2 Mark

Unit – I

1. What is table?
2. What is mean by median?
3. What is arthimetic mean?
4. Mention the methods of measures of central tendency.
5. Explain the class interval.
6. What is meant by mode?
7. Define harmonic mean.
8. Give the relation between mean, median and mode.
9. What is the relationship between arithmetic mean, geometric mean and harmonic mean?
10. What is statistics?
11. From the following data of marks scored by 7 students in statistics, find out the mean marks
    Marks scored : 6,4,9,5,2,8,12
12. Write the rules of classification.
13. What are the objects of classification?
14. What is an average?
15. Write any two functions of an average.
16. What do you mean classification of data?
17. What is a diagram?
18. What is a cumulative frequency distribution?
19. What is class frequency?
20. What is weighted arithmetic mean?

Unit – II

1. What is mean deviation?
2. Define range
3. What is meant by Skewness?
4. What is the quartile deviation?
5. Calculate coefficient of variation. $\bar{X} = 5.12$, standard deviation 2.812
6. Give the meaning of the term standard deviation.
7. Find out the mean deviation from median from the following data:
   240,238,236,245,242,248,237
8. What is coefficient of variation?
9. Write the significance of measuring variation.
10. Define dispersion
11. Write any two uses of range.
12. What are a quartile of the distribution?

13. Explain the Bowley's coefficient of Skewness.
14. Find the standard deviation if the sum and the sum of the square of 100 items are 1357 and 24680 respectively.
15. What is coefficient of variation?
16. State the demerits of mean deviation.

Unit – III

1. What is rank correlation?
2. What do you mean by regression analysis?
3. What is positive correlation?
4. Give the rank correlation formula.
5. What do you mean by correlation?
6. Write the meaning of multiple correlation.
7. What is simple correlation?
8. Write the formula for spearman's rank correlation coefficient when one value occur 'm' times.
9. What are regression analysis?
10. If the regression coefficient of X on Y and regression coefficient of Y on X are respectively -0.2337,-0.6643then find the value regression coefficient.
11. Write any two assumption of Pearson coefficient.
12. Write the uses of regression analysis.
13. List the two methods of studying regression.
14. From the regression equation 6 X + 10Y = 700and 15 X + 16 Y = 1390. Find the mean values.
15. If coefficient of correlation r is 0.64 and its P.E = 0.1312 then find the value of N
16. State the various types of correlation.
17. Mean = 50, coefficient of variation = 40%, Karl Pearson's coefficient = -0.4. find standard deviation and mode.
18. Write any two properties of Karl Pearson's coefficient of correlation
19. Write down the two regression equation.
20.

Unit – IV

1. What is meant by moving average?
2. Write a short note on seasonal variation.
3. What is methods of least squares?
4. Explain the term time serious.
5. Write any two significance of time serious analysis.
6. List out the uses of time series analysis.
7. Mention the methods used to estimate secular trend.

8. What is interpolation?

Unit – V

1. Define cost of living index.
2. What is meant by factor reversal test?
3. Define index number.
4. What are the types of index numbers?
5. What is time reversal test?
6. List any two uses of index numbers
7. List any two problems in constructing index numbers.
8. Give formula for Bowley's Index number.
9. What is meant by price index numbers?
10. State the condition for Time Reversal Test, Unit Test, Factor Reversal Test and Circular Test.
11. What is Circular Test?
12. Give the formula for calculating index numbers using the methods of Laspere and Paasehe.

5 Mark

Unit – I

1. Explain the special characteristics of classification
2. Describe the general rules of preparing tables.
3. What is tabulation? State its four objectives?
4. Explain the importance of diagram in statistics.
5. What are the rules to be followed in tabulation?
6. Explain the uses and limitation of statistics.
7. Define the term statistics? Explain the uses of statistics in commerce and business.
8. Explain classification by giving an example.
9. Explain the types of various diagrams.
10. Calculate mean from the following data:

Marks	: 10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students:	5	4	7	12	10	8	4

11. Find Harmonic mean from the data given below

    12,10,6,8,15,15

12. Compute harmonic mean from the following data

Wages (Rs)	: 60	45	25	75	80	15	30
No. of workers:	4	9	7	21	6	3	2

13. Calculate the mode of the following frequency distribution

Wages	:	0	20	40	60	80	100			
No. of workers	:	50	45	34	16	6	0			

14. From the following data, calculate the arithemetic mean

Family	: A	B	C	D	E	F	G	H	I	J
Expenditure	: 30	70	10	75	50	8	42	250	40	36

15. Calculate arithmetic mean for the following data:

Marks	: 20-30	30-40	40-50	50-60	60-70	70-80
No. of students:	5	8	12	15	6	4

16. Compute the geometric mean of the following series

Marks	: 0- 10	10-20	20-30	30-40	40-50
No. of students:	5	7	15	25	8

17. From the following find out the mean profit

Profits per shop	: 100-200	200-300	300-400	400-500	500-600
No. of shops	: 10	18	20	26	30
Profits per shop	: 600-700	700-800			
No. of shops	: 28	18			

18. Calculate median :

Marks	: 10-25	25-40	40-55	55-70	70-85	85-100
Frequency	: 6	20	44	26	3	1

19. Calculate mean from the following data

Value	: 1	2	3	4	5	6	7	8	9	10
Frequency	: 21	30	28	40	26	34	40	9	15	57

20. Compute median from the following

Size of shoes:	5	5.5	6	6.5	7	7.5	8
Frequency	: 10	16	28	15	30	40	34

21. Find out the median from the following
    57,58,61,42,38,65,72,66.
22. Calculate mean form the following data

Register No.	: 1	2	3	4	5	6	7	8	9	10
Marks	: 40	50	55	78	58	60	73	35	43	48

23. Calculate geometric mean of the following data
    2574, 475, 75, 5, 0.08, 0.005, 0.0009.
24. Calculate mode for the data given below

Mid value	: 70	90	110	130	150
Frequency	: 43	78	83	125	87

25. Calculate the geometric mean
    125, 1462, 7, 0.22, 0.08, 12.75, 0.5, 38.
26. Calculate the geometric mean of the following :
    0.8974, 0.0570, 0.0081, 0.5677, 0.0002, 0.0984, 0.0854, 0.5672.
27. Find the value of median for the following data.

