

**MAASAI MARA UNIVERSITY**

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

**THIRD YEAR FIRST SEMESTER**

**SCHOOL OF TOURISM AND NATURAL RESOURCE MANAGEMENT**

**BACHELOR OF SCIENCE (FORESTRY)**

**COURSE CODE: WST 300**

**COURSE TITLE: WOOD PROPERTIES**

**DATE: 25th JANUARY, 2017 TIME: 08:30-10:30 AM**

**INSTRUCTIONS TO CANDIDATES**

Answer **ALL** questions in section **A** and any other **THREE** in section **B.**

***This paper consists of 3 printed pages. Please turn over***

**SECTION A** *(Answer all questions)*

**Question 1**

1. Discuss the importance of determining the properties of commercial timber. **(4 Marks)**
2. Briefly discuss the effect of silvicultural activities on wood properties and quality of timber for various end uses. **(4 Marks)**
3. Describe the microfibril angle (MFA) of the wood cell wall layers using illustrations and explain their effects on mechanical properties of wood.

**4 Marks)**

**Question 2**

1. Write short notes on the following in relation to wood failures
   1. Creep and relaxation
   2. Rate of loading (@**2 = 4 Marks)**
2. Illustrate by use of a diagram, the cell wall organization structure and indicate the chemical composition in each layer **(5 Mark)**
3. Briefly discuss factors that affect the natural durability of wood. **(4 Marks)**

**SECTION B** *(Answer any three)*

**Question 3**

1. Explain giving relevant examples why wood parenchyma cells are important in identification of hardwoods. **(5 Marks)**
2. Categorize the different types of water according to their location in the wood micro/macrostructure. **(5 Marks)**
3. Briefly discuss the electrical properties of wood **(3Marks)**

**Question 4**

1. Discuss in details various wood seasoning defects that occur when drying stresses exceed the strength properties of wood using illustrations where possible. **(5 Marks)**
2. Wood decay may occur in timber in all stages from standing tree to the final stages of wood conversion. Explain this statement and discuss the conventional methods of protecting timber. **(5 Marks)**
3. Explain the concept of wood anisotropicity and it’s on the dimensional stability of wood? **(5 Marks)**

**Question 5**

1. Explain the different kinds of knots and their effect on wood strength using illustrations where appropriate. **(6 Mark)**
2. List the advantages of wood as a building material over other materials **(5 Marks)**
3. What is the influence of wood anisotropy on the dimensional stability of wood **(4 Marks)**

**Question 6**

1. Explain the reason of the high tensile strength of wood in the longitudinal direction of the tree as compared to the transverse direction and the effect to end use of wood in relation to the cellulosic bonds. **(4 Marks)**
2. Briefly discuss the major categories of softwood timber grades **(6 Marks)**
3. Give the properties of wood lignin and some possible uses **(5 Marks)**

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