



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF BANKING, ACCOUNTING & FINANCE

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF COMMERCE

BAC 309: FINANCIAL DERIVATIVES

DATE: 26/7/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS: Attempt Question One and any other Two Questions

QUESTION ONE (30 MARKS)

- a) Highlight and explain the uses of Financial Derivatives (4 marks)
- b) Explain the following types of Commodity derivatives:
 - i. Investment Commodities
 - ii. Consumption Commodities (6 marks)
- c) You have entered into a 10 month forward contract on stock with a price of sh50. The risk free rate of interest (compounded continuously) is 6% P.a for all maturities. Dividends of shs 1.80 per share are expected after 3 months, 6 months and 9 months.

Required

- i. Find the present value of the dividends (3 marks)
 - ii. Find the forward price F_0 (3 marks)
- d) The exercise price of a non-dividend paying stock is Shs.21 and its current price is Shs.25 with an implied volatility of 23%.
 - i. Calculate the price of a call option written on this stock with a maturity of three months given a short-term risk-free interest rate of 5%. (8 marks)

- ii. Calculate the price of a put option on the same stock given the same risk-free interest rate. (6 marks)

QUESTION TWO (20 MARKS)

- a) What do the following terms mean with respect to a put option?
- i. In-the-money
 - ii. Out of –the-Money
 - iii. At- the- Money
 - iv. Near-the Money (8 marks)
- b) Wisdom Investments Ltd. Purchased a futures contract of a coupon bearing bond whose price is Shs. 9,000. The futures contract will mature in 9 months. If a coupon payment of Shs.400 is expected after 4 months, and the 4-month and 9-month risk free interest rates are 3% p.a and 4% p.a compounded continuously, calculate:
- i. The futures Price F_0 (6 marks)
 - ii. The amount of arbitrage profit that Wisdom Investments Ltd. locks in if any. (6 marks)

QUESTION THREE (20 MARKS)

- a) Explain the following terms as used in Financial Derivatives Market. (8 marks)
- i. Call option
 - ii. Put option
 - iii. Stock Index.
 - iv. Swaption
- b) i) Explain the term ‘in- the –money’. (2 marks)
- ii) A call option of XYZ Co. has an exercise price of shs 125. Find the intrinsic value of the call if the current price is:
- 1. shs 110
 - 2. shs 125
 - 3. shs 130 (6 marks)
- c) What do you understand by the term” Marking –to- Market”? (4 marks)

QUESTION FOUR (20 MARKS)

- a) Differentiate between options and swaps (6 marks)
- b) Ideal Tech Ltd has entered into a forward Rate Agreement that specified it will receive a fixed rate of 4% on a principal of shs, 1000,000 for a 3-month period starting in three years. If the 3-month floating rate is 4.5 % for the 3-month period, find the cash flow to the lender. (6 marks)
- c) Explain four uses of financial derivatives (8 marks)

QUESTION FIVE (20 MARKS)

- a) Explain the following terms as used Derivatives Market. (6 marks)
 - i. Delta
 - ii. Vega
 - iii. Rho
- b)
 - i Differentiate between Features of Futures Contracts. (4 marks)
 - ii Explain the two sides of option positions. (6 marks)
- c)
 - i Two year interest rates in Kenya and United States are 10% and 14% respectively and the Spot exchange rate between the Kenyan Shilling and the USA Dollar is 0.0098USD/KSh. If the two year forward exchange rate is 0.0115USD/KSh. Explain the strategy that an arbitrageur who has borrowed Shs1, 000,000 at 10% from a large international bank in Kenya would take to make a profit. (6 marks)