FSTY 405 — Silviculture II

Midterm, 16 October 2007

Name:

Student number:

- Ensure that your name and student number are correctly entered above.

- Answer in the spaces provided, writing down clearly any intermediate steps. Use the reverse as scratch pad. Writing just the final numerical answer is *not* acceptable.

- Write clearly, and use ink, not pencil.

- Answer clearly and to the point. Nonsense will be penalized.

- Pages: 4. Questions: 4, worth 1 mark each.

- Time: 45 minutes.

- Info (you may or may not need this):
  $a^x a^y = a^{x+y}$, $(a^x)^y = a^{xy}$, $y = a^x \Leftrightarrow x = \log_a y$,
  $\log_e x \equiv \ln x$, $e^x \equiv \exp(x)$,
  $\log_a xy = \log_a x + \log_a y$, $\log_a x^y = y \log_a x$.
  Area of circle of radius r: πr^2.

1. Assume a simple yield function

$$V = 20.3(H - 5.12) \,,$$

with a site index model

$$H = 1.62S(1 - e^{-0.0308t})^2 \,.$$

V is volume in m^3/ha, H top height in metres, t age in years, and S is the site index.

For site index 21, at what age does the volume reach 300 m^3/ha?

2. Fill in the blanks:

Age (years)	Yield (m^3/ha)	PAI (m^3/ha-yr)	MAI (m^3/ha-yr)
20	. . . .		3
		. . . .	
30	105		. . . .
		5.5	
40	. . . .		. . . .

(Note that changes are on the intervals between ages).

3. What is, and what is the use of:

   (a) Zone of influence

   (b) Eichhorn's law

   (c) 5-year growth intercept

   (d) Normal yield table

4. Clutter *et al* give the following anamorphic model for slash pine:

$$H = ae^{-b/A};,$$

where H is top height, A is the total age in years, and $b = 12.45$. An 18 years-old stand has a top height of 20 m. Estimate the site index (base age 25).