Prototypes of questions for the 'Final Test for Financial Econometrics'

Theoretical part, chapter 4:

What does spurious regression mean? What misleading results are to be expected when
two independent random walks are regressed on each other.

Given a set of I(1) variables, {x1_t,...,xk_t}. What conditions must be fullfilled so that they can be said to be cointegrated.

What property has the LS estimate of b in y_t = a + b x_t + u_t.
(a) If y and x are I(1) and cointegrated.
(b) If y and x are I(1) and not cointegrated.
(c) If y and x are I(0).

Give an example of a system of I(1) variables, which are not cointegrated.
Transform it to the VEC form. Give the Pi matrix.
What is the rank of Pi?
What is the number of the stochastic trends.

Given a 2-dim system of I(1) variables, which are cointegrated, in VEC form.
What is the number of stochstic trends in the system.
How do you calculate a representation of the stochastic trends.
Choose some numeric values for the alpha and beta matrix.
Check whether the alpha values are plausible, so that the induced changes in the variables actually lead to a convergence to the long run relation.

Empirical tests (augmented Dickey-Fuller) make you conclude that 3 variables are integrated of order 1.
You build up a 3-dim system, and test with the trace/rank test for the number of cointegrating relationships. You find a rank of Pi of 3 (3 eigenvalues are different
form 0). How do you proceed in your empirical analysis.

The output of the Johansen precedure of a 3-dim CIVAR gives the cointegrating relations
1 x_(t-1) - 2 z_(t-1) = u_(t-1)
1 y_(t-1) + z_(t-1) = v_(t-1)
When applying the bivariate Engle-Granger procedure we find (rounded numbers)
x_t = y_(t) + 3 z(t) + w_t
Comment.

State the asymptotic properties of the estimates of the Johansen procedure in case
you know the form of the true model, the model is out of the class of models for which the asymptotic properties have been dreived, and you have estimated that model.

Theoretical part, chapter 5:

What is the difference of the data structure of pooled data wrt panel data.

If you want to test a simple model for pooled data against a FE version, which test would you use.

Why do researchers take up the burden and investigate FE and RE models instead of including the relevant indivdual characteristica in the model (in a model for the
variance of the errors, or both).

State the model (equations, assumptions) for
(a) pooled data, (b) the FE model, (c) the RE model.

The R2 of an estimated RE and of an estimated FE model is difficult to compare. Why.

What are the properties of the FE estimator for the FE model, what for the RE model.

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The RE estimator is a GLS estimator, which weighes the within and between variances.
As boundary cases the FE and the estimator for pooled data turns out. Summarize the 3 cases we have distinguished.

What is the null hypothesis of the Hausman test for panel data, what the alternative.

Which estimator have we used as starting point for the dynamic panel model, and why?

The Arellano-Bond estimator takes up instruments proposed by Anderson-Hsiao. What property of the instruments is used for the GMM estimator.
What are the asy properties of a GMM estimator (N --> infty, T fix), if the estimated
model is the true one.
(Consider only dynamic panel models without third explantories.)

Applications:
Have a look at all empirical homework problems.