Examination: **Derivatives (1928)** **Winter Term 2005/06**

Examiner: **Prof. Dr. Peter Reichling**

The following aids can be used: English language dictionary without any marking.

This examination comprises **7 problems**. All of them are to be solved.

EXAMINATION QUESTIONS:

Problem 1. (8 Points)

Explain the leverage effect of a long call. (Support your answer with a small numerical and graphical example.)

Problem 2. (8 Points)

Set up an arbitrage table for the case when the lower bound of a European call is violated.

Problem 3. (6 Points)

Explain briefly why it is not optimal to exercise an American call option on a non-dividend-paying stock before the expiration date.

Problem 4. (15 Points)

Derive the value of a European call option on the basis of the one-period binomial model. Why is this valuation is called risk-free valuation?

Problem 5. (6 Points)

What is a delta-hedging? What conditions must be fulfilled for an investment to be delta neutral?

Problem 6. (9 Points)

Show graphically and formally the payoffs of cash-or-nothing options. How can one value these options?

Problem 7. (8 Points)

Draw a profit profile for a bull spread using puts. When should an investor pursue this strategy? What is the maximum gain and loss the investor can incur? Determine the break-even of the strategy.

GOOD SPEED!