5	11	4	6	3	10	5	7	9	6
6	2	3	7	8	6	4	3	6	5
9	5	6	4	7	7	5	2	6	2
6	4	8	7	5	12	4	7	10	6
7	8	3	6	7	5	5	8	6	4
6	11	5	2	6	9	7	3	7	5

28. Compute Geomeric mean from the following data:
    Marks: 5,10,20,25,40,42,45,48,70,80
29. A distribution consists of 3 components with frequencies 28,36 and 56 having their means 3.2,7.5 and 9.0 respectively. Find the mean of the combined distribution
30. The following data given the average wage and number of workers in firms A,B and C.

Firm	Average wage Rs.	No. of workers
A	65.5	100
B	48.6	150
C	55.0	250

    Find the average wage for the workers of 3 firms combined.
31. Calculate geometric mean for the given continuous data

X	0-20	20-40	40-60	60-80	80-100	100-120
F	8	12	30	40	20	10

32. The mean weight of 150 students in a class is 60 kg. the mean weight of boys in the class is 70 kg and that of the girl is 55 kg. find the number of girls in the class.
33. Calculate geometric mean from the following data
    10, 110, 135, 120, 50, 59, 60, 7
34. The mean wages of 150 workers in a factory is Rs.85. if the arithmetic mean of 80 workers in one section is Rs.92. Calculate the arithmetic mean of wages for other section
35. Calculate quartile deviation from the following data:
    25,15,30,45,20,50
36. From the following calculate the median marks:

Marks (more than)	:	0	10	20	30	40	50
No of students	:	50	46	40	20	10	3

37. An analysis of the monthly wages paid to workers in the firm A and B belonging to the same industry gives the following result:

	Firm A	Firm B
No of workers	500	600
Average monthly wage (Rs)	480	475
Variance of distribution of wages(Rs)	400	625

i. Which firm pays a larger wage bill?
ii. In which firm is there greater variability in individual wages?

38. Calculate geometric mean of the following:
    50,72,54,82,93
39. Coefficient of variations of two series are 60% and 80% respectively. Their standard deviations are 20 and 16 respectively. What are their arithmetic means?

40.

Unit – II

1. State the different methods of measuring depression.
2. What are the various requisites of a good average?
3. State the merits and demerits of mean deviation.
4. Distinguish between mean deviation and standard deviation.
5. Explain the various measures of dispersion.
6. What is coefficient of variation? Explain its importance?
7. What is standard deviation? Explain its importance.
8. Find the standard deviation for the following data

Production (tones)	: 50	100	125	150	200	250	300
No . of factories	: 2	5	7	12	9	5	3

9. Compute quartile deviation and co-efficient of quartile deviation from the following data

Marks	: 15	25	35	45	55	65	75
No. of students	: 3	2	7	9	12	6	3

10. Find mean deviation from mean for the following data

X	: 10	15	20	25	30
Y	: 2	4	6	8	5

11. Calculate mean deviation from the following data 50,70,45,20,80,90,25,30,40,10.
12. Calculate standard deviation from the following data
    9,27,18,54,45,72,36,63,81.
13. Calculate Karl pearson's co-efficient of skewness
14. Define Skewness and write a note on the measures of Skewness
15. Compute karl parson's co-efficient of skewness
    40,36,42,53,20,65,67,20,36
16. From the marks secures by 120 students in section A and 120 students in section B of a class, The following measures are obtained.
    Section A: $\bar{X}$ = 46.83; S.D =14.8; Mode = 51.67
    Section B: $\bar{X}$ = 47.83; S.D =14.8; Mode = 47.07
17. Calculate the co- efficient of variation of the following:
    40,41,45,49,50,51,55,59,60,60.

18. For the data given below, calculate standard deviation
40,50,60,70,80,90,100.

19. calculate standard deviation from the following data

x:	6	9	12	15	18
f:	7	12	19	10	2

20. find out the value o quartile deviation and its co-efficient from the following data

Roll no.:	1	2	3	4	5	6	7
Marks :	20	28	40	12	30	15	50

21. calculate karl pearson's co-efficient of skewness for the following data

25 15 23 40 27 25 23 25 20

22. calculate the standard deviation from the following data
14,22,9,15,20,17,12,11

23. calculate range and co-efficient of range

Day :	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Price :	200	210	208	160	220	250

24. calculate co-efficient of skewness from the following

Marks above :	0	10	20	30	40	50	60	70	80
Mo. of students :	150	140	100	80	80	70	30	14	0

25. You are given the following data:

	X	Y
Mean	36	85
Standard deviation	11	8

Correlation coefficient 0.66

Estimate the value of X when Y = 75.

26. Find the coefficient of skewness from the data given below:

Size :	3	4	5	6	7	8	9	10
Frequency :	7	10	14	35	102	136	43	8

27. Calculate the coefficient of range from the following data

Profit (rs. In lakhs) :	10-20	20-30	30-40	40-50	50-60
No. of companies :	8	10	12	8	4

28. Calculate mean deviation from the following series:

X :	10	11	12	13	14
Y :	3	12	18	12	3

29. A distribution had Q1 = 31.3, Q2 = 35 and Q3 = 36.4. calculate co-efficient of skewness.

30. Calculate Q3,D8 and P23.

Salary (Rs. '000):	15-19	20-24	25-29	30-34	35-39	40-44
No. of workers :	15	25	40	50	40	30

31. Compute quartile deviation for the following data

Size	: 4-8	8-12	12-16	16-20	20-24	24-28/	28-32	32-36	36-40
No. of items	: 6	10	18	30	15	12	10	6	2

32. Calculate pearson's coefficient of skewness for the following data

Mid value	: 20	30	40	50	60	70	80
Frequency	: 1	12	55	91	55	12	1

33. From the data given below calculate the coefficient of variation:
    Karl pearson's coefficient of skewness = 0.42
    Arithmetic mean = 86
    Median = 80.

