STAT 473, Test 1, Spring 2007, Study Guide

Important: In general, unless the problem states otherwise, unevaluated expressions, such as $(1-e^{-(.03)6})/(1+(1.03)^{-2})$ and $\frac{1}{65}\int_0^5 e^{-.05\,t}\,dt$ are just as acceptable as numeric answers, as long as the answer can in principle be reduced to a number. It is even acceptable to give an answer of the form "$P = A_x/\ddot{a}_x$ where A_x is as computed in problem 1a and $\ddot{a}_x = \ldots$".

If I were studying for this test, I would certainly prepare for the following question types. Note: I can of course always change constant force problems into De Moivre, especially if I don't ask you to evaluate the integral. The symbols (WA, # B) refer to homework problem B for week A.

Note: I do not intend to ask any Markov-reserve questions.

(1) A shock problem using last survivor. (W1, # 3)
(2) I could ask, say, for "the probability of withdrawal between ages 20-25 due to either decrement (a) or decrement (b)." (W1 #2,W2 # 2). I could also ask such a question based on a multiple decrement table.
(3) Construct a multiple decrement table. (Bowers Exercise 10.17)
(4) Convert between q and q' (or p and p') using either UDD or constant force between decrements. [Formulas (10.5.9), (10.5.12), the formula at the bottom of p. 330, and formula (10.6.3), p. 329. Note: The latter two formulas assume ${}_tq'^{(i)}$ is UDD while the former two work if ${}_tq^{(i)}$ is either UDD or constant force. The condition "${}_tq'^{(i)}$ is UDD" is described as "UDD in each associated decrement" and "${}_tq^{(i)}$ is UDD" is described by "each decrement and the total decrement are UDD." Confusing? You bet!]
(5) Compute various probabilities from either a multiple decrement table or a given distribution. (Bowers Exercise 10.4)
(6) Compute APV for policies that pay differing amounts for different decrements. (Bowers Exercise 11.2)
(7) Compute the expense loaded premium. (Bowers, Exercise 15.5, 15.10(b).)
(8) Asset share computations.
(9) Markov annuity (payment when there is no transition).

(10) Markov insurance (payment when there is a transition).