**Finance/Financial Engineering Comprehensive Exam**

# The exam is closed book. You can use a letter-sized sheet of hand-written notes and a calculator.

Part 1: ECON 233

(32 points)

# *(4 pts.)* Does holding a bond until maturity eliminate interest rate risk? Why or why not?

# *(4 pts.)* What does the historical record show about the risk-reward trade-off in finance?

# *(4 pts.)* Why would anyone buy a bond at a price above face value, thus guaranteeing themselves a capital loss when holding the bond to maturity?

# *(4 pts.)* How do you calculate beta, and what does it measure?

Please **show all calculations**. If you're stuck, **assume a solution** to get full credit on a later part.

# *(8 pts.)*It's Jan. 22, 2015. You're thinking of buying a corporate bond with a coupon rate of 0.42%, which matures on May 6, 2019. The appropriate yield to maturity is 0.58%. The bond has a face value of $1,000 and pays interest semiannually. The next coupon will be paid in 104 days. What should be the invoice price (in $)?

# *(8 pts.)*ABC Corp. has just paid a quarterly dividend of $0.31. ABC's dividends will grow by 5% for the next 4 quarters, and then grow by 0.4% thereafter. ABC has a quarterly required return of 4%. What is the intrinsic value of ABC stock?

Part 2: ECON 236

# (32 points)

# *(8 pts.)*Suppose that LIBOR rates for maturities of 1, 2, 3, 4, 5, and 6 months are 2.6%, 2.9%, 3.1%, 3.2%, 3.25%, and 3.3% with continuous compounding. What are the forward rates for future 1-month periods?

# *(8 pts.)*Suppose you currently own 500 shares of Netflix stock. The current price of Netflix is and the stock has a CAPM beta of 0.96. The current price of the S&P 500 ETF is . How many shares of the ETF would you need to buy or sell to reduce your beta to 0.5?

# *(8 pts.)*The closing price of Intercontinental Exchange Inc. (ticker ICE) stock on 19 Jun 2017 was One year earlier, on 20 Jun 2016, ICE stock closed at Calculate the percentage return per annum with:

# Annual compounding.

# Semiannual compounding.

# Monthly compounding.

# Continuous compounding.

# *(8 pts.)*Union Pacific Corp. (ticker UNP) stock currently trades for $109.44. A call option with strike $105.00 is valued at $10.35 and a put option with the same strike is valued at $5.35. Draw the net (not gross) payoff diagram for a covered call, using specific values for the strike, option price and stock price. What asset is equivalent to a covered call?