# Chapter 13 - Test Bank

###  Multiple-choice questions

[Go to ⇨ Multiple choice questions - Memorandum](#AC13MCQ)

*Answer the following questions by selecting the appropriate answer from the list below.*

**Which of the following statements with regard to derivatives are correct?**

1. Derivatives are leveraged investments, as only a small initial outlay is needed.
2. Derivatives prices are less volatile than the prices of the underlying assets.
3. Derivatives contracts can be based on non-financial variables such as the weather.
4. Derivatives can be used to reduce the risk of holding a market position.
5. (i) and (iii) only
6. (i), (ii) and (iv) only
7. (i), (iii) and (iv) only
8. (ii), (iii) and (iv) only

**The difference between the current market price and the current forward price is referred to as the**

1. margin
2. net-carry cost
3. spread
4. basis

**What are the characteristics of options?**

1. The seller has an obligation to honour the option.
2. The expiry date is a specified date in the future.
3. The strike price may vary on a daily basis.
4. The buyer has the choice to exercise the option.
5. (i) and (ii) only
6. (i), (ii) and (iv) only
7. (i), (iii) and (iv) only
8. (ii), (iii) and (iv) only

**Holding a long call option, with the premium of R5 and a strike price of R40 when the underlying asset is trading at R60, implies that the position is**

1. out-of-the-money and showing a loss of R20
2. in-the-money and showing a profit of R15
3. out-of-the-money and showing a loss of R15
4. in-the-money and showing a profit of R20

**A fall in the price of the underlying asset will have which of the following effects on the premiums of an option?**

1. Call premiums will rise.
2. Put premiums will fall.
3. Put premiums will rise.
4. Call premiums will fall.
5. (i) and (ii) only
6. (iii) and (iv) only
7. (i), (ii) and (iii) only
8. (i), (iii) and (iv) only

####

**Which of the following statements about interest rate swaps are correct?**

1. They are regarded as off-balance sheet financial instruments.
2. During the life of the swap, payments between the two parties are based on a notional principal amount.
3. The periodic payments are executed in two different currencies.
4. The two parties exchange their individual debt obligations on reference dates.
5. (i) and (ii) only
6. (iii) and (iv) only
7. (i), (ii) and (iii) only
8. (i), (iii) and (iv) only

####

**A South African firm called Company Omega has borrowed money from a UK bank for 10 years and needs to pay the interest on the loan quarterly in British pounds. Which ONE of the following instruments will be the MOST suitable to hedge Company Omega’s exchange rate risk over the long-run?**

1. A forward rate agreement
2. A currency swap
3. An interest rate swap
4. A credit swap

**An investment fund buys the right to receive the better of two pre-specified indexes. What is such an exotic option called?**

1. Look-back option
2. Barrier option
3. Rainbow option
4. As-you-like-it option

**With regard to derivatives, what does the term “leverage” imply?**

1. Entering into positions that are economically equivalent to those in the cash markets without significant upfront payments
2. Closing a position by entering into a transaction equal and opposite to the position
3. Borrowing funds in order to take a position in the market
4. Entering into a short position without owning the underlying

**Which of the following statements with regard to hedgers and speculators are correct?**

1. A speculator usually takes ownership of the commodity in question.
2. A speculator seeks to make a risk-less profit from small mispricing in the market.
3. In their derivative dealings, hedgers substitute price risk with basis risk.
4. A hedger may use derivatives to eliminate his or her risk of loss by giving up any potential for gain.
5. (i) and (ii) only
6. (iii) and (iv) only
7. (i), (ii) and (iii) only
8. (i), (iii) and (iv) only

###  Written questions

[Go to ⇨ Written questions - Memorandum](#AC13WQ)

*Answer the following questions.*

**How does the holder of a future contract terminate it before expiration?**

**Ann is currently holding a portfolio valued at R108 000 diversified over the share market. The three-month ALSI is trading at 8760. She is concerned that the share prices across the board are about to fall sharply, causing the value of her portfolio to decline. Ann decides to sell 10 three-month ALSI futures. The contract size is 10 times the index value. Three months later the ALSI futures contracts close out at 8120 and the value of Ann’s portfolio is R101 200.**

**2.1 What would Ann’s profit/loss have been if she did not enter into the futures contract?**

**2.2 What is Ann’s profit/loss on the futures contract transaction?**

**2.3 What is Ann’s total profit/loss?**

**Suppose the market price for bond A is R100,67005%, the short-term financing rate is 6 per cent per year, and the bond coupon is 4 per cent per year.**

