

**MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY EXAMINATIONS 2016/2017 ACADEMIC YEAR**

**THIRD YEAR FIRST SEMESTER**

**SCHOOL OF TOURISM AND NATURAL RESOURCE MANAGEMENT**

**BACHELOR OF SCIENCE IN FORESTRY**

**COURSE CODE: FOR 310**

**COURSE TITLE: FOREST INVENTORY**

**DATE: 26TH JANUARY, 2017 TIME: 11:00AM-1:00PM**

**INSTRUCTIONS TO CANDIDATES**

I**nstruction:** Answer All questions in Section A, and Any three in section B.

***This paper consists of 2 printed pages. Please turn over***

**SECTION A**

1. Define the following terms **(5 marks)**
2. Sampling unit
3. Sampling frame
4. Sample design
5. Confidence interval
6. Statistical Inference
7. Explain five reasons why it is not advisable to carry out a 100% tree assessment in a forest **(5 marks)**
8. Define stratification, and explain why it is important in forest inventory **(3 marks)**
9. Using Smalian’s and Huber’s formulae determine the volume of a tree log measuring 12 metres long with a larger diameter of 55 cm and smaller diameter of 28 cm. Assume that that diameter at the middle of the log is the average between the larger and smaller diameter. Give comments on the performance of each formula in determining tree volumes **(5 marks)**
10. What are the three advantages to using digital data collectors in the field over paper-based methods **(3 marks)**
11. Differentiate between temporary and permanent plots based on purpose and application **(4 marks)**

**SECTION B**

1. Discuss the applications of remote sensing in forest inventory **(15 marks)**
2. The forest inventory data below was recorded using a digital data collector for tree number 14 in plot 3. Draw a rough sketch of the tree showing the areas as described by the figures on the diagram **(15 marks)**

Key

D Diameter

Br-Branching

Sw- Sweep

F- Extra Features

I-Internode

1. You have been tasked with being a team leader for the forest inventory data collection field work for Mau Forest. Describe the procedure you would use to carry out a successful forest inventory data collection **(15 marks)**
2. The following equation was used to estimate the volume of wood in a *Podocarpus latifolius* plantation in Timboroa;

 Volume=0.0012 (dbh)2-0.033 (dbh) + 0.5

1. Develop a table to show the volumes of trees of dbh 40, 45, 50, 55 and 60 **(10 marks)**
2. On a graph of volume (y axis) vs dbh (x axis) plot this relationship using dbh value of 40, 45, 50, 55 and 60 **(5 marks)**

**//END**