ONE (4 marks): Tree Factor (TF) is an important concept in forestry and forest modelling.

a) What is Tree Factor (TF)?

TF (a.k.a. expansion factor) is the number of trees/acre represented by a tree in an inventory.

b) FVS considers TF explicitly. Why?

The model needs TF to scale individual tree estimates to the stand level. The model also uses TF for mortality and regen modelling.

c) How is TF determined in FVS?

By specifying the inventory design explicitly.

d) Do you need to consider TF at all when you choose stand table projection, using e.g. movement ratios or Adams & Ek? Explain.

Yes, in the sense that you need a stand table to begin with to use these models which probably comes from inventory.

TWO (2 marks): FVS simulates three attributes or features of individual trees. What are the three attributes?

DBH
Height
Crown Ratio
THREE (2 mark): If the TASS model can simulate trees in so much more detail than FVS can, why don't more folks use TASS?

TASS requires a very large amount of individual tree measurements to run. Also spatial data on (x,y) for each tree are required. Finally, TASS requires similar data to calibrate. All are difficult and costly, so folks don't do it.

FOUR (2 marks): The Lake States FVS variant uses an equation to predict diameter increment that has two parts. The first is called "POT" and the second "MOD". Explain what POT and MOD are, briefly.

POT is growth potential, which is a function of species, size and productivity.

MOD is a "growth modifier" which scales the POT down to account for the effect of competition. Thus, mod ranges: 0 ≤ mod ≤ 1

So Δd = POT * MOD