



# **MAASAI MARA UNIVERSITY**

**REGULAR UNIVERSITY  
EXAMINATIONS 2018/2019  
ACADEMIC YEAR  
FOURTH YEAR SECOND SEMESTER**

**SCHOOL OF TOURISM AND NATURAL  
RESOURCE MANAGEMENT  
BACHELOR OF SCIENCE (FORESTRY)**

**COURSE CODE: FOR 421  
COURSE TITLE: NON-WOOD AND  
FOREST  
PRODUCTS**

**DATE: 23<sup>RD</sup> APRIL 2019  
1630HRS**

**TIME: 1430 -**

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**INSTRUCTIONS TO CANDIDATES**

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

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

**SECTION A (25 MARKS)**

1. (a) Identify the criteria used in grouping wood products into major or minor products

**(3Marks)**

(b) Explain the merits and demerits of the whole tree utilization concept

**(4Marks)**

(c) Discuss briefly the use of wood bark in Kenya and the increase in the recent past.

**(3Marks)**

(d) Identify the properties of bark that make it potential raw material for industrial use?

**(3Marks)**

2. (a) Write short notes on the following chemical wood products:

- (i) Cellulose ethers
- (ii) Modified cellulose
- (iii) Regenerated cellulose

**(6Marks)**

(b) Explain the factors that influence quality of tannin from *Acacia meansii*?

**(4Marks)**

(c) Identify the factors that must be considered before extraction of tannin from source.

**(2Marks)**

**SECTION B (45 MARKS)**

3. (a) Discuss in details the “Integrated Management of Non Wood Forest Products resources” in relation to scientific knowledge and technology.

**(4Marks)**

(b) Explain the advantages and disadvantages of “domestication” of Non Wood Forest Product (NWFP) resources.

**(4Marks)**

(c) Discuss the research and development requirements for improving technology and management of non-wood forest products.

**(4Marks)**

(d) Explain the factors that influence sustainability of non-wood forest products

**(3Marks)**

**4.** (a) Identify the factors that affect market supply of gums in Kenya. **(4Marks)**

(b) Discuss major challenges experienced by communities living in ASALS dealing with gums as source of livelihood.

**(4Marks)**

(c) Discuss tannins as classified by Parkin and Everest.

**(3Marks)**

(d) Discuss any two methods used in the purification of tannins.

**(4Marks)**

**5.** (a) Discuss any three types of gums giving details of their properties and composition.

**(6 Marks)**

(b) Explain the factors that increase gum exudation from a tree. **(2 Marks)**

(c) Explain the main problems in wood saccharification.

**(4 Marks)**

(d) Explain why the potential for fermentable sugar yield is lower in hardwoods than softwoods.

**(3Marks)**

**6.** (a) Discuss any two commercial methods that you can use for production of ethanol from wood or wood waste in Kenya.

**(6 Marks)**

(b) Give details of wood hydrolysis by percolation process. **(4 Marks)**

(c) Discuss the potential of bee-keeping as a source of livelihood for some Kenyan communities.

**(5Marks)**

**//END**