34. Calculate the mean deviation from the mean for the following data

Size	: 2	4	6	8	10	12	14	16
Frequency	: 2	2	4	5	3	2	1	1

35. Mean of 200 items is 80 and their standard deviation is 10. Find the sum of the items and also the sum of squares of all the items.

36. Find out the Q1, D1 and P1 for the following data

C.I	: 15-19	20-24	25-29	30-34	35-39	40-44
F	: 15	25	40	50	40	30

37. In a frequency distribution the coefficient of skewness based on quartiles is 0.6. if the sum of the upper and lower quartiles is 100 and median is 38, find the value of upper quartile.

38. Find the mean deviation for the following data:

Class	: 0- 10	10 – 20	20 – 30	30 – 40	40 – 50
Frequency	: 5	8	15	16	6

39. Find the Bowley's skewness for the following data:
    Monthly Income(Rs. '000): 10,27,24,12,27,27,20.

40. Find the Karl pearson's skewness for the following data

Class	: 0-10	10-20	20-30	30-40	40-50
Frequency	: 5	8	15	16	6

41. Calculate mean deviation from the following data

Monthly income(Rs.)	10	27	24	12	27	27	20

42. Compute quartile deviation from the following data

Marks	: 58	59	60	61	62	63	64	65	66
No. of students:	15	20	32	35	35	22	20	10	8

43. Compute percentile range
    30, 9, 21, 29, 18, 24, 13, 27, 7

44. Find out bowley's coefficient of skewness from the following data

X	: 7	8	9	10	11	12	13	14
Y	: 8	20	35	40	32	25	18	22

45. Two samples of size 40 andd 60 have 25 and 30 as their respective mean values. If their standard deviation are 4 and 5 respectively, find the mean and standard deviation of the combined group.
46. Calculate standard deviation, mode and median when mean is 125, coefficient of variation is 30% and coefficient of skewness is +0.24.

47. Calculate mean deviation (taking deviation from mean from the following data:

x:	2	4	6	8	10
f:	1	4	6	4	1

48. From the following series find and out the Karl Pearson's coefficient of skewness.

Measurement :	11	12	13	14	15
Frequency :	3	9	6	4	3

49. Given the following data estimate the marks in mathematics for a student who has secured 60 marks in English

Arithmetic average of marks in Mathematics	80
Arithmetic average of marks in English	50
SD of marks in English	10
SD of marks in Mathematics	15
Coefficient of correlation	0.4

50. Calculate the quartile deviation and its co-efficient

Age (in years) :	20	30	40	50	60	70	80
No. of members :	3	61	132	153	140	51	3

51. If Q1 = 18 Q3 = 25, Mode = 21; mean = 18, find out the co-efficient of skewness.
52.

Unit – III

1. What are the uses of regression?
2. Distinguish between correlation and regression
3. What is meant by correlation? What are the properties of the coefficient of correlation?
4. Define correlation and distinguish it from rank correlation.

Marks :	30	32	37	42	55	67	69	75
No. of students :	9	11	17	20	10	13	9	11

5. Calculate co-efficient of correlation from the following data.

X:	22	24	26	28	30	32	34
Y:	40	36	25	50	48	46	38

6. Find out the regression equation of profit on sales:

	Average	Std. Deviation
Sales (Rs. In '000) :	33	8.6

Profit (Rs. In '000) : 42 17.4

r = 0.37

7. From the following data, calculate of y when x=12

   $\bar{X} = 7.6$, $\bar{Y} = 14.8$, $\sigma_x = 3.6$, $\sigma_y = 2.5$

8. Calculate karl pearson's correlation co-efficient between x and y from the following data
   $n = 13$, $\Sigma x = 117$, $\Sigma x^2 = 1313$, $\Sigma y = 260$, $\Sigma y^2 = 6580$, $\Sigma xy = 2827$.
9. Find out rank correlation co – efficient

X :	8	7	10	1	4	5	3	6	9	11	12	2
Y :	2	4	9	3	12	11	8	1	7	6	5	2

10. From the following data, fins out the two regression equations:

	X	Y
Arithmetic mean	36	85
Standard deviation	11	8

Correlation co- efficient between x and y = 0.66

11. Marks obtained by 8 students in accountancy (x) and statistics (y) are given below. Compute rank correlation

X:	15	20	28	12	40	60	20	80
Y:	40	30	50	30	20	10	30	60

12. Calculate the coefficient of correlation from the data given below by the method of concurrent deviations.

Year	: 1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Import	: 85	82	89	95	104	108	112	100	99	93	90
Prices	: 110	115	112	118	120	109	98	102	130	105	107

13. Calculate the regression equations y on x from the following data

X:	10	12	13	12	16	15
Y:	40	38	43	45	37	43

14. Calculate co-efficient of correlation from the following data

X:	12	9	8	10	11	13	7
Y:	14	8	6	9	11	12	3

15. From the following data obtain the two regression equations

Sales	: 91	97	108	121	67	124	51	73	111	57
Purchase	: 71	75	69	97	70	91	39	61	80	47

16.

