LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION – **STATISTICS**

THIRD SEMESTER – **APRIL 2012**

# ST 3104/3101 - BUSINESS STATISTICS

Date : 28-04-2012 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**SECTION A**

**Answer ALL questions. (10 x 2 =20)**

1. Define median. Give an example.
2. Write any two applications of statistics in business.
3. Find the mode: 3,5,6,5,6,7,2,8,9,6,7,8,10,6.
4. Write down the formulae for Regression equations X on Y and Y on X.
5. Define correlation.
6. Mention any two uses of Index numbers.
7. What is Time Series?
8. Write down the formula for Karl Pearson’s coefficient of Skewness
9. Define Transportation Problem.
10. List out Methods of finding an Initial Basic Feasible Solution (IBFS).

**SECTION B**

**Answer any FIVE questions. (5 x 8 =40)**

1. Draw a Histogram and Frequency Polygon for the following data:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Class interval** | 500-509 | 510-519 | 520-529 | 530-539 | 540-549 | 550-559 | 560-569 |
| **Frequency** | 8 | 18 | 23 | 37 | 47 | 26 | 16 |

1. Write down the merits and demerits of statistics.
2. Calculate Q.D and coefficient of Q.D for the given data:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **X** | 10 | 20 | 30 | 40 | 50 | 80 | 90 |
| **F** | 4 | 7 | 15 | 18 | 7 | 2 | 5 |

1. Find coefficient of rank correlation between the variables X and Y.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Weight of fathers** | 65 | 66 | 67 | 68 | 69 | 70 | 71 |
| **Weight of mothers** | 67 | 68 | 66 | 69 | 72 | 72 | 69 |

15. Construct the Price index numbers to the following data by using the method of

(i) Laspeyre’s (ii).Paasche’s (iii). Marshall-Edgeworth (iv). Fisher’s Ideal index number

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Commodities** | **2010**  **P0 Q0** | | **2011**  **P1 Q1** | |
| **A** | 10 | 6 | 15 | 5 |
| **B** | 12 | 10 | 15 | 10 |
| **C** | 18 | 5 | 27 | 3 |
| **D** | 8 | 5 | 12 | 4 |

16. Calculate Karl Pearson’s Coefficient of Skewness:

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

17. Solve the following Assignment Problem, given the cost involved for each machine.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Works** | **Machines** | | | |
| **M1** | **M2** | **M3** | **M4** | |
| **W1** | 15 | 6 | 7 | 8 | |
| **W2** | 3 | 13 | 7 | 6 | |
| **W3** | 8 | 9 | 4 | 10 | |
| **W4** | 3 | 5 | 7 | 11 | |

18. Fit a Straight line to the following data.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **X** | 2 | 4 | 6 | 8 | 10 |
| **Y** | 4 | 3 | 5 | 3 | 6 |

**SECTION C**

**Answer any TWO questions. (2 x 20 =40)**

19. (i) Find the Mean and Standard Deviation from the following data:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Class interval** | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
| **frequency** | 3 | 61 | 132 | 153 | 140 | 51 | 2 |

(ii) Two cricketer scored the following runs in seven matches. Find who is more consistent              player.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **M.Hussey** | 67 | 29 | 95 | 83 | 44 | 101 | 72 |
| **V.Kholi** | 35 | 71 | 108 | 40 | 64 | 94 | 88 |

20. Obtain the Initial Basic Feasible Solution and the cost of the Transportation Problem by        Using **(i)** North-West Corner Rule, **(ii)** Least Cost method and **(iii)** Vogel’s Approximation       Method.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Origin** | **Destination** | | | | |
|  | **D1** | **D2** | **D3** | **Supply** |
| **O1** | 4 | 9 | 6 | **8** |
| **O2** | 5 | 5 | 3 | **11** |
| **O3** | 7 | 6 | 10 | **7** |
| **O4** | 3 | 8 | 4 | **17** |
| **Demand** | **10** | **12** | **21** | **43** |

21. The following table gives the age of cars of a certain make and annual maintenance costs.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Age of cars in years** | 2 | 4 | 6 | 8 | 10 | 12 |
| **Maintenance cost in Rs.(’00)** | 10 | 20 | 30 | 50 | 62 | 74 |

(i) Find the two Regression Equations.

(ii) Estimate the likely Age of cars in years when Maintenance cost in Rs 2500

(iii) Calculate the correlation betweenAge of cars in years and Maintenance cost.

22. Find the seasonal variations by the Link Relative Method to the following data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **YEAR** | | | | |
| QUARTER | **2007** | **2008** | **2009** | **2010** | **2011** |
| **I** | 30 | 35 | 31 | 31 | 34 |
| **II** | 26 | 28 | 29 | 31 | 36 |
| **III** | 22 | 22 | 28 | 25 | 26 |
| **IV** | 31 | 36 | 32 | 35 | 33 |

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