**3.1 What is the expected futures price for a six-month contract on bond A?**

**3.2 The six-month contract on bond A is trading at R102,56785%. Does an arbitrage opportunity exist? If so, how will an arbitrageur capitalise on the situation?**

**The diagram below illustrates the payoff for which derivatives instrument?**

****

**Jacky writes 200 three-month put options on TEDDY shares with a strike price of R270 and a premium of R2,50. What profit/loss will Jacky realise if the share price rises to R280?**

**Company Omega has a 10-year asset that yields fixed income of 8 per cent per annum. The company finances the asset with six-month commercial paper that pays interest at six-month JIBAR + 100 basis points.**

**5.1 What major risk does Company Omega face?**

**5.2 How can Company Omega best hedge this risk?**

**List the cash flows involved in a vanilla fixed-for-floating currency swap.**

**Leverage magnifies not only the potential gains on a derivatives position but also the potential losses.. Substantiate the latter part of this statement by way of an example using futures.**

####

**Explain the role that speculators play within the derivatives market.**

**What management actions can a company implement to ensure its derivatives operations are prudently carried out?**

###  True or false questions

[Go to ⇨ True/False questions - Memorandum](#AC13TFQ)

*Read the statements below and indicate whether they are true or false.*

**A contango market occurs when the futures price is higher than the spot price; the basis is negative.**

**A long put option will be profitable when the price of the underlying increases beyond the strike price by an amount bigger than the option premium.**

**The transaction costs of acquiring a synthetic equity portfolio via an equity swap are significantly less than the transaction costs of obtaining an actual equity portfolio.**

**Insurance derivatives allow companies to insure the risk of default by debt issuers.**

**A hedger can eliminate risk exposure by taking a derivatives position that is equal and equivalent to an existing or anticipated cash-market position.**

###  Choose the correct term

 [Go to ⇨ Choose the correct term - Memorandum](#AC13CTCT)

*Select the correct term to make the statement accurate.*

**The clearinghouse of an exchange is responsible for determining the profit and loss on all open derivatives positions by revaluing them at the end of each business day at the closing contract prices traded on the exchange. This process is known as margining/marking-to-market.**

####

**An agreement to buy or sell, on an organised exchange, a standard quantity and quality of a security at a specified date at a price determined at the time of trading is called a forward contract / futures contract.**

**If a trader anticipates a rise in the equity price and would like to make profits, he should buy/sell a call option.**

**Entering into a derivatives contract in order to transfer risk to another party is called hedging/arbitrage.**

**Knock-in/knock-out barrier options expire worthless if at any time before maturity the underlying asset trades at the trigger price.**

# Chapter 13 - Memorandum

###  Multiple-choice questions

[Go back to ⇦ Multiple choice questions](#C13MCQ)

*Answer the following questions by selecting the appropriate answer from the list below.*

**Which of the following statements with regard to derivatives are correct?**

1. Derivatives are leveraged investments, as only a small initial outlay is needed.
2. Derivatives prices are less volatile than the prices of the underlying assets.
3. Derivatives contracts can be based on non-financial variables such as the weather.
4. Derivatives can be used to reduce the risk of holding a market position.
5. (i) and (iii) only
6. (i), (ii) and (iv) only
7. (i), (iii) and (iv) only
8. (ii), (iii) and (iv) only

**The difference between the current market price and the current forward price is referred to as the**

1. margin
2. net-carry cost
3. spread
4. basis

**What are the characteristics of options?**

1. The seller has an obligation to honour the option.
2. The expiry date is a specified date in the future.
3. The strike price may vary on a daily basis.
4. The buyer has the choice to exercise the option.
5. (i) and (ii) only
6. (i), (ii) and (iv) only
7. (i), (iii) and (iv) only
8. (ii), (iii) and (iv) only

**Holding a long call option, with the premium of R5 and a strike price of R40 when the underlying asset is trading at R60, implies that the position is**

1. out-of-the-money and showing a loss of R20
2. in-the-money and showing a profit of R15
3. out-of-the-money and showing a loss of R15
4. in-the-money and showing a profit of R20

**A fall in the price of the underlying asset will have which of the following effects on the premiums of an option?**

1. Call premiums will rise.
2. Put premiums will fall.
3. Put premiums will rise.
4. Call premiums will fall.
5. (i) and (ii) only
6. (iii) and (iv) only
7. (i), (ii) and (iii) only
8. (i), (iii) and (iv) only

