Example questions on Lecture 3 (Linear Prediction):

1) What is the basic (core) task of linear prediction?
2) How can the prediction coefficients be calculated based in the autocorrelation of the signal to predict?
3) What is the relation of the prediction error filter and the prediction filter itself?
4) How do the optimal prediction coefficients for white noise look like?
5) What is the prediction error gain? Which power quantities are set into relation to calculate the prediction error gain?
6) How can one profit by prediction for audio coding?
7) How does a filter look like, based on the prediction coefficients, which models the spectral envelope of a signal?
8) Describe a method which allows estimating the autocorrelation function of a signal.
9) What is the core concept of the Levinson-Durbin recursion? – For which purpose is it used?
10) Comparing to the direct calculation of the prediction coefficients by solving the Yule-Walker equation (where the matrix inversion is necessary) with the result of the Levinson-Durbin recursion: Is there a difference of the results? – Explain.
11) Which criterion do the reflection coefficients fulfill? Which property of the prediction error filter is directly related to this criterion?
12) What is the concept of backward prediction?