pie-chart? (3)
 b) From the data given below draw the trend line by the method of semi-averages and estimate the value of the year 2005: (6)

<i>Year:</i>	1995	1996	1997	1998	1999	2000	2001	2002	2003
<i>Value:</i>	19	22	23	24	27	28	30	32	34

- c) Calculate Pearson's coefficient of skewness for the following data: (7)

<i>Class:</i>	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
<i>Frequency:</i>	10	14	40	24	12

OR

Q.III Attempt the following:

- x) Define a Histogram and state its uses. (3)
 y) Determine the trend values by three yearly moving averages: (6)

<i>Year:</i>	1995	1996	1997	1998	1999	2000	2001	2002
<i>Variable:</i>	8	12	10	13	15	12	16	17

- z) Calculate the S.D. and its coefficient for the following data: (7)

<i>Marks:</i>	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
<i>No. of students:</i>	5	10	15	20	4

Q.4 Attempt the following:

- a) Write a note on methods of estimating trend component of time series. (3)
 b) Calculate the mean deviation from mean of the following data: (6)

<i>Class:</i>	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
<i>Frequency:</i>	2	8	10	3	4

- c) Fit a straight line trend and find trend values for the following data by the method of least squares : (7)

Year:	2000	2001	2002	2003	2004
Profit(in 000's):	4	7	3	6	8

OR

Q.IV Attempt the following:

- x) Discuss the steps involved in construction of index numbers. (3)
y) Find the mode for the following data: (6)

Heights:	140	145	150	155	160	165	170
No. of persons:	6	8	15	14	13	15	8

- z) Find the four yearly moving averages for the following data: (7)

Year:	2001	2002	2003	2004	2005	2006	2007	2008
Production:	68	62	61	63	65	68	63	67

Q.5 Attempt the following:

- a) Explain briefly tabulation of data. (3)
b) Find the combined mean for the following data having two groups of 60 and 30 items each with averages 25 and 35 respectively. (6)
c) From the index numbers given below, find out the index numbers by shifting the base from 1997 to 2000. (7)

Year:	1997	1998	1999	2000	2001	2002	2003	2004
Index numbers:	100	105	108	150	156	153	158	160

OR

Q.V Attempt the following:

- x) Explain various methods of primary data collection. (3)
y) The contents of two groups are as follows: (6)

Group	Size	Mean	S.D.
I	30	20	3
II	30	25	4

Calculate the combine Standard Deviation.

- z) Splice the following two series of index numbers continuing:1) series A forward 2) series B backward. (7)

Year	1997	1998	1999	2000	2001	2002	2003	2005
Series A:	110	115	135	140	—	—	—	—
Series B:	—	—	—	100	112	128	135	146