####

**Which of the following statements about interest rate swaps are correct?**

1. They are regarded as off-balance sheet financial instruments.
2. During the life of the swap, payments between the two parties are based on a notional principal amount.
3. The periodic payments are executed in two different currencies.
4. The two parties exchange their individual debt obligations on reference dates.
5. (i) and (ii) only
6. (iii) and (iv) only
7. (i), (ii) and (iii) only
8. (i), (iii) and (iv) only

####

**A South African firm called Company Omega has borrowed money from a UK bank for 10 years and needs to pay the interest on the loan quarterly in British pounds. Which ONE of the following instruments will be the MOST suitable to hedge Company Omega’s exchange rate risk over the long-run?**

1. A forward rate agreement
2. A currency swap
3. An interest rate swap
4. A credit swap

**An investment fund buys the right to receive the better of two pre-specified indexes. What is such an exotic option called?**

1. Look-back option
2. Barrier option
3. Rainbow option
4. As-you-like-it option

**With regard to derivatives, what does the term “leverage” imply?**

1. Entering into positions that are economically equivalent to those in the cash markets without significant upfront payments
2. Closing a position by entering into a transaction equal and opposite to the position
3. Borrowing funds in order to take a position in the market
4. Entering into a short position without owning the underlying

**Which of the following statements with regard to hedgers and speculators are correct?**

1. A speculator usually takes ownership of the commodity in question.
2. A speculator seeks to make a risk-less profit from mispricing in the market.
3. In their derivative dealings, hedgers substitute price risk with basis risk.
4. A hedger may use derivatives to eliminate his or her risk of loss by giving up any potential for gain.
5. (i) and (ii) only
6. (iii) and (iv) only
7. (i), (ii) and (iii) only
8. (i), (iii) and (iv) only

###  Written questions

[Go back to ⇦ Written questions](#C13WQ)

*Answer the following questions.*

**How does the holder of a future contract terminate it before expiration?**

**A buyer who does not want to hold a position to maturity enters into another contract of identical terms but on the opposite side prior to maturity. Since the individual is now buyer and seller of the same contract, the clearinghouse nets out the positions.**

**Ann is currently holding a portfolio valued at R108 000 diversified over the share market. The three-month ALSI is trading at 8760. She is concerned that the share prices across the board are about to fall sharply, causing the value of her portfolio to decline. Ann decides to sell 10 three-month ALSI futures. The contract size is 10 times the index value. Three months later the ALSI futures contracts close out at 8120 and the value of Ann’s portfolio is R101 200.**

**2.1 What would Ann’s profit/loss have been if she did not enter into the futures contract?**

**2.2 What is Ann’s profit/loss on the futures contract transaction?**

**2.3 What is Ann’s total profit/loss?**

**2.1 R101 200 – R108 000 = – R6800. Ann would have suffered a loss of R6800 on her portfolio.**

**2.2 (8760 × 10) – (8120 × 10) = R6400. Ann made a profit of R6400 on the futures contract.**

**2.3 R6400 – R6800 = – R400. Ann made a total loss of R400.**

**Suppose the market price for bond A is R100,67005%, the short-term financing rate is 6 per cent per year, and the bond coupon is 4 per cent per year.**

**3.1 What is the expected futures price for a six-month contract on bond A?**

**3.2 The six-month contract on bond A is trading at R102,56785%. Does an arbitrage opportunity exist? If so, how will an arbitrageur capitalise on the situation?**

**3.1 Futures price = spot price × [1+ (i – d) × n] = R100,67005% × [1 + (0,06 – 0,04) × 0,5] = R101,67675%**

**3.2 Yes – the arbitrageur buys bond A in the spot market, financing it at 6 per cent per year and sells a six-month futures contract on bond A. The arbitrageur holds bond A for six months and sells it at the futures price, thus making a risk-less profit of R102,56785% - R101,67675 = R0,8911%**

###

**The diagram below illustrates the payoff for which derivatives instrument?**

****

**A long call option**

**Jacky writes 200 three-month put options on TEDDY shares with a strike price of R270 and a premium of R2,50. What profit/loss will Jacky realise if the share price rises to R280?**

**The option is out of the money and will not be exercised by the holder. Jacky will retain the option premium thus making a profit of R2,50 × 200 = R500**

**Company Omega has a 10-year asset that yields fixed income of 8 per cent per annum. The company finances the asset with six-month commercial paper that pays interest at six-month JIBAR + 100 basis points.**

**5.1 What major risk does Company Omega face?**

**5.2 How will Company Omega best hedge this risk?**

**5.1 Company Omega faces interest-rate risk i.e., the risk that the floating interest rate (JIBAR + spread) will exceed the return on the asset..**