Employee	Ranking by manager I	Ranking by manager II
E	3	1
F	6	5
G	5	6
H	8	8
I	7	7
J	9	10

Compute the co-efficient of rank correlation

17. Calculate co-efficient of correlation from the following data

X	: 12	9	8	10	11	13	7
Y	: 14	8	6	9	11	12	3

18. Calculate co-efficient of correlation from the following data

X	: 57	59	62	63	64	65	55	58	57
Y	: 113	117	126	126	130	129	111	116	112

19. Calculate the co-efficient of concurrent deviation from the following data:

Year	: 2007	2008	2009	2010	2011
Supply	: 350	375	410	300	360
Price	: 210	220	230	270	320

20. Calculate the coefficient of correlation by concurrent deviation method

X : 17	12	25	41	32	51
Y: 12	15	23	32	28	26

21. Construct the regression line X on Y for the following data

X: 10	12	13	12	16	15
Y: 40	38	43	45	37	43

22. From the following data, find the most propbale value of Y when X is 60.

$\overline{X}$ = 53.2, $\overline{Y}$ = 27.9

Regression coefficient of Y on X = -1.5

Regression coefficient of X on Y = -0.2

23. The ranking of 10 students in two subjects A and B are as follows:

A: 6	5	3	10	2	4	9	7	8	1
B: 3	8	4	9	1	6	10	7	5	2

Calculate rank correlation coefficient.

24. From the data given below, find the correlation coefficient between X and Y.

X: 40	45	47	50	53	60	57	51	48	45
Y: 75	69	65	64	70	71	75	83	90	92

25. Calculate the coefficient of correlation between X and Y for the following data:

X	: 6.9	8.5	5.8	8.6	9.6	8.0	9.7
Y	: 2.9	3.8	6.5	2.3	5.5	3.5	3.2

26. From the following data, obtain the line of regression of Y on X and estimate the average value of Y, when X = 8,16,24

X	: 2	6	8	11	13	13	13	14
Y	: 8	6	10	12	12	14	14	20

27. The coefficient of rank correlation of the marks obtained by 10 students in statistics and accountancy was found to be 0.2. it was later discovered that the difference in ranks in the two subjects obtained by one of students was wrontly taken as 9 instead 7. Find the correct coefficient of rank correlation.
28. Calculate Karl Pearson's coefficient of correlation:

x:	6	8	12	15	18	20	24	28	31
y:	10	12	15	15	18	25	22	26	28

29. Find the price in Mumbai when the price in Calcutta is 70 from the following data

	Calcutta	Mumbai
Arithmetic mean	65	67
Standard deviation	2.5	3
Correlation coefficient	0.8	

30. The following table gives the score obtained by 11 students in English and Tamil translation. Find the rank correlation co-efficient

English:	40	46	54	60	70	80	82	85	85	90	95
Tamil :	45	45	50	43	40	75	55	72	65	42	70

31. Following are given the ranks of 8 pairs. Find r.

Rank X	: 4	2	7	5	3	1	8	6
Rank Y	: 8	3	6	5	1	2	7	4

32. Given the regression equation of Y on X and X on Y are respectively Y = X and 4X – Y = 3. Find the correlation co-efficient between X and Y
33. Compute the coefficient of correlation through concurrent deviation method from the following data:

X	: 36	42	59	45	47	44	49	57
Y	: 49	53	72	80	21	29	39	30

34. Find the regression equation of X or Y:

X	:	6	9	12	5	8	14
Y	:	5	20	15	12	9	11

35. If the regression equations are 7x – 4y – 28 = 0 and 12x – 10y – 90 = 0, find the correlation coefficient between x and y.
36. Calculate correlation co – efficient from the following data:

X	:	10	12	18	24	23	27
Y	:	13	18	12	25	30	10

37.

Unit – IV

1. State the merits and demerits of moving average.
2. What are the components of time series?
3. Compute 3 yearly moving average from the following data

Year	: 2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Sales (in ‘000 units):	55	47	59	151	79	36	45	72	83	89	102

4. Compute the trend from the following by the method of least squares

Years	: 2000	2001	2002	2003	2004
Population (in lakhs)	: 830	920	710	900	1690

5. Find the three yearly moving average from the following data.

Year :	2008	2009	2010	2011	2012	2013	2014	2015
Sales:	30.1	45.4	39.3	41.4	42.2	46.4	46.6	49.2

6. Calculate 3 yearly moving average of the given data

Year	:2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Sales (tons)	: 55	47	59	151	79	36	45	72	83	89	102

7. Calculate the trend value by the method of least square

Year:	1979	1980	1981	1982	1983
Sales:	100	120	140	160	180

8. Find the seasonal index from the following table by ratio to moving average method

Seasons	2004	2005	2006	2007	2008
I quarter	40	42	41	45	44
II quarter	35	37	35	36	38
III quarter	38	39	38	36	38
IV quarter	40	38	42	41	42

9. Find the trend of profits by three year moving average method

Year :	2000	2001	2002	2003	2004	2005	2006	2007
Profit :	15,420	14,470	15,520	21,020	26,120	31,950	35,370	34,670

10. Calculate 4 yearly moving average for the following data

Year	: 1975	1976	1977	1978	1978	1980	1981	1982	1983	1984
Production	: 50.0	36.5	43.0	44.5	38.9	38.1	32.6	41.7	41.1	33.8

11. From the data given below, estimate the population for the year 1895 using interpolation.

Year	:	1891	1901	1911	1921	1931
Production('000)	:	46	66	81	93	101

12. Calculate the five yearly moving average

Year	: 1973	1974	1975	1976	1977	1978
Production ('000 units)	: 14	17	22	28	26	18
Year	: 1979	1980	1981	1982	1983	1984
Production ('000 units)	: 29	24	25	29	30	23

13. From the following data calculate 5 yearly moving average:

Year	:	1984	1995	1996	1997	1998	1999
Sales('000)	:	2	6	1	5	3	7
Year	:	2000	2001	2002	2003	2004	
Sales ('000)	:	2	6	4	8	3	

14. Calculate 4 yearly moving average

Year	: 1995	1996	1997	1998	1999	2000	2001	2002	2003

Sales : 116 120 125 132 125 129 134 140 135
(Rs. '000)

15. Calculate 7 years moving average

Year	: 1987	88	89	90	91	92	93	94	95	96	97
Exp.	: 97	87	102	115	122	130	142	140	147	153	160

(Rs. In '000)

16. From the following details calculate 5 – years moving average.

Year	: 1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
No of students	: 332	317	357	392	402	405	410	427	405	438

17. Calculate 4 year by moving average for the following data:

Year	:	1993	1994	1995	1996	1997	1998	1999	2000
Y	:	30.1	45.4	39.3	41.4	42.2	46.4	46.6	49.2

18.

