



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2017/2018 ACADEMIC YEAR
FOURTH YEAR SECOND SEMESTER**

**SCHOOL OF TOURISM AND NATURAL
RESOURCE MANAGEMENT
BACHELOR OF SCIENCE IN FORESTRY**

COURSE CODE: FOR 421

COURSE TITLE: NONWOOD FOREST PRODUCTS

DATE: 16TH APRIL, 2018

TIME: 0830 - 1030AM

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 (Attempt all questions- 25 Marks)

Question 1

- (a) Explain the criteria used in grouping wood products into major or minor products. **(3 Marks)**
- (b) Explain the merits and demerits of the whole tree utilization concept. **(4 Marks)**
- (c) explain why the use of tree bark in Kenya has been on the increase in the recent past. **(5 Marks)**

Question 2

- (a) State the factors that increase gum exudation from a tree. **(2 Marks)**
- (b) Explain the main problems in wood saccharification. **(4 Marks)**
- (c) Explain why the potential for fermentable sugar yield is lower in hardwoods than softwoods. **(3 Marks)**
- (d) What are the properties of bark that make it potential raw material for industrial use? **(4 Marks)**

SECTION B (Answer any 3 questions- 45 Marks)

Question 3

- (a) Discuss in details the “Integrated Management of Non-Wood Forest Products resources” in relation to scientific knowledge and technology. **(4 Marks)**
- (b) State advantages and disadvantages of “domestication” of Non-Wood Forest Product (NWFP) resources. **(4 Marks)**
- (c) Discuss the research and development requirements for improving technology and management of non-wood forest products. **(4 Marks)**
- (d) Give the factors that influence sustainability of non-wood forest products **(3 Marks)**

Question 4

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

- (i) Cellulose ethers
- (ii) Lingo-sulfonates
- (iii) Modified cellulose
- (iv) Regenerated cellulose

(8 Marks)

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

(4 Marks)

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

(3 Marks)

Question 5

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

(5 Marks)

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

(4 Marks)

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

(3 Marks)

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

(3 Marks)

Question 6

(a) Discuss any two types of gums giving details of properties and composition.

(4 Marks)

(a) Discuss any one commercial method used for production of ethanol from wood or wood waste.

(3 Marks)

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

(4 Marks)

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

(4 Marks)

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