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**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF MATHEMATICS AND ACTUARIAL SCIENCE**

**UNIVERSITY EXAMINATION FOR DEGREE OF BACHELOR OF EDUCATION ARTS, EDUCATION SCIENCE AND ACTUARIAL SCIENCE**

**1ST YEAR 1ST SEMESTER 2016/2017 ACADEMIC YEAR**

**(REGULAR) MAIN CAMPUS**

**COURSE CODE: SAS 101**

**COURSE TITLE: DESCRIPTIVE STATISTICS**

**EXAM VENUE: STREAM: Bed. ARTS & SCIENCE, Bsc. ACTUARIAL**

DATE: EXAM SESSION:

TIME: 2.00 HOURS

**Instructions:**

1. **Answer question 1 (Compulsory) and ANY other 2 questions**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

**QUESTION ONE (30 MARKS)**

1. Explain TWO branches of statistics. (2 Marks)
2. Outline FOUR objectives of collecting statistical information (4 Marks)
3. Explain THREE types of class intervals giving examples in each case where they can be applied.

(6 Marks)

1. Consider the following weights in kilograms of 50 first year students at Jaramogi Oginga Odinga University of Science and Technology



1. Construct a frequency distribution for the data using appropriate type of class interval

(4 Marks)

1. How many students have more than 41 kilograms of weight (2 Marks)
2. Explain THREE main purposes of index numbers. (2 Marks)
3. State TWO objectives of time series (2 Marks)
4. The following data shows measurements of height of students in meters

1.2, 5.0, 6.1, 7.8, 9.3, 13.7

i. Find the percentile that corresponds to 9.3 (2 Marks)

ii. Find the 20th percentile (3 Marks)

1. Discuss FIVE properties of coefficient of correlation (5 Marks)
2. Using sketch of graphs explain and interpret the THREE types of skewness

(3 Marks)

**QUESTION TWO (20 MARKS)**

1. Outline TWO merits and TWO demerits of mode (4 Marks)
2. Out of 400 statistics students who sat for Continuous Assessment Test, a random sample of 30 students is taken and their CAT’s marks are as follows;

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| CAT Marks | 5 | 6 | 7 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 17 | 18 | 21 | 22 | 26 |
| No. of Students | 2 | 1 | 1 | 1 | 3 | 2 | 3 | 4 | 2 | 5 | 1 | 1 | 1 | 2 | 1 |

From the data answer the following;

1. Construct a cumulative frequency distribution table for the data. (3 Marks)
2. Starting with the class 5 – 9, construct a group data frequency distribution for the data.

(3 Marks)

1. Compute the grouped data’s Variance, Mean, Median and Mode. (10 Marks)

**QUESTION THREE (20 MARKS)**

1. Outline THREE merits and THREE demerits of chain index numbers. (6 Marks)
2. Calculate the index number from the following data by applying
3. Bowley’s price index (4 Marks)
4. Marshall-Edgeworth price index (3 Marks)
5. Fischer’s method (3 Marks)
6. Kelly’s Method (4 Marks)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Base Year | | | Current Year | | |
| Commodity | Price (Kshs) | Qty (bags) | Commodity | Price (Kshs) | Qty (bags) |
| A  B  C | 10  20  2 | 3  15  25 | A  B  C | 8  15  3 | 4  20  30 |

**QUESTION FOUR (20 MARKS)**

The following chart shows the percentage of persons living below the poverty level in the United States for the years 1992 – 1997.

Persons Living Below Poverty Level

|  |  |
| --- | --- |
| Year (X) | Percent (Y) |
| 1992  1993  1994  1995  1996  1997 | 14.8  15.1  14.5  13.8  13.7  13.3 |

1. Construct a scatter diagram placing the year on the horizontal.
2. Do you believe that a correlation exists between the year and the % of persons living below the poverty level? If so, is it positive or negative? Explain?
3. Determine the (r) (Use only the last two numbers in each year in your calculations e.g 92, for 1992)
4. At, does a correlation exist?
5. Determine equation of a line of best fit between year and persons living below the poverty level.
6. Use the equation in part (e) to predict the percentage of persons below poverty level in 1998 (20 Marks)

**QUESTION FIVE (20 MARKS)**

1. Suppose the sugar price has risen by 6%, 11%, 13%, and 15% in each of the four successive years. Determine the average price increase of sugar. (4 Marks)
2. The following are nine prices of stock on New year stock exchange. Find the standard deviation.

15, 28, 32, 36, 50, 52, 68, 74, 104 (4 Marks)

1. A normal distribution has a mean of 100 and a standard deviation of 10. Find the Z-scores for the following values. (4 Marks)
2. 110
3. 115
4. 100
5. 82
6. Explain FOUR ways of classifying data. (4 Marks)
7. Outline FOUR merits of Mean (4 Marks)