Unit – V

1. Explain the problems in the construction of index numbers.
2. What are the uses of index numbers?
3. What are the classification of index numbers?
4. Write the characteristics of index number.
5. What are the properties of an Ideal Index numbers?
6. State the merits of index numbers.
7. Calculate Fisher's ideal index number.

		2013	2014	
Commodity	Price	Qty	Price	Qty
A	12	75	30	90
B	3	22.5	9	15
C	1.5	30	3	37.5
D	3	15	7.5	12
E	1.5	60	4.5	4.5

8. Calculate cost of index number from the following:

Item	: 352	220	230	160	190
Index no. weight	: 48	10	8	12	15

9. Find price index number by using Fisher's formula from the following data

		2011	2012	
Commodity	Price	Qty	Price	Qty
A	5	15	7	12
B	4	5	6	4
C	7	4	9	3
D	52	2	55	2

10. From the following data construct an price index for 2005 taking 2004 as base.

Commodities	:	A	B	C	D	E
Price in 2004 (Rs.)	:	50	40	80	110	20
Price in 2005 (Rs.)	:	70	60	90	120	20

11. Calculate price index number

Commodity		: A	B	C	D	E
Quantity		: 10	15	15	20	5
Price	2008	: 100	15	70	20	5
	2009	: 120	20	60	30	7

12. Calculate the index number using Fishers ideal formula

	Base year Quantity	Base year Price	Current year Quantity	Current year Price
A	50	10	60	12
B	30	8	32	9
C	35	5	40	7

13. Compute index number using Fishers Ideal Formula.

	Quantity	Base year Price	Quantity	Current year price
A	12	10	15	12
B	15	7	20	5
C	24	5	20	9
D	5	16	5	14

14. Construct an index number for 2008 taking 2007 as base

Commodity	price in 2007	Price in 2008
A	90	95
B	40	60
C	90	110
D	30	35

15. Compute Fisher's ideal index from the following data:

	1981-82		1982-83	
Commodities	Price	Value	Price	value
A	4	40	5	50
B	8	64	9	80

C	10	70	10	70
D	2	10	4	16

16. From the following data, calculate price index number

Commodities	Price (Rs.) 1998	Price (Rs.) 1999
A	50	70
B	40	60
C	80	90
D	110	120
E	20	20

17. Compute the cost of living index number from the following data

Commodity	Base year Price	Current year Price	Weight
Food	200	280	30
Fuel	150	100	10
Clothing	150	120	20
House rent	100	200	20
Miscellaneous	100	200	20

18. From the following data construct Fisher's Ideal index.

Commodity	Price		Quantity	
	2006	2007	2006	2007
A	4	10	50	40
B	3	9	10	2
C	2	4	5	2

19. From the following data construct Fisher's ideal index

	2004		2005	
Commodities	Price	Expenditure	Price	Expenditure
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	60
E	20	100	25	150

20. Compute the cost of living index number from the following data

Commodity	Base year Price	Current year price	Weight
Food	12	28	42
Fuel	7	12	8
Clothing	25	70	13

House rent	10	26	15
Education	16	40	6
Miscellaneous	9	36	16

21. Construct the index numbers for 2002 on the basis of the price of 2000 from the following data

Commodities	Price in 2000 (Rs.)	Price in 2002 (Rs.)
1	115	130
2	72	89
3	54	75
4	60	72
5	80	105

22. Calculate index number through Aggregate Expenditure Method:

Commodities	Quantity consumed	Price per unit (in 1999)	Price per unit (in 2005)
A	120	20	22
B	150	15	17
C	160	30	25
D	80	10	20
E	70	5	15
F	40	12	24
G	30	7	18

23. Calculate Paasche's Index Number for the data:

Commodity	2005		2004	
	Price	Quantity	Price	Quantity
X	6.8	24	7.3	30
Y	12.3	16	15.0	20

24. From the following particulars, construct cost of living index number.

	Index Number	Weights
Food	352	48
Fuel	220	10
Clothing	230	8
Rent	160	12
Miscellaneous	190	15

25.

10 Mark

Unit – I

1. Explain the types of diagram.
2. Explain the functions of statistics as a managerial tool.
3. What do you understand by central tendency? Write down the merits and demerits of arithmetic mean.
4. What is a statistical table? Explain clearly the essential parts of the goods tables.
5. Explain the general rules of tabulation.
6. Calculate mean deviation and co-efficient of mean deviation from the following data

X	:0-20	20-40	40-60	60-80	80-100	100-120	120-140	140-160
Y	: 4	8	10	15	20	5	9	11

7. Calculate mean and median from the following data given below:

X: 5	10	12	13	17	20	22	25
Y: 3	7	15	28	20	12	9	6

8. Calculate mode from the following data

Daily wages(Rs.)	:0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
No. of families	: 4	5	15	9	11	14	8	13	7	8

9. Calculate mean , median and mode.

Marks	: 0-10	10-20	20-30	30-40	40-50
No. of Students	: 3	8	17	20	22

10. Calculate the mean, median and mode from the following data

Marks	: 11-20	21-30	31-40	41-50	51-60	61-70	71-80
No. of students	: 42	38	120	84	48	36	31

11. Calculate the mode from the following series

Size of the item	: 0-5	5-10	10-15	15-20	20-25
Frequency	: 20	24	32	28	20

12. Find median for the following frequency distribution

Wages (Rs.)	:10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of persons	: 1	3	11	21	43	32	9

13. From the following data, compute arithmetic mean by direct method.

Marks	: 0-10	10-20	20-30	30-40	40-50	50-60
No. of students	: 5	10	25	30	20	10

41. The marks scored by 60 students in an examination are given below calculate arithmetic mean.

6	10	58	56	0	25	32	35	35	9

78	17	60	50	35	38	30	10	48	5
63	48	35	30	31	21	23	23	50	72
19	25	35	40	46	42	45	25	60	41
35	36	38	35	33	46	28	31	35	42
46	38	39	45	48	50	28	29	31	55

