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**University Examinations 2015/2016**

FIRST YEAR FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN BRIDGING MATHEMATICS

**SMA 0004: PROBABILITY AND STATISTICS**

 **DATE: AUGUST 2016 TIME: 11/2 HOURS**

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

**QUESTION ONE (30MARKS)**

1. Give a brief definition of the following terms:
2. Sample (1 Mark)
3. Statistics (1 Mark)
4. Primary data (1 Mark)
5. Secondary data (1 Mark)
6. The following data represents the heights of 10 pupils in class five. Use the data to find;

3,4,3,5,3,6,9,8,4,3

1. Mean (1 Mark)
2. Median (1 Mark)
3. Mode (1 Mark)
4. Range (1 Mark)
5. Variance (2 Marks)
6. Highlight any four methods of collecting data. (4 Marks)
7. The probability of a woman giving birth to a male is 0.51 and of giving birth to a female is 0.49. James and Mary would like to have a family consisting of two girls and one boy
8. What is the probability of having 2 girls and 1 boy? (3 Marks)
9. What is the probability of the first 2 children being a boy and then a girl? (3 Marks)
10. Highlight any four qualities of a good sample. (4 Marks)
11. The data below presents sisal and pyrethrum earnings from the year 2000 to 2006

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Year  | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Small scale | 4 | 7 | 5 | 9 | 10 | 11 | 14 |
| Large scale  | 7 | 15 | 11 | 9 | 13 | 14 | 16 |

Present the above information in a composite Bar Chart. (4 Marks)

1. What is the difference between sample space and sample outcome. (2 Marks)

**QUESTION TWO (10 MARKS)**

1. Define mean deviation. (1 Mark)
2. Calculate the variance and Standard deviation of the following data. (9 Marks)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mark (x) | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| Students (y) | 2 | 3 | 4 | 4 | 5 | 8 | 7 | 5 | 4 | 3 | 2 | 2 | 1 |

**QUESTION THREE (10 MARKS)**

1. Identify any five axioms of probability. (5 Marks)
2. In a certain school, there are 3 streams; 1A, 1B and 1C. Class 1A has 37 students, 1B has 35 students and 1C has 32 students. The average mark in a maths set for class 1A was 61.5, 1B had 60.3 and 1C had 62.9. Compute the average mark of form 1. (5 Marks)

**QUESTION FOUR (10 MARKS)**

1. Give any four examples of discrete probability distribution. (4 Marks)
2. The following weights refer to weights of eight students in first and second year

First year (x) 52 63 45 36 72 65 47 25

Second year (y) 62 53 51 25 79 43 60 33

Obtain the regression equation of y and x. (6 Marks)

**QUESTION FIVE (10 MARKS)**

1. Identify and briefly explain any four components of time series. (4 Marks)
2. Discuss five stages in a statistical investigation. (6 Marks)

**QUESTION SIX (10 MARKS)**

1. An examination consists of four true or false questions i.e the answer to each question is true or false. Consider a student who has no knowledge of the subject matter. What is the probability that the student shall:
2. Get exactly none of the four questions correctly. (3 Marks)
3. Get exactly one of the four correct. (3 Marks)
4. What are the characteristics of Binomial distribution? (4 Marks)