## NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

## FACULTY OF APPLIED SCIENCES DEPARTMENT OF FOREST RESOURCES AND WILDLIFE MANAGEMENT BACHELOR OF SCIENCE HONOURS DEGREE MAIN EXAMINATION

## FOREST MENSURATION: EFW 4101

January 2013 T			me Allowed: 3 Hours				Total Marks: 100		
<b>INSTRUCTIONS TO CANDIDATES:</b> Answer <b>QUESTION ONE</b> and any <b>THREE</b> others. Each question carries <b>25 marks</b> .									
1. Diameter and height measurements are the basis for forest mensuration and forest production. Discuss.									
2. Describe the procedure for calculating the volume of a leaning tree which is forked just the ground level and growing on an old termite mound.									
3. The Forestry Commission intends to introduce three new species into the country. Trials were set up 10 years ago in 3 one hectare plots with a total 1000 trees per species. Describe									
(i) How you would determine the form factor of each species [12marks]									
(ii) How you would construct volume tables for each species									3marks]
4. Describe the procedure for determining number of stem, basal area and volume per hectare in Mzola Forest with an area of 67 200 hectares.									
<ul> <li>5. A forest biometrician monitored growth of a tree from 1970 (five years after planting) to 2010 by measuring its height and circumference at breast height. Data recorded are presented in Table 1</li> <li>Table 1. tree circumference and height data recorded from 1970 to 2010.</li> </ul>									
Year	1970	1975	1980	1985	1990	1995	2000	2005	2010
Circumference, cm	15.6	25	40.2	63	99	127	131	133	134
height	10.1	12.2	13.8	14.4	15.8	16.3	16.5	16.8	17

Use data in Table 1 to
(a) to calculate volume increment
[10 marks]
(b) Construct the Mean annual basal area increment curve
[10 marks]
(c) Comment on the Current Annual Increment curve
[5marks]

6. With the aid of examples, explain the following sampling techniques

(i) 3P sampling
(ii) One stage sampling
(iii) Point- Centre Quarter method

## \*\*\*END OF PAPER\*\*\*