42. Calculate the mean , median and mode form the following data:

Age	No. of people	Age	No. of people
20-25	14	40-45	20
25-30	28	45-50	15
30-35	33	50-55	13
35-40	30	55-60	7

43. Show that A.m> G.M> H.M from the following

Marks	0-19	20-39	40-59	60-79	80-99
No. of students	5	15	35	15	10

44. From the following data, calculate the mean, median and mode.

Rent	15-25	25-35	35-45	45-55	55-65	65-75	75-85	85-95
No. of Houses	8	10	15	25	40	20	15	7

45. From the following data, calculate the mean, median and mode

Wages	0-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50
No. of workers	8	16	30	45	62	32	15	6

46. Calculate mode from the following data

Daily income (Rs.)	No. of families
0-10	4
10-20	5
20-30	15
30-40	9
40-50	11
50-60	14
60-70	8
70-80	13
80-90	7
90-100	8

47. Calculate the missing frequencty from the following data:

X	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
Y	4	7	12	?	22	11	3

48. Calculate the arithmetic average of the following data.

Marks:	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 - 100
Students:	33	53	108	221	153	322	439	526	495	50

49. Calculate the median for the following data:

Value :	0 – 4	5 – 9	10 – 19	20 – 29	30 – 39	40 – 49	50 – 49	60 – 69
Frequency:	320	350	720	660	590	520	380	240

50. Calculate the standard deviation for the data given below:

Marks :	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50
No of students:	7	12	24	10	?

51. Find the value of quartile deviation and its coefficient from the following data:

Profits :	4 – 8	8 – 12	12 – 16	16 – 20	20 – 24	24 – 28	28 – 32	32 – 36	36 – 40
No of Cos:	6	10	18	30	15	12	10	6	2

52. Calculate the mean profit for the following data:

Profits	100 – 200	200 – 300	300 – 400	400 – 500	500 – 600	600 – 700	700 – 800
No of shops	10	18	20	26	30	28	18

53.

Unit – II

1. What is meant by measure of dispersion? State the different methods of measuring it.
2. Calculate Bowley's co-efficient of skewness from the following data

Expenses(Rs) :	0-20	20-40	40-60	60-80	80-100	100-120
No. of families :	4	21	18	27	37	5

3. From the following table. Compute the quartile deviation as well as its co-efficient.

Size :	4- 8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40
Frequency :	6	10	18	30	15	12	10	6	2

4. Find out standard deviation and its co-efficient

Marks :	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
No. of Students	: 14	26	32	45	39	12	9	2

5. Weekly wages of labourer are given below:
   Calculate quartile deviation and co-efficient of quartile deviation

Weekly wages (Rs.):	100	200	400	500	600	Total
No. of weeks :	5	8	21	12	6	52 weeks

6. Calculate the three mean deviations and the corresponding co – efficient of mean deviations.

Age :	20	25	27	32	41	46	50	55
No. of workers :	2	3	10	20	15	10	8	2

7. Find the standard deviation from the following

Workers :	A	B	C	D	E	F	G	H	I	J
Wages(Rs.) :	320	310	315	322	326	340	325	321	320	331

8. Calculate standard deviation from the following data

Size of items :	6	7	8	9	10	11	12
Frequency :	3	6	9	13	8	5	4

9. Calculate Bowley's measure of skewness from the following data:

Payment of commission	No. of salesmen
1000-2000	4
1200-1400	10
1400-1600	16
1600-1800	29
1800-2000	52
2000-2200	80
2200-2400	32
2400-2600	23
2600-2800	17
2800-3000	7

10. Calculate standard deviation from the following data.

Class interval	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45
Frequency	6	5	15	10	5	4	3	2

11. Calculate coefficient of variation

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	12	18	35	42	50	45	20	8

12. Calculate coefficient of skewness for the following frequency distribution

Marks	No. of students
More than 10	100
More than 20	97
More than 30	90
More than 40	70
More than 50	40
More than 60	25
More than 70	15
More than 80	8
More than 90	3

13. Compare the skewness of A and B

	Q1	M	Q3
Series A	40	60	80
Series B	62.85	65.25	72.15

14. From the following data, calculate coefficient of variation

Marks	5-7	8-10	11-13	14-16	17-19
No. of students	14	24	38	20	4

15. From the following data, calculate coefficient of variation

Marks	50-53	53-56	56-59	59-62	62-65	65-68	68-71	71-74	74-77
Frequency	3	8	14	30	36	28	16	10	5

16. The following information is related with the wages given for workers in two factories

	Factory I	Factory II

No. of workers	200	450
Average wage (Rs.)	83	65
Variance of wage	54	23

Calculate the combined standard deviation of the two factories. In which factory variation of wages is greater.

17. Calculate the standard deviation of the following frequency distribution of marks:

Marks :	0- 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
No of Students:	5	12	30	45	50	37	21

18. Calculate Bowley's co – efficient of skewness.

No of Children per family :	0	1	2	3	4	5	6
No of families :	7	10	16	25	18	11	8

54. Calculate mean deviation (from mean) from the following data

Size	3 – 4	4 – 5	5 – 6	6 – 7	7 – 8	8 – 9	9 – 10
Frequency	3	7	22	60	85	32	8

55. Calculate the standard deviation for the following data:

Age	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79
Frequency	3	61	223	137	53	19	4

56. Calculate Karl Pearson's co – efficient of skewness from the following data

Size	1	2	3	4	5	6	7
Frequency	10	18	30	25	12	3	2

57.

Unit – III

1. What is regression? explain its important features
2. The girls participate in competition the remarks of three judges one as follows. decide which pair judge have nearest approach

Judge I : 1	5	4	8	9	6	10	7	3	2
Judge II : 4	8	7	6	5	9	10	3	2	1
Judge III : 6	7	8	1	5	10	9	2	3	4

3. Find karl pearson's co-efficient of correlation

X:	25	35	45	52	20	33	40	30
Y:	20	15	10	14	23	18	22	30

4. Calculate the two regression equations from the following data

X:10	12	13	12	16	15	
Y : 40	38	43	45	37	43	

Estimate the value of y when x = 20.

