BHARATHIAR UNIVERSITY, COIMBATORE
(For the students admitted from 2008 – 2009 onwards)

B.Com / B.Com (Computer Applications)
PART – III – GROUP B – ALLIED

Subject Title: STATISTICS FOR BUSINESS

Number of hours:

Subject description: This course introduces the concepts, methods and the application of Statistical Tools that are essential for commerce, economics and industry

Goal: To enable the students to learn the Statistical methods and their applications in Commerce

Objective: On successful completion of this course the students shall enrich to solve the Statistical problems in commerce

Unit I:
Meaning and Definition of Statistics – Collection of data — Primary and Secondary - Classification and Tabulation – Diagrammatic and Graphical presentation
Measures of Central tendency – Mean, Median, Mode, Geometric Mean and Harmonic Mean – simple problems

UNIT II:
Measures of Dispersion – Range, Quartile Deviation, Mean Deviation, Standard Deviation and Co-efficient of Variation.
Skewness – Meaning – Measures of Skewness - Pearson’s and Bowley’s co-efficient of Skewness.

UNIT III:
Correlation – Meaning and Definition – Scatter diagram, Karl Pearson’s co-efficient of Correlation, Spearman’s Rank Correlation, Co-efficient of Concurrent deviation.
Regression Analysis – Meaning of regression and linear prediction – Regression in two variables – Uses of Regression

Unit IV:
Index Numbers – Meaning, Uses and Methods of construction – Un-weighted and Weighted index numbers – Tests of an Index number – Cost of living index number.

UNIT V:
Interpolation: Binomial, Newton’s and Lagrange methods.
Probability – Concept and Definition – Addition and Multiplication theorems of Probability (statement only) – simple problems based on Addition and Multiplication theorems only.
Books Recommended:
1. Statistical Methods by S.P. Gupta
2. Business Mathematics and Statistics by P. Navaneetham
3. Statistics by R.S.N. Pillai and V. Bagavathi
5. Applied General Statistics by Frederick E. Croxton and Dudley J. Cowden

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B.Com (CA) DEGREE EXAMINATION
Allied - STATISTICS FOR BUSINESS

Time : Three hours                                                                            Maximum : 100 marks

SECTION A – (10 X 1 = 10 marks)
Answer ALL the questions
1. Data originally collected for an investigation is known as
   (a) secondary data    (b) primary data   (c)  grouped data     (d) sources of data
2. In chronological classification data are classified on the basis of
   (a) attributes   (b) class intervals    (c) time   (d) location
3. Which of the following is not a Measure of central tendency?
   (a) Mean    (b) Median    (c) Mode       (d) Range
4. The formula for co-efficient of variation is
   (a) \( \frac{\sigma}{X} \times 100 \)         (b) \( \frac{X}{\sigma} \times 100 \)                    (c) \( \frac{X}{\sigma} \)         (d) \( \frac{\sigma}{X} \)
5. Rank correlation co-efficient was developed by
   (a) Pearson     (b) Spearman       (c) Fisher    (d) none of these
6. If one of the regression co-efficients is > 1, the other must be
   (a) = 1     (b)  < 1              (c)  > 1         (d)  0
7. Which one of the following is a component of Time Series?
   (a) Regression      (b) Correlation      (c)  Trend     (d) Index Numbers
8. Laspeyre’s index is based on
   (a) Base year quantities   (b) Current year quantities    (c) both   (d) none of these
9. When ‘x’ variable advances by equal intervals and the value of ‘x’ for which ‘y’ is to
be interpolated in one of the class limits of ‘x’ series, the method used for
interpolation is
   (a) Binomial       (b) Newton’s     (c) Lagrange’s      (d) none of these
10. The limits for probability lies between
   (a) -1 and +1       (b)  0 and 1       (c)  -1 and 0    (d) none

SECTION B  - ( 5 X 6 = 30 marks)
Answer ALL the questions

11. (a) What is secondary data. What are the sources of secondary data?     (or)
    (b) What are the advantages of a diagrammatic representation?
12. (a) Define Mean and Median. Give their merits and demerits     (or)
    (b) Calculate Geometric mean
13. (a) Compute Rank correlation co-efficient for the following data
   X : 15 20 28 12 40 60 20 80
   Y : 40 30 50 30 20 10 30 60
   (or)
   (b) What are regression equations? Why we have two regression equations?

