**BON SECOURS COLLEGE FOR WOMEN-THANJAVUR**

**PG & RESEARCH DEPARTMENT OF COMMERCE**

 **CLASS : II B.Com**

 **SUBJECT : BUSINESS TOOLS FOR DECISION MAKING**

 **SECTION – A 2 Mark**

**Unit – I**

1. What is table?
2. What is mean by median?
3. What is arithmetic 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

1. Write the rules of classification.
2. What are the objects of classification?
3. What is an average?
4. Write any two functions of an average.
5. What do you mean classification of data?
6. What is a diagram?
7. What is a cumulative frequency distribution?
8. What is class frequency?
9. 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. 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

1. What is coefficient of variation?
2. Write the significance of measuring variation.
3. Define dispersion
4. Write any two uses of range.
5. What are a quartile of the distribution?
6. Explain the Bowley’s coefficient of Skewness.
7. Find the standard deviation if the sum and the sum of the square of 100 items are 1357 and 24680 respectively.
8. What is coefficient of variation?
9. 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.

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.

**SECTION – B 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

1. Find Harmonic mean from the data given below 12,10,6,8,15,15
2. 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

1. Calculate the mode of the following frequency distribution

Wages : 0 20 40 60 80 100

No. of workers : 50 45 34 16 6 0

1. 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

1. 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

1. 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

1. 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

1. Calculate median :

Marks : 10-25 25-40 40-55 55-70 70-85 85-100

Frequency : 6 20 44 26 3 1

1. 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

1. 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

1. Find out the median from the following

57,58,61,42,38,65,72,66.

1. 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

1. Calculate geometric mean of the following data

2574, 475, 75, 5, 0.08, 0.005, 0.0009.

1. Calculate mode for the data given below

Mid value : 70 90 110 130 150

Frequency : 43 78 83 125 87

1. Calculate the geometric mean

125, 1462, 7, 0.22, 0.08, 12.75, 0.5, 38.

1. Calculate the geometric mean of the following :

0.8974, 0.0570, 0.0081, 0.5677, 0.0002, 0.0984, 0.0854, 0.5672.

1. 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

1. Compute Geomeric mean from the following data:

Marks: 5,10,20,25,40,42,45,48,70,80

1. 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

1. The following data given the average wage and number of workers in firms A,B and C.

Firm Average wage No. of workers

 Rs.

A 65.5 100

B 48.6 150

C 55.0 250

Find the average wage for the workers of 3 firms combined.

1. 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

1. 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.
2. Calculate geometric mean from the following data

10, 110, 135, 120, 50, 59, 60, 7

1. 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
2. Calculate quartile deviation from the following data:

25,15,30,45,20,50

1. 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

1. 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

1. Which firm pays a larger wage bill?
2. In which firm is there greater variability in individual wages?
3. Calculate geometric mean of the following:

50,72,54,82,93

1. Coefficient of variations of two series are 60% and 80% respectively. Their standard deviations are 20 and 16 respectively. What are their arithmetic means?

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

1. 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

1. Find mean deviation from mean for the following data

X : 10 15 20 25 30

Y : 2 4 6 8 5

1. Calculate mean deviation from the following data 50,70,45,20,80,90,25,30,40,10.
2. Calculate standard deviation from the following data

9,27,18,54,45,72,36,63,81.

1. Calculate Karl pearson’s co-efficient of skewness
2. Define Skewness and write a note on the measures of Skewness
3. Compute karl parson’s co-efficient of skewness

40,36,42,53,20,65,67,20,36

1. 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: X = 46.83; S.D =14.8; Mode = 51.67

Section B: X = 47.83; S.D =14.8; Mode = 47.07

1. Calculate the co- efficient of variation of the following:

40,41,45,49,50,51,55,59,60,60.

1. For the data given below, calculate standard deviation

40,50,60,70,80,90,100.

1. calculate standard deviation from the following data

x: 6 9 12 15 18

f: 7 12 19 10 2

1. 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

1. calculate karl pearson’s co-efficient of skewness for the following data

25 15 23 40 27 25 23 25 20

1. calculate the standard deviation from the following data

14,22,9,15,20,17,12,11

1. calculate range and co-efficient of range

Day : Monday Tuesday Wednesday Thursday Friday Saturday

Price : 200 210 208 160 220 250

1. 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

1. 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.

1. 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

1. 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

1. Calculate mean deviation from the following series:

X : 10 11 12 13 14

Y : 3 12 18 12 3

1. A distribution had Q1 = 31.3, Q2 = 35 and Q3 = 36.4. calculate co-efficient of skewness.
2. 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

1. 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

1. 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

1. From the data given below calculate the coefficient of variation:

Karl pearson’s coefficient of skewness = 0.42

Arithmetic mean = 86

Median = 80.

1. 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

1. 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.
2. 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

1. 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.

1. 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

1. Find the Bowley’s skewness for the following data:

Monthly Income(Rs. ‘000): 10,27,24,12,27,27,20.

1. 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

1. Calculate mean deviation from the following data

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

1. 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

1. Compute percentile range

30, 9, 21, 29, 18, 24, 13, 27, 7

1. 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

1. 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.
2. Calculate standard deviation, mode and median when mean is 125, coefficient of variation is 30% and coefficient of skewness is +0.24.
3. Calculate mean deviation (taking deviation from mean from the following data:

x: 2 4 6 8 10

f: 1 4 6 4 1

1. 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

1. 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

1. 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

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

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

1. 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

1. 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

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

 X = 7.6, Y = 14.8, x = 3.6, y = 2.5

1. Calculate karl pearson’s correlation co-efficient between x and y from the following data

n = 13, x = 117, x2 = 1313, y = 260,y2 = 6580, xy = 2827.