5. Compute the co-efficient of correlation between X – advertisement and y – sale

X: 10	12	18	8	13	20	22	15	5	17
Y: 88	90	94	86	87	92	96	94	88	85

6. Compute the coefficient of correlation between advertisement expenditure (X) and sales (Y)

X:	10	12	18	8	13	20	22	15	5	17
Y:	88	90	94	86	87	92	96	94	88	85

7. The ranking of 10 studnets in two subjects A and B are as follows

A:	6	5	3	10	2	4	9	7	8	1
B:	3	8	4	9	1	6	10	7	5	2

Calculate rank correlation co-efficient.

8. Give the following data, calculate the expected value of Y when X = 12

	X	Y
Average	7.6	14.8
Standard deviation	3.6	2.5

r = 0.99

9. Calculate karl pearson's coefficient of skewness from the following data:

Profit (Rs. In Lakhs)	No. of Companies
70-80	12
80-90	18
90-100	35
100-110	42
110-120	50
120-130	45
130-140	30
140-150	8

10. Calculate Karl pearson's co-efficient of skewness from the following data:

X:	12.5	17.5	22.5	27.5	32.5	37.5	42.5	47.5
F:	8	16	30	45	62	32	15	6

38. Find out the regression coefficient of Y on X and X on Y on the basis of the following data:

$\Sigma X = 50$; $\Sigma Y = 60$; $\Sigma XY = 350$; $N = 10$

Variance of X = 4; Variance of Y = 9

11. Find the two regression equations for the following two series:

X: 35	25	29	31	27	24	33	36	
Y : 23	27	26	21	24	20	29	30	

12. Calculate Karl pearson's coefficient of correlation for the data given below:

Height of Husbands X (in inches):	60	62	64	66	68	70	72
Height of wives Y (in inches) :	61	63	63	63	64	65	67

13. Calculate spearman's rank correlation coefficient

Height of fathers	: 180	155	170	174	160	172	166	172	172

Height of sons : 170 165 180 180 164 169 170 170 174

14. Given the regression lines as $3x + 2y = 26$ and $6x + y = 31$. Find $\bar{x}$ and $\bar{y}$. also find the correlation coefficient between x and y.
15. On the basis of the following data, obtain regression equations:

X:	15	27	27	30	34	38	46
Y:	120	140	150	170	180	22	230

16. Calculate the coefficient of correlation from the following data

X	: 10	12	13	16	17	20	25
Y	: 19	22	26	27	29	33	37

17. The co-efficient of rank correlation of the marks obtained by 10 students in statistics and accountancy was found to be 0.5. it was later discovered that the difference in ranks in the two subjects obtained by one of the students was wrongly taken as 3 instead of 7. Find the correct coefficient of rank correlation.
18. Calculate the regression equations x on y and y on x from the following data.

X	: 8	7	10	9	6
Y	: 15	18	17	21	14

    a. The value of y for a given cvalue of x as 21
    b. The value of x when the value of y is 30.

19. From the following data, calculate correlation coefficient:

Marks in subject I :	37	52	75	11	69	78	90	40	32	50
Marks in subject II :	69	48	80	15	49	70	95	16	21	25

20. Compute co – efficient of correlation from the following:

x:	77	54	27	52	14	35	90	25	56	60
y:	35	58	60	40	50	40	35	56	34	42

21. The marks obtained by students in two different subjects are given below. from this compute rank correlation co – efficient.

1^{st} Subject	: 60	15	20	28	12	40	80	20
2^{nd} subject	: 10	40	30	50	30	20	60	30

22. From the following data, obtain the two regression equations

Sales	: 91	97	103	121	67	124	51	73	111	57
Purchase	: 97	75	69	97	70	91	39	61	80	47

23. Determine the regression line of y on x

X	: 10	12	13	12	16	15
Y	: 40	38	43	45	37	43

24. If $\bar{x} = 7.6$ $\bar{y} = 14.8$; $\sigma x = 3.6$, $\sigma y = 2.5$, $r = 0.99$, find out the regression equations like X on Y and Y on X . Also find the value of Y when X = 12.

Unit – IV

1. Explain the components of time series.

2. Fit a straight line trend through the method of least square for the following data. Also estimate the value for the year 2012.

Year	: 2002	2003	2004	2005	2006	2007	2008
Sales (in units)	: 110	115	130	140	145	160	180

3. Fit a straight line trend through the method of least square for the following data and estimate the value for the year 2010.

Year	:2001	2002	2003	2004	2005	2006	2007
Production (in '000 units)	: 6	8	9	10	12	11	8

4. Fit a straight line by the method of least squares and also calculate the trend

Year	: 1995	1996	1997	1998	1999	2000	2001
Profit	: 430	473	590	522	382	339	401

5. Use the method of least squares to fit a straight line to the below data.

Year	: 2001	2002	2003	2004	2005	2006	2007
Profit (Rs.'000):	60	72	75	65	80	85	95

6. Calculate trend value from the following data using the method of least square.

Year	: 2003	2004	2005	2006	2007	2008
Production	: 7	9	12	15	18	23

7. The following data relate to the profit earned by a public Ltd. Company from 1998 to 2003.

Year	: 1998	1999	2000	2001	2002	2003
Profit (Rs.)	: 10000	12000	15000	16000	18000	19000

Fit a straight line trend by the method by least square to the data and tabulate the trend values.

