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**University Examinations 2015/2016**

FIRST YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER IN PUBLIC HEALTH AND MASTER OF SCIENCE IN EPIDEMIOLOGY

**HPM 5112: MEDICAL BIOSTATISTICS**

**DATE: NOVEMBER 2015 TIME: 3 HOURS**

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

**QUESTION ONE (30 MARKS)**

1. Define and discuss qualitative and quantitative data (6 Marks)
2. (i) Describe and discuss type 1 and type 11 errors (6 Marks)

 (ii) Explain the errors to be minimized in Biological surveys (4 Marks)

1. State and describe components of hypothesis testing (9 Marks)
2. Explain the central limit theorem and it’s properties (5Marks)

**QUESTION TWO (10 MARKS)**

A Medical Clinic wishes to determine the average time a patient waits to be served. The clinic took a random sample of 100 patients and found that mean waiting time was 7.2 minutes. Assuming that the population standard deviation is known to be 15 minutes of wait for medical services in the clinic. Fund 95% and 99% confidence interval of the mean waiting time for the patients seeking medical services.

**QUESTION THREE (10 MARKS)**

Thirteen patients with severe chronic cur flow limitation were the subject of a study by Kimani et all. Who investigated the effectiveness of a treatment to improve gas exchange in such subjects.

The following data are the body surface area (m2) of the patients.

2.10 1.74 1.68 1.83 1.57 1.71 1.73

1.65 1.74 1.57 2.76 1.90 1.77

 a) Compute the mean

 b) Compute the standard deviation

 c) Compute coefficient of variation (10 Marks)

**QUESTION FOUR (10 MARKS)**

Describe the sampling methods. (10 Marks)

**QUESTION FIVE (10 MARKS)**

Ruth and Jane (2012) reported the following data on pituitary gland weight in a sample of 4 (four) white rats

Mean=9.0mg; Standard error of mean=3

1. What was sample standard deviation
2. Construct a 95% confidence interval for the mean pituitary weight of a population of similar rats

 (10 Marks)