

**W1-2-60-1-6**

**JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY**

**UNIVERSITY EXAMINATIONS 2019/2020**

**THIRD YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOTECHNOLOGY AND BACHELOR OF SCIENCE IN MICROBIOLOGY**

**SBT 2304: BIOSTATISTICS AND EXPERIMENTAL DESIGN**

**DATE: DECEMBER, 2019 TIME: 2 HOURS**

INSTRUCTIONS: ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

 USE THE 0.05 SIGNIFICANCE LEVEL

**QUESTION ONE: 30 MARKS**

a. State the laws of probability. (6 marks)

b. Briefly describe the principles of experimental design. (6 marks)

c. The following data are dry weights (g) at a vegetable variety grown in pots after application of two growth hormones (A and B). Test whether the two growth hormones have different effects on the dry weight of the vegetable. (8 marks)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Growth hormone A: | 8.4 | 4.5 | 3.8 | 6.1 | 4.7 | 11.2 | 9.6 |  |
| Growth hormone B: | 11.6 | 7.5 | 10.4 | 8.4 | 13.0 | 7.0 | 9.6 | 13.2 |

d. State the differences and similarities between ordinal and ratio scales of measurements. (6 marks)

e. In a population, a researcher found out that 7-% of the persons are HIV positive. If the researcher randomly selects five persons from the population, what is the probability that two of them will be HIV positive? (4 marks)