

National Exams December 2008

04-For-A6, Silviculture

3 hours duration

NOTES:

1. If doubt exists as to the interpretation of any question, the candidate is urged to submit with the answer paper, a clear statement of any assumptions made.
2. This is an OPEN BOOK EXAM.
Any non-communicating calculator is permitted.
3. Question 1 must be completed, of the 6 remaining questions, the examinee has the option of choosing the remaining 4 questions. FIVE (5) questions constitute a complete exam paper. The first five questions as they appear in the answer book will be marked.
4. Each question is of equal value of 20 marks.
5. Most questions require an answer in essay format. Clarity and organization of the answer are important.

1. Define Silviculture in terms of wood productivity and non timber management objectives. Define why foresters practice silviculture and outline their basis for utilizing this tool with respect to forest management.
2. In terms of regeneration, describe the modes of regeneration for hardwood and softwood species. Demonstrate your understanding of the differences between hardwood and softwood species and their ability to inhabit an area after a disturbance. In short, why do pioneer species dominate a site earlier in natural succession than others and show this development over time.
3. List and define the natural stages of stand development following a disturbance as per Ralph Nyland, Silviculture Concepts and Application. Graphically represent the growth of a stand over time, locating each of the stand stages.
4. In terms of stand development, explain why foresters use interventions such as pre-commercial thinning, plantations, natural regeneration, commercial thinning and harvest practices to influence stand growth. Demonstrate your understanding of each intervention by defining the implementation choices to be made, when and why one would consider each intervention and their resulting impact on stand growth and development.
5. Shade tolerance has an impact on how trees grow and develop. Explain the difference between shade tolerance and intolerance, giving 3 examples of each species. Describe their reproductive strategies, longevity and tolerance to water.
6. Commercial Thinning is a silviculture tool implemented in stands in the hopes of influencing growing stock. Describe what commercial thinning is and explain 3 common commercial thinning types showing their resulting impact on stand average dbh after the intervention, density and potential stand health.
7. What is meant by scarification or site prep? When should scarification be implemented? What is the impact to the site and how does this related to plantation establishment?

Marking Scheme

All questions have equal weight. All question components are weighted equally.