**5.2 Company Omega can illuminate this risk by entering into an interest rate swap agreement with a bank and agreeing to pay a fixed rate of say 7,5 per cent per annum and receiving six-month JIBAR + 100 basis points. Thus the company will lock in an interest-rate spread of 0,5 per cent per annum..**

**List the cash flows involved with a vanilla fixed-for-floating currency swap.**

* **The initial exchange of principals on commencement of the swap**
* **The interest payments made by each counterparty to the other during the tenor of the swap**
* **The final re-exchange of principals on termination of the swap. Both the initial and re-exchange of principals takes place at the spot exchange rate prevailing on contract date.**

**Leverage magnifies not only the potential gains on a derivatives position but also the potential losses on a derivatives position. Substantiate the latter part of this statement by way of an example using futures.**

**Investor A has a lump sum of R20 000 that he wants to invest. The investor buys 100 Absa shares at R200 per share. Three months later the Absa share price decreases, trading at R180. The investor decides to minimise any further losses and sells the shares. The investor makes a loss of R2000 [(R180 – 200) × 100] – this equals a loss of 10 per cent on the investor’s initial investment of R20 000. The 10 per cent loss equals the 10 per cent negative movement in share price.**

**Investor B also has a lump sum of R20 000 that he wants to invest. Investor B, however, decides to buy 10 Absa three-month futures contracts at R2000. One contract is equivalent to 100 shares. The initial margin requirement is 10 per cent of the contract value i.e. R20 000, therefore the leverage ratio is 10:1. Three months later, the Absa share price decreases and is trading at R180. The investor decides to minimise any further losses, and closes the position. The investor will not recover the initial margin of R20 000 as the margin equals the loss of the position [(R180 – R200) × 10 × 100]. Investor B makes a loss of R20 000 – a loss of 100 per cent on the initial investment of R20 000. The 100 per cent loss is 10 times more than the 10 per cent negative movement in the share price.**

####

**Explain the role that speculators play within the derivatives market.**

* **Speculators attempt to make profits by taking a view on the market**
* **Speculators are willing to bear risk that hedgers wish to avoid.**
* **Speculators are important participants in the derivatives market because they add liquidity and are often the counterparties of hedgers.**

**What management actions can a company implement to ensure its derivatives operations are prudently carried out?**

* **Separate front, middle and back offices.**
* **Set up and comply with risk limits.**
* **Carry out scenario analysis and stress testing.**
* **Monitor the activities of traders.**
* **Back-test pricing, valuation and risk models.**
* **Avoid slavishly following the same trading strategy as other market participants.**

###  True or false questions

[Go back to ⇦ True/False questions](#C13TFQ)

*Read the statements below and indicate whether they are true or false.*

**A contango market transpires when the futures price is higher than the spot price; the basis is negative.**

**True**

**A long put option will be profitable when the price of the underlying increases beyond the strike price by an amount bigger than the option premium.**

**False – a long put option will be profitable when the price of the underlying falls below the strike price by an amount bigger than the option premium.**

**The transaction costs of acquiring a synthetic equity portfolio via an equity swap are significantly less than the transaction costs of obtaining an actual equity portfolio.**

**True**

**Insurance derivatives allow companies to insure the risk of default by debt issuers.**

**False – insurance derivatives allow insurance companies to manage the risks of catastrophic events such as hurricanes and earthquakes.**

**A hedger can eliminate risk exposure by taking a derivatives position that is equal and equivalent to an existing or anticipated cash-market position.**

**False – a hedger can eliminate risk exposure by taking a derivatives position that is equal and *opposite* to an existing or anticipated cash-market position.**

###  Choose the correct term

 [Go back to ⇦ Choose the correct term](#C13CTCT)

*Select the correct term to make the statement accurate.*

**The clearinghouse of an exchange is responsible for determining the profit and loss on all open derivatives positions by revaluing them at the end of each business day at the closing contract prices traded on the exchange. This process is known as margining/marking-to-market.**

**marking-to-market**

####

**An agreement to buy or sell, on an organised exchange, a standard quantity and quality of a security at a specified date at a price determined at the time of trading is called a forward contract/futures contract.**

**futures contract**

**If a trader anticipates a rise in the equity price and would like to make profits, he should buy/sell a call option.**

**buy**

**Entering into a derivatives contract in order to transfer risk to another party is called hedging/arbitrage.**

**hedging**

**Knock-in/knock-out barrier options expire worthless if at any time before maturity the underlying asset trades at the trigger price.**

**Knock-out**