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. Calculate the coefficient of correlation by concurrent deviation method

X : 17 12 25 41 32 51

Y: 12 15 23 32 28 26

1. 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

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

X = 53.2, Y = 27.9

Regression coefficient of Y on X = -1.5

Regression coefficient of X on Y = -0.2

1. 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.

1. 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

1. 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

1. 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

1. 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.
2. 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

1. 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

1. 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

1. 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

1. 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
2. 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

1. Find the regression equation of X or Y:

X : 6 9 12 5 8 14

Y : 5 20 15 12 9 11

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

X : 10 12 18 24 23 27

Y : 13 18 12 25 30 10

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 : 55 47 59 151 79 36 45 72 83 89 102

(in ‘000 units):

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

Years : 2000 2001 2002 2003 2004

Population : 830 920 710 900 1690

(in lakhs)

1. 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

1. Calculate 3 yearly moving average of the given data

Year :2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013

Sales : 55 47 59 151 79 36 45 72 83 89 102

 (tons)

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

Year: 1979 1980 1981 1982 1983

Sales: 100 120 140 160 180

1. 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

1. 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

1. 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

1. 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

1. Calculate the five yearly moving average

Year : 1973 1974 1975 1976 1977 1978

Production : 14 17 22 28 26 18

(‘000 units)

Year : 1979 1980 1981 1982 1983 1984

Production : 29 24 25 29 30 23

(‘000 units)

1. 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

1. 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)

1. 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)

1. 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

1. 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

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

1. Calculate cost of index number from the following:

Item : 352 220 230 160 190

Index no. weight : 48 10 8 12 15

1. 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

1. 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

1. 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

1. Calculate the index number using Fishers ideal formula

Base year Base year Current year Current year

 Quantity Price Quantity Price

A 50 10 60 12

B 30 8 32 9

C 35 5 40 7

1. 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

1. 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

1. 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

1. From the following data, calculate price index number

Commodities Price (Rs.) Price (Rs.)

 1998 1999

 A 50 70

 B 40 60

 C 80 90

 D 110 120

 E 20 20

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

Commodity Base year Current year Weight

 Price Price

Food 200 280 30

Fuel 150 100 10

Clothing 150 120 20

House rent 100 200 20

Miscellaneous 100 200 20

1. 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

1. 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

1. 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

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

Commodities Price in 2000 Price in 2002

 (Rs.) (Rs.)

1 115 130

2 72 89

3 54 75

4 60 72

5 80 105

1. Calculate index number through Aggregate Expenditure Method:

Commodities Quantity consumed Price per unit Price per unit

 (in 1999) (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

1. 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

1. 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

 **SECTION – C 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

1. 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

1. Calculate mode from the following data

Daily :0-10 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100

wages(Rs.)

 No. of : 4 5 15 9 11 14 8 13 7 8

families

1. Calculate mean , median and mode.

Marks : 0-10 10-20 20-30 30-40 40-50

No. of Students : 3 8 17 20 22

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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 ?

1. 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

1. 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

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

1. 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

1. 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 : 14 26 32 45 39 12 9 2

Students

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. Compare the skewness of A and B

Q1 M Q3

Series A 40 60 80

Series B 62.85 65.25 72.15

1. 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

1. 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

1. 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.

1. 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

1. 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

1. 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

1. 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

1. 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

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

1. 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

1. 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.

1. 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

1. 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

1. 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.

1. 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

1. 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

1. 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

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

 X Y XY

Variance of X = 4; Variance of Y = 9

1. 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

1. Calculate Karl pearson’s coefficient of correlation for the data given below:

Height of Husbands X 60 62 64 66 68 70 72

(in inches):

Height of wives Y 61 63 63 63 64 65 67

(in inches) :

1. 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

1. Given the regression lines as 3x + 2y = 26 and 6x +y = 31. Find x and y. also find the correlation coefficient between x and y.
2. 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

1. 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

1. 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.
2. 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

1. The value of y for a given cvalue of x as 21
2. The value of x when the value of y is 30.
3. 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

1. 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

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

1st Subject : 60 15 20 28 12 40 80 20

2nd subject : 10 40 30 50 30 20 60 30

1. 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

1. Determine the regression line of y on x

X : 10 12 13 12 16 15

Y : 40 38 43 45 37 43

1. If x = 7.6 y = 14.8; x = 3.6, 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 : 110 115 130 140 145 160 180

(in units)

1. 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 : 6 8 9 10 12 11 8

(in ‘000 units)

1. 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

1. 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

1. 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

1. 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.

1. 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

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

Year : 2001 2002 2003 2004 2005 2006 2007

Production : 75 67 68 65 50 54 41

(Ton)

1. 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)

1. 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

1. 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

1. 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

1. Fit a straight line trend for the following data

Year : 1995 1996 1997 1998 1999 2000

Production : 7 9 12 15 18 23

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

1. 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

1. 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 : 100 120 150 175 195 200 210 220

Price index

1. 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

1. Show that fisher’s ideal index satisfies both the time reversal and factor reversal tests, using the following data
2. 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

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

Commodity price in 2007 price in 2008

 (Rs.) (Rs.)

A 50 70

B 40 60

C 80 90

D 110 120

E 20 20

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

Commodity Price Quantity Price Quantity

 (2007) (2008) (2007) (2008)

A 2 8 4 6

B 5 10 6 5

C 4 14 5 10

D 2 19 2 13

1. 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

1. The following data relate to the process and quantities of six commodities in the year 2009 and 2010. Construct the following indices.
2. Laspeyres’s index
3. Paasche’s index and
4. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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

1. 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