UNIVERSITY OF COLOMBO, SRI LANKA

FACULTY OF MANAGEMENT AND FINANCE

Postgraduate & Mid-career Development Unit

Master of Business Administration/Master of Business Administration in Finance/Master of Business Administration in Marketing/Master of Business Administration in HRM (Semester IV – Second Half) Examination, March – 2017

MBAFI 615-Financial Derivatives

Instructions:

- Time allowed: Three Hours
- Answer any five (05) questions
- Clear and concise answers are expected
- Use of Calculators is allowed
- This paper consists of six (06) questions and four (06) pages

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01.

i. "Derivatives can be used to either hedge risk or to take risk." How do you differentiate whether the user is a hedger or speculator?

(05 marks)

ii. Differentiate forward and future contracts.

(05 marks)

iii. Briefly describe the followings.

a. Deep in the money options

b. Intrinsic value and time value of an option

c. Warrants

d. Profit of a short position of a forward contract

(10 marks)

(Total Marks 20)

02.

i. Suppose that an European put (p) on a share is Rs. 2, Today's stock price of the share (S_o) is Rs. 104, Time to maturity (T) is 0.5, Risk free rate of return (r) is 6% and the exercise price (K) is Rs. 105. Put-call parity condition is given by

$$c + Ke^{-rT} = p + S_o$$

a. What should be the European call price to eliminate any arbitrage opportunity?

(03 marks)

b. If the price of the European call is Rs. 2.00 what is the strategy that you can implement today to earn an arbitrage profit?

(03 marks)

c. If the stock price after six months (S_T) is Rs. 95, what are the actions you would take to realize the arbitrage profit?

(03 marks)

d. If the stock price after six months (S_T) is Rs. 115, what are the actions you would take to realize the arbitrage profit?

(03 marks)

ii. Suppose the Value of ASPI is Rs.6350 today, Value of a portfolio of a manager is Rs.20 million, Risk-free rate of interest is 10%, dividend yield on the ASPI is 4% and the beta of the portfolio of the manager is 0.5. One Futures Contract (FC) is 200 times the ASPI. Futures on ASPI to mature at the end of June, 2017. Current Index Futures price is Rs. 6445. Because of the election results the manager feels that the market would go up during the next three months and he is therefore planning a strategy to use index futures to increase the beta risk of the portfolio to 2 until the end of May 2017 i.e., for next three months.

a. What position in futures contracts on the ASPI is necessary to increase the beta risk to 2?

(02 marks)

b. Suppose the ASPI turns out to be Rs. 5500 in May, 2017 and the June futures price on ASPI in May, 2017 is Rs. 5555.

1. What is the gain/loss on the Futures Contract?
2. What is the Portfolio expected value in May, 2017?
3. What is the total expected value of the manager in May, 2017 with hedging?

(06 marks)

(Total Marks 20)

03.

i. Briefly explain the uses of SWAPs for organizations.

(04 marks)

ii. Table below provides some of the market data regarding bonds traded.

Bond Face Value	Time to Maturity (Years)	Annual Coupon (Rs.)	Bond Price (Rs.)
1000	1	0	909.091
1000	2	0	811.622
1000	3	80	785.228
1000	4	90	856.575

As an investment analyst, extract as much information as possible regarding interest rates of the market.

(08 marks)

iii. "The reinvestment rate risk and maturity price risk could be different on the nature of the investor." Do you agree? Explain your answer emphasizing how it differs on the nature of the investor.

(04 marks)

iv. Why the interest rates for different bonds with different maturities are different? Explain your answer highlighting the factors that could affect on this behavior.

(04 marks)

(Total Marks 20)

04.

i. Briefly explain the factors that could affect on the premium of an option highlighting the nature of the impact of each factor on both put and call options written on a security.

(05 marks)

ii. Rupee rate of a dollar is Rs. 150 today and you anticipate that it will be Rs.170 in June 2017. June Futures that mature after 3 months on dollars are traded at Rs. 160 today and you can have either a Long or a Short position. The interest rate of Sri Lanka is 12% and the US it is 4%.

If you want to buy US$100,000 in May and want to hedge the exchange rate risk, what is your strategy? Explain your answer with reasons.

(05 marks)

iii. Ceylon Petroleum Corporation used zero collar agreements to hedge the risk of rising oil prices.

a. What do you mean by a zero collar agreement?

b. When the instrument was used for hedging, how could it end up with such a huge loss? Explain your answer using the features and the nature of the zero collar oil hedging agreement of the CPC.

(10 marks)

(Total Marks 20)

05.

i. You advise your organization which imports raw material to have a long position on a foreign exchange futures agreement to hedge the risk of depreciation of rupee in the future. If rupee appreciates, the organization will lose.

a. Do you agree? Why? Explain your answer.

(4 marks)

b. If your CEO says the loss is because of futures agreement, how do you defend your strategy?

(4 marks)

c. When you decide on hedging the risk of a non-financial organization, what are the advices that you would make?

(4 marks)

ii. Suppose the stock price (S_0) is Rs. 155, exercise price of an option (K) is = Rs. 145, time to maturity (T) is 4 months, volatility (σ) is 22% per annum and the risk free rate of interest (r) is 12% per annum. The u, d and p of Binomial model are given by

$$u = e^{\sigma\sqrt{\Delta t}}, \quad d = 1/u, \quad p = \frac{e^{rT} - d}{u - d}$$

$$f = [pf_u + (1-p)f_d]e^{-rt}$$

With the information given above, calculate the Binomial approximations for

a. European put and

(2 marks)

b. European call (2 marks)

iii. Binomial Model is better than Black-Scholes Model for pricing Options. Do you agree? Explain.

(4 marks)

(Total Marks 20)

06.

i. "Use of derivative for hedging the risk of organizations have ended up with loosing huge amount of money." How could it happen? Explain your answer.

(05 marks)

ii. "Most of the huge losses are made by organizations due to the actions of one trader who has violated the risk limits." Give possible reasons as to why it is so difficult to control traders.

(05 marks)

iii. "Most of the big losses are incurred by derivative traders of financial organizations." Briefly discuss the lessons for traders in financial organizations using appropriate examples.

(05 marks)

iv. "One of the advises is to have appropriate systems in place to monitor traders." Can system along control traders? Discuss your opinion using an example.

(05 marks)

(Total Marks 20)

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