



Navrachana University

End Semester Examination

May – 2017

SYMBA – Sem IV

Subject Code: FA206

Subject Name: Derivative

Date: 10/05/2017

Time: 8.00 AM to 10.00 AM

Instructions:

- All Questions are compulsory.
 - Total marks: Weighting: 30%
 - Note: Closed Book. Closed Laptop
 - Write in this Paper Only. No supplementary required
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Circle the One Best Answer to the following:

(2 Marks each)

1. A three-month index futures contract is trading at its full-carry price, that is, 995. Assuming the annualized risk-free rate and dividend yield to be 5% and 3% respectively (with continuous compounding), the current level of the index is about:
a. 986 b. 990 c. 1000 d. 975
2. Futures contracts:
 - a. Guarantee delivery of a specific commodity at any point in time up to the last trading day.
 - b. Do not guarantee delivery if the seller is a speculator and not a supplier.
 - c. Guarantee delivery of a specified quantity of a specific commodity.
 - d. Are mostly sold by hedgers to speculators as the delivery date approaches.
3. I disagree with the following:
 - a. In futures trading, both volume and open interest go up and down together.
 - b. In a futures contract, both the buyer and the seller are obligated to perform.
 - c. As the delivery date on a contract approaches, its futures price tends to converge to the spot price.
 - d. As a user of a commodity, if you expect the spot price on the delivery date of a contract to be higher than its futures price observed today, then you would buy the contract.

4. With respect to stock index futures, the following is (are) true:
 - a. There is no physical delivery of the underlying asset.
 - b. Investors with diversified stock portfolios may use such contracts to offset probable losses on their portfolios.
 - c. Futures traders have quick access to their gains.
 - d. All of the above.

5. I agree with the following statement:
 - a. In futures trading, the buyer pays the seller a margin amount. With options, the buyer pays the seller a premium.
 - b. You are shortly expecting an inward remittance of £ 100,000 on exports. If you expect the Rupee to rise vis-à-vis the £ by the time payment is due, then you may consider initiating a short hedge on £ futures contracts.
 - c. An inverted market is a special case of contango.
 - d. When warrants are exercised, there is no infusion of capital into the company.

6. I disagree with the following:
 - a. As a mutual fund manager having a floating-rate investment, I would buy an interest rate floor in anticipation of a decline in the benchmark rate.
 - b. Program Trading refers to Index Arbitrage and Portfolio Insurance.
 - c. In a Range Forward Contract acquired by an importer for purchasing, say, US Dollars, with the range being Rs. 65 ~ 66, the selling bank or dealer holds, in effect, a put option on the currency with the strike price equal to Rs. 66.
 - d. All of the above

7. With reference to swaps, the following is incorrect:
 - a. In interest rate swaps, the principal amounts are not exchanged
 - b. Swaps are based on the theory of comparative advantage.
 - c. In a currency swap, the principal amounts are re-exchanged at maturity.
 - d. None of the above.

8. A company caps three-month LIBOR at 10%p.a. The principal amount is \$20 million. On the reset date, it is determined that the company will be paid \$ 50,000 at the end of the ensuing quarter. Therefore, what is the three-month LIBOR p.a on the reset date?
 - a. 11%
 - b. 12%
 - c. 10%
 - d. 14%

9. The following statement(s) is (are) correct:

- a. As my client has bought a forward contract on the Japanese Yen for an outward remittance, price insurance has been secured without any probable sacrifice involved.
- b. Exchange risk can be hedged through Futures, but not Options.
- c. If your client was long in the spot market, then you advise a short hedge in the futures market.
- d. a and c only.

10. I disagree with the following:

- a. The key to effective hedging is that the basis tends to be more stable and predictable, than the actual cash and future price levels.
- b. The daily payment arising from the process of marking-to-market is known as Maintenance Margin.
- c. Premium is payable in interest-rate options.
- d. Strictly speaking, a CDS is an option.

Fill in the blanks: (1 mark each)

1. Given an observed option price, the estimate of volatility that equates the Black-Scholes option model value to the observed market price is called _____ volatility.
2. As an issuer of a floating-rate bond, you may advise your company to _____ (buy/sell) an interest-rate cap to hedge against the risk faced.
3. A company has announced a 1-for-2 rights issue. The market price of its stock is Rs. 100 and the subscription price has been fixed at Rs. 80. Therefore, the value of a right will be Rs. _____. {Value of a right = (Market Price of stock less Subscription Price)/N+1, where N equals the number of rights required per one new share}.
4. A convertible of Rs. 100 par will get converted into four equity shares. If the share is trading at Rs. 30, and the security is trading at a conversion premium of 5%, the price of the convertible will be Rs. _____.
5. With an interest-rate _____ structured by a borrower, the borrower is giving up any benefit that would accrue if the benchmark rate fell below a certain level.

6. The seller in a futures contract will gain by mark-to-market margin if the value of the contract _____.
7. You have been asked to suggest a suitable hedge involving options, for your firm's variable-rate borrowing; your firm seeks to economize on the premium and is, therefore, prepared for only partial upside protection. Under the circumstances, you would recommend an interest-rate _____.
8. _____ yield is a measure of the degree of backwardation.
9. If two warrants are needed to acquire one share at a subscription price of Rs.14, then the market price of a warrant trading at a premium of 25% is Rs. _____, when the stock trades at Rs.30. Formula Value of a warrant = {Market Price of stock less Subscription Price}* Number of shares obtainable per warrant.
10. Weather derivatives are useful to hedge against _____ risk.

Solve the following (SHOW YOUR WORKING):

- 1) Suppose that £1 = \$1.28 and that the interest rates in U.K and USA are 7 % and 4 % per annum, respectively. What is the one-month forward rate as per the Interest Rate Parity Theorem? (3 marks)
- 2) Pursuant to the advice given by the London branch of your bank, a UK-based businessman who expects receipts in US\$ bought a call on the £, traded at the Chicago Mercantile Exchange. The strike is \$1.30/£, premium is 1 cent per £ and each contract is for £62,500. Compute the total payoffs at the following alternative prices at expiration. \$1.35, \$1.40, \$1.45 and \$1.50. (4 marks)
- 3) Given the following information on two companies, which are planning to raise funds, work out a swap to the advantage of both, showing the payments from

one to the other. The swap benefits will be shared equally by the two companies. Company A desires floating-rate borrowing and Company B prefers fixed-rate borrowing. (5 marks)

	Company A	Company B
Cost of fixed-rate funds	5.20%	6.30%
Cost of floating-rate funds	3m LIBOR + 0.30%	3m LIBOR + 0.50%

4. A biscuits company wants to buy 100,000 kilos of sugar in early March, to cover its production needs till the year-end. The current price is Rs. 34 per kilo, but the company fears a price rise in the months ahead. Assuming that the contract size for sugar futures is 10,000 kilos:
- Recommend the suitable hedge to the company. (1 mark)
 - Assume that your hedge involved futures with a March-end delivery, which was trading at Rs. 34.50 per kilo when the hedge was initiated. In early March, your client offsets the hedge and also buys its requirement in the cash market, at which point the spot and futures prices are Rs. 34.25 and Rs. 34.60 respectively. What is the effective cost of flour to the company? (2 marks)