8. Find the number of workers earning between Rs. 650 and Rs. 680 from the following data by applying a suitable formula for interpolation

Salary (Rs.)	No. of workers
Less than 600	38
Less than650	120
Less than 700	174
Less than 750	190
Less than 800	250

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

Year	: 2001	2002	2003	2004	2005	2006	2007
Production (Ton)	: 75	67	68	65	50	54	41

10. From the following data calculate trend by the method of least square

Year	: 1998	1989	2000	2001	2002	2003	2004
Profits	: 100	105	109	96	102	108	112

(Rs. '000)

11. Calculate 6 yearly moving average from the following data:

Year	:	1990	91	92	93	94	95	96	97	98	99	2000
Demand (in tones)	:	105	120	115	110	100	130	135	160	155	140	145

12. Fit a straight line trend by the method of least squares to the following data.

Year	:	1996	1997	1998	1999	2000	2001	2002	2003
Profits (Rs in lakhs)	:	56	55	51	47	42	38	35	32

13. Fit a straight line trend by the method of least squares to the following data and find the trend values

Year	: 1995	1996	1997	1998	1999	2000	2001
Production	: 80	90	92	83	94	99	92

14. Fit a straight line trend for the following data

Year	: 1995	1996	1997	1998	1999	2000
Production	: 7	9	12	15	18	23

15.

Unit – V

1. What is an index number? Why are index numbers called economic parameters.
2. Compute the chain base index number from the following information

Year:	2008	2009	2010	2011	2012	2013	2014
FBI :	115	215	310	390	410	475	520

3. Using the following data, construct Fisher's ideal and show hoe it satisfies factor reversal test and time reversal test?

Commodity	Price in rupees P.U		Number of miss	
	Base year	Current year	Base year	Current year
A	6	10	50	56
B	2	2	100	120
C	4	6	60	60
D	10	12	50	24
E	8	12	40	36

4. Calculate the real wages index number from the following data

Year	: 2006	2007	2008	2009	2010	2011	2012	2013
Wages(Rs):	700	900	1100	1200	1400	1600	1800	1900
Consumer Price index	: 100	120	150	175	195	200	210	220

5. Compute
   A) Lasspeyre's
   B) Paasche's and

c) Fisher's index numbers

Item	price		Quantity	
	Base year	Current year	Base year	Current year
A	6	10	50	50
B	2	2	100	120
C	4	6	60	60
D	10	12	30	25

6. Show that fisher's ideal index satisfies both the time reversal and factor reversal tests, using the following data
7. Find price index number by using Fisher's formula from the following data

	Base year		Current year	
Commodity	Price	Qty	Price	Qty
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

8. From the following data construct an index for 2007 taking 2008 as base

Commodity	price in 2007 (Rs.)	price in 2008 (Rs.)
A	50	70
B	40	60
C	80	90
D	110	120
E	20	20

9. Construct index numbers of price from the following data by applying Laaspeyres method

Commodity	Price (2007)	Quantity (2008)	Price (2007)	Quantity (2008)
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

10. calculate Laspeyre's method and paasche's method of index number from the following data:

	Base Year		Current Year	
	Kilo	Rate (rs.)	Kilo	Rate (Rs.)
Bread	10	3	8	3.25
Meat	20	15	15	20
Tea	2	25	3	23

11. The following data relate to the process and quantities of six commodities in the year 2009 and 2010. Construct the following indices.
    a) Laspeyres's index
    b) Paasche's index and
    c) Fisher's index

Goods	2009		2010	
	Price (Rs.)	Quantity	Price (Rs.)	Quantity
A	5	14	3	18
B	8	18	6	25
C	3	25	1	40
D	15	36	12	48
E	9	14	7	18
F	7	13	5	19

12. Find out the cost of living index for the following data:

Expenses on	Food	Rent	Clothing	Fuel	Others
Price (1984) Rs.	150	50	100	20	60
Price (1985) Rs.	174	60	125	25	90

13. Calculate a Fisher's Ideal Index from the following data and show that it satisfies time reversal test:

	2002		2003	
Items	Price	Qty	Price	Qty
A	10	40	12	45
B	11	50	11	52
C	14	30	17	30
D	8	28	10	29
E	12	15	13	20

14. Calculate Laspeyre's and Bowley's price under numbers from the data given below:

Commodity	Price		Quantity	
	2006	2007	2006	2007
P	2	5	20	15
Q	4	8	4	5
R	1	2	10	12
S	5	10	5	6

15. Calculate Laspeyre's, Paasche's and Bowley's price index numbers from the data given below:

	2005		2006	
Commodity	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

16. Calculate Fisher's ideal index number and tesyt whether it satisfies time reversal test and factor reversal test.

		2004		2005
Commodity	Price	Qty	Price	Qty
Rice	12	75	30	90
Milk	3	22.5	9	15
Fire wood	1.5	30	3	37.5
Sugar	3	15	7.5	12
Cloth	1.5	60	4.5	4.5

17. From the following data, interpolate the value of the year 1999:

Year	:	1990	1995	2000	2005	2010
Sales (in tones)	:	195	215	260	280	310

18. Calculate the index number by Fisher's ideal formula and show how it satisfies the factor reversal test.

Commodity	2001		2001	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	61
D	8.5	30	12	24
E	8	40	16	22

19. Compute fisher's Idea index from the following data,. And show that it satisfies time reversal test and factor reversal test

Goods	2009		2010	

	Price (Rs.)	Quantity	Price (Rs.)	Quantity
A	4	40	5	50
B	8	64	9	80
C	10	70	10	70
D	2	10	4	16

20. Compute cost of living index number for the following data

Group	Index number	Weight
Food	247	47
Fuel	293	7
Clothing	289	8
Rent	100	13
Miscellaneous	236	14

21. Compute cost of living index by family budget method

	Weight	Price	
Commodity		1999	2000
Food	35	350	440
Fuel	10	220	330
Clothing	20	230	400
Rent	15	160	105
Miscellaneous	20	190	340

22. Calculate Laspeyre, paasche's and fisher Ideal index numbers for the following data

Commodity	Quantity		Price	
	2006	2007	2006	2007
P	20	16	1.2	2
Q	35	38	2.1	2.4
R	10	9	3	4.1
S	45	50	0.8	1.2

23.