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 9months.

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)