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**University Examinations 2015/2016**

FIRST YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN BUSINESS ADMINISTRATION AND DIPLOMA IN PURCHASING AND SUPPLIES MANAGEMENT

**SMB 2100: INTRODUCTION TO STATISTICS**

 **DATE: DECEMBER 2015 TIME: 11/2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Define statistics. (1 mark)
2. List four stages that are involved in a statistical investigation. (2 Marks)
3. Give four features of a normal distribution. (2 Marks)
4. Use graphical method to determine the mode for the following data:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Class | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 |
| Frequency | 2 | 7 | 21 | 25 | 30 | 35 | 28 | 12 |

1. Calculate the regression equation of x on y from the following data:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 1 | 2 | 3 | 4 | 5 |
| y | 2 | 5 | 3 | 8 | 7 |

 (4 Marks)

1. An event has the probability Find the complete binomial distribution for $n=5$ trials. (4 Marks)
2. Describe the four measurements of scales. (4 Marks)
3. By the use of a Scatter diagram explain the following levels of correlation:
4. Positive correlation
5. Negative correlation
6. No correlation (3 Marks)
7. Compute the mean and the standard deviation for the following data:

5,8,15,29,47,47,64,71,74 (4 Marks)

1. Fit a trend line to the following data by the method of semi average. (3 Marks)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Sales | 102 | 105 | 114 | 110 | 108 | 116 | 112 |

**QUESTION TWO (15 MARKS)**

1. Give the two divisions of statistics. (1 Mark)
2. Distinguish between primary data and secondary data. (1 Mark)
3. Describe the following tools of collecting data.
4. Interviews. (2 Marks)
5. Observations. (2 Marks)
6. Questionnaires. (2 Marks)
7. Sampling. (2 Marks)
8. Give three sources of secondary data. (3 Marks)
9. Give two purposes of statistics in business administration. (2 Marks)

**QUESTION THREE (15 MARKS)**

1. Construct a pie chart for the following information:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Product | A | B | C | D |
| Sales | 200 | 150 | 100 | 150 |

1. A manufacturing company produces three items A,B and C. The data below represents the sales of these products for four consecutive months.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Month** | **A** | **B** | **C** | **Totals** |
| Jan | 70 | 50 | 60 | 180 |
| Feb | 40 | 60 | 50 | 150 |
| March | 20 | 30 | 10 | 60 |
| April | 80 | 70 | 40 | 210 |

Use this information to draw a:

1. Simple bar graph (2 Marks)
2. Multiple bar graph (2 Marks)
3. Component bar graph (2 Marks)
4. The following are sales of a leading supermarket for the years 1995 and 1996

|  |  |  |
| --- | --- | --- |
| **Month** | **1995** | **1996** |
| January | 400 | 420 |
| February | 480 | 450 |
| March | 420 | 600 |
| April | 580 | 640 |
| May | 600 | 580 |
| June | 800 | 700 |
| July | 750 | 800 |
| August  | 600 | 750 |
| September | 550 | 600 |
| October | 500 | 480 |
| November  | 600 | 550 |
| December | 900 | 950 |

Construct a z-chart for the year 1996. (7 Marks)

**QUESTION FOUR (15 MARKS)**

The table below gives the marks of 2 tests given to candidates for a certain job qualification.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test I | 51 | 54 | 55 | 59 | 65 | 60 | 70 |
| Test II | 38 | 44 | 33 | 36 | 33 | 23 | 10 |

Use this information to calculate:

1. The Karl Pearson’s coefficient of correlation and comment on the value. (8 Marks)
2. The Rank correlation coefficient. (7 Marks)

**QUESTION FIVE (15 MARKS)**

1. From the following data, compute the price index number, by taking 1990 as the base year.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 |
| Price per unit | 18 | 20 | 24 | 36 | 44 | 34 |

 (3 Marks)

1. (i) Fit a poisson distribution for the following data:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| x | 0 | 1 | 2 | 3 | 4 | 5 |
| f | 20 | 15 | 7 | 3 | 1 | 1 |

 (4 Marks)

(ii) A variable $x$ follows the poisson distribution with mean=6. Calcualte given that 

1. P(X=0) (1 Mark)
2. P(x>2) (3 Marks)
3. A normal curve has and Find the area between and  (4 Marks)