14. (a) Calculate trend by moving average method for the following data assuming four
     yearly cycle
     Production: 600 620 650 680 680 660 700 720
   (or)
   (b) Calculate (i) Laspeyre’s (ii) Paashe’s Index numbers from the following data

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Base Year</th>
<th>Current Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Price</td>
<td>Quantity</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

15. (a) Interpolate ‘y’ when x=32 from the following data by the Binomial expansion
     method
     X : 30 34 36 38 40
     Y : 340 353 358 364 369
   (or)
   (b) Two students x and y work independently on a problem. The probability that x
       will solve a problem is ¾ and the probability that y will solve it is 2/3. What is
       the probability that the problem will be solved?

SECTION C - (5 X 12 = 60 marks)
Answer ALL the questions

16. (a) Explain any three methods of collecting primary data. Give their merits and
demerits
   (or)
   (b) From the following table, draw Ogive curves and hence find median

<table>
<thead>
<tr>
<th>Wages</th>
<th>0-10</th>
<th>10-20</th>
<th>20-30</th>
<th>30-40</th>
<th>40-50</th>
<th>50-60</th>
<th>60-70</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of workers:</td>
<td>5</td>
<td>8</td>
<td>10</td>
<td>14</td>
<td>11</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

17. (a) Goals scored by Teams A and B in a Football season are as follows

<table>
<thead>
<tr>
<th>No. of goals scored in a match</th>
<th>Team A</th>
<th>Team B</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>27</td>
<td>17</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

   Which team is more consistent?
(or)

(b) Calculate mean, median and mode from the following data

<table>
<thead>
<tr>
<th>Marks</th>
<th>Below 10</th>
<th>Below 20</th>
<th>Below 30</th>
<th>Below 40</th>
<th>Below 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of students</td>
<td>3</td>
<td>8</td>
<td>17</td>
<td>20</td>
<td>22</td>
</tr>
</tbody>
</table>

18. (a) Calculate Karl Pearson’s Co-efficient of Correlation

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

(or)

(b) Obtain two regression equations and also estimate ‘x’ when y = 26.

X : 10  12  13  17  18  20  24  30
Y : 5   6   7   9  13  15  20  21

18. (a) Calculate Seasonal indices for the following data by simple average method

<table>
<thead>
<tr>
<th>Year</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>3.7</td>
<td>4.1</td>
<td>3.3</td>
<td>3.5</td>
</tr>
<tr>
<td>1985</td>
<td>3.7</td>
<td>3.9</td>
<td>3.6</td>
<td>3.6</td>
</tr>
<tr>
<td>1986</td>
<td>4.0</td>
<td>4.1</td>
<td>3.3</td>
<td>3.1</td>
</tr>
<tr>
<td>1987</td>
<td>3.3</td>
<td>4.4</td>
<td>4.0</td>
<td>4.0</td>
</tr>
</tbody>
</table>

(or)

(b) Calculate Fisher’s ideal Index number and show that it satisfies Time reversal test and Factor reversal test from the following data

<table>
<thead>
<tr>
<th>Commodity</th>
<th>1999</th>
<th>2005</th>
<th>1999</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>B</td>
<td>10</td>
<td>10</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>15</td>
<td>20</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>E</td>
<td>20</td>
<td>25</td>
<td>15</td>
<td>10</td>
</tr>
</tbody>
</table>

20. (a) Use Newton’s formula to estimate the expectation of life at the age of 27.

Age : 20  25  30  35  40
Expectation of Life : 33  29.8 26.6 23.5 20.5

(or)

(b) (i) A committee of 4 persons is to be appointed from 7 men and 3 women. What is the probability that the committee contains (i) exactly two women and (ii) at least one woman?

(ii) The probability that India wins a cricket – test match against Sri Lanka is 1/3. If India and Sri Lanka play three test matches, what is the probability that

(a) India will lose all the three matches
(b) India will win at least one test match