

UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE (GENERAL) DEGREE
SEMESTER I (LEVEL III) EXAMINATION- July, 2023

Subject: Botany

Course Unit: Forestry (BOT 3162)

Time: One and half hours

Index No. :

Answer **THREE** questions **ONLY**, INCLUDING question number 01

1.

A) Define the term “forest” according to the Food and Agriculture Organization (FAO).

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(12 marks)

B).

i). List the **THREE** types of calipers used for measuring the diameter of a tree trunk.

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(6 marks)

C). Questions from i to iii are based on the following diagram of cross section of a tree trunk. Note: Circumference of the tree trunk at breast height is 50 cm.



i). Label an annual ring on the diagram.

(02 marks)

ii). Calculate the DBH (diameter at breast height) value of the tree trunk.

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(05 marks)

iii). Calculate the basal area (BA) of the tree.

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(05 marks)

section of a tree

D). What are the uses of Biltmore stick in dendrometrics?

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(04 marks)

E). There are several methods to measure the height of a standing tree.

i). Give **FOUR** indirect methods to measure the height of a tree.

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(04 marks)

ii). Define the following terms related to the height of a tree.

- Standard timber bole height

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- Merchantable height

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(10 marks)

iii). When measuring the height of a tree inside a forest ecosystem, what are the possible precautions you could take to minimize any errors?

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(10 marks)

F). Given below is a profile diagram of an un-cut forest stand maintains under the Shelterwood Uniform System.

i). Draw a profile diagram of the above stand as it may appear after completing the removal cut. Use the space given below to draw the illustration.



Un-cut forest stand

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After removal cut

(06 marks)

ii). What is the scientific basis of the above-mentioned silvicultural system?

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(06 marks)

G). Following measurements of an even-aged plantation of *Tectona grandis* were taken to prepare a forest inventory.

Plant density = 3,000 stems per hectare.

Basal area = 1.848×10^6 square inches.

Mean merchantable height = 2 sixteen feet logs.

i). Calculate the mean diameter of a single tree.

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(10 marks)

ii). Estimate the amount of extractable board feet wood volume per hectare.

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(20 marks)

2).

- i). List ten (10) characteristic features to differentiate a Boreal forest (taiga) from a Tropical rainforest.

(80 marks)

- ii) Briefly describe the importance of growth rings in tree trunks in forestry.

(20marks)

3).

- i). "Some conventional silvicultural systems maintain the greenery of the forest throughout the process while it is not so in other conventional silvicultural systems". Comment on the statement.

(60 marks)

- ii). Briefly discuss the demerits of the Shelterwood silvicultural system.

(40 marks)

4).

- i). If you are going to establish a man-made forest to obtain high quality timber by harvesting a natural sub-montane forest ecosystem, how would you select the best silvicultural system to fulfill your main goal? Briefly discuss.

(60 marks)

- ii). What is your opinion on harvesting a natural forest ecosystem for the purpose mentioned above?

(10 marks)

- ii). Write a short account on how you would select the most appropriate plant species for the selected silvicultural system (in 4. i).

(30 marks)