CHARTERED INSTITUTE FOR SECURITIES & INVESTMENT
(Formerly Securities & Investment Institute)

LEVEL 3
CERTIFICATE IN INVESTMENTS

UNIT 7
FINANCIAL DERIVATIVES

EFFECTIVE FROM APRIL 2009

OBJECTIVE OF THE EXAMINATION

The objective of the examination is to ensure that candidates have a basic knowledge of financial derivatives products and markets, as well as trading, settlement, investment strategies and regulation.

The examination will test candidates' knowledge and understanding of the following elements:

- Introduction to Derivatives
- Futures and Options Trading
- Principles of Exchange-Traded Futures and Options
- Principles of OTC Derivatives
- Principles of Clearing and Margin
- Trading, Hedging and Investment Strategies
- Special Regulatory Requirements

ASSESSMENT STRUCTURE

A 1½ hour examination of 75 multiple choice questions.

Candidate sitting the examination by Computer Based Testing may have, in addition, a small number of trial questions that will not be separately identified and do not contribute to the result. Candidates will be given proportionately more time to complete the test.

SYLLABUS STRUCTURE

The unit is divided into ***elements***. These are broken down into a series of ***learning objectives***.

Each learning objective begins with one of the following prefixes: ***know***, ***understand***, ***be able to calculate*** or ***be able to apply***. These words indicate the different levels of skill to be tested. Learning objectives prefixed:

- ***know*** require the candidate to recall information such as facts, rules and principles
- ***understand*** require the candidate to demonstrate comprehension of an issue, fact, rule or principle
- ***be able to calculate*** require the candidate to be able to use formulae to perform calculations
- ***be able to apply*** require the candidate to be able to apply their knowledge to a given set of circumstances in order to present a clear and detailed explanation of a situation, rule or principle

EXAMINATION SPECIFICATION

Each examination paper is constructed from a specification that determines the weightings that will be given to each element. The specification is given below.

It is important to note that the numbers quoted may vary slightly from examination to examination as there is some flexibility to ensure that each examination has a consistent level of difficulty. However, the number of questions tested in each element should not change by more than plus or minus 2.

Examination specification **75 multiple choice questions**		
Element number	**Element**	**Questions**
1	Introduction to Derivatives	5
2	Futures and Options Trading	9
3	Principles of Exchange-Traded Futures and Options	16
4	Principles of OTC Derivatives	16
5	Principles of Clearing and Margin	8
6	Trading, Hedging and Investment Strategies	16
7	Special Regulatory Requirements	5
	Total	**75**

CANDIDATE UPDATE

Candidates are reminded to check the 'Candidate Update' area of the Institute's website (www.sii.org.uk) on a regular basis for updates that could affect their examination as a result of industry change.

SUMMARY SYLLABUS

ELEMENT 1 INTRODUCTION TO DERIVATIVES

1.1 General

ELEMENT 2 FUTURES AND OPTIONS TRADING

2.1 Exchanges
2.2 Trading Platforms
2.3 Clearing Mechanisms

ELEMENT 3 PRINCIPLES OF EXCHANGE-TRADED FUTURES AND OPTIONS

3.1 Futures Pricing
3.2 Options Pricing
3.3 Market Transparency, Transaction Reporting and Monitoring
3.4 Order / Instruction Flow and Order Type
3.5 Trade Registration

ELEMENT 4 PRINCIPLES OF OTC DERIVATIVES

4.1 Concepts and Characteristics
4.2 Forwards and Swaps
4.3 Credit Default Swaps
4.4 Other Swap Types
4.5 Inflation swaps and Structured Products
4.6 Options
4.7 Market Platforms and Trade Processing
4.8 Settlement, Processing and Collateral of OTC Contracts

ELEMENT 5 PRINCIPLES OF CLEARING AND MARGIN

5.1 Definition and Purpose of Clearing
5.2 The Principles of Margin

ELEMENT 6 TRADING, HEDGING AND INVESTMENT STRATEGIES

6.1 Derivative Users
6.2 Futures Spread Trading
6.3 Options Strategies
6.4 Basics of Hedging (Futures)
6.5 Basics of Hedging (Options)
6.6 Comparison of Exchange-Traded and OTC Hedges
6.7 Applications of Derivative Strategies

ELEMENT 7 SPECIAL REGULATORY REQUIREMENTS

7.1 Principles Based Regulation
7.2 US – Main Differences Between EU and US Regulations
7.3 International Accounting Standards
7.4 Merger and Acquisition Activities

ELEMENT 1 INTRODUCTION TO DERIVATIVES

1.1 General

On completion, the candidate should:

1.1.1 *understand* the basic concepts and fundamental characteristics of:

- forward and futures contracts
- contracts for differences

1.1.2 *understand* the basic concepts and fundamental characteristics of options contracts, including:

- basic puts and calls
- options on cash and futures
- American, European
- common path dependent and average pricing options

1.1.3 *understand* the risks and rewards associated with derivatives:

- counterparty risk
- market risk
- liquidity risk
- risks to the buyer of options
- risks to the writer of options

1.1.4 *understand* the significance of gearing to exchange traded derivatives:

- how margin facilitates gearing
- effect on derivative positions
- reward versus outlay
- reward versus risk

1.1.5 *understand* the principles and differences between the two major measures of exchange traded liquidity (open interest and volume)

1.1.6 *understand* the main features and differences of OTC traded products in contrast to exchange-traded products:

- how an OTC product is traded
- standard versus bespoke OTC contracts
- set maturity or expiry dates versus bespoke OTC contracts
- margin requirements versus collateral
- central clearing versus counterparty risk
- liquidity from standard versus bespoke OTC contracts
- actively managed Exchange Traded versus OTC hedging
- market transparency versus confidential transactions

1.1.7 *understand* the trading mechanisms by which OTC and exchange traded markets meet:

- block trades
- EFPs / EFSs
- Flex products

1.1.8 *understand* how to interpret basic options diagrams:

- long call
- long put
- short call
- short put

1.1.9 *understand* the main markets and stakeholders:

- FX, Money Markets, Equity, Fixed Income, Commodity, Regulators
- Quote driven versus order driven
- Floor versus voice versus electronic
- Price Givers – Central Banks, Banks, major market corporates etc.
- Price Takers – Central Banks, Banks, corporates, asset managers, insurance companies, private clients

1.1.10 *understand* the role of liquidity providers:

- Intermediaries – IDBs
- Prime Brokers
- FCMs
- Executing Brokers
- Clearing Brokers

ELEMENT 2 FUTURES AND OPTIONS TRADING

2.1 Exchanges

On completion, the candidate should:

2.1.1 *know* the structures, physical and electronic trading processes, clearing mechanisms and main products of the following exchanges and markets

- Liffe, EDX London, Eurex, MEFF, B_Clear
- CME Group, PHLX, CBOE, OneChicago
- SGX, Osaka, TSE

2.1.2 *know* the membership structures (brokers, dealers and broker / dealers, general clearing, individual clearing and non-clearing) and their principal rights:

- executing trades for third parties
- executing trades for their own account
- executing trades for other members
- capacity as broker
- capacity as dealer
- capacities of clearing members

2.2 Trading Platforms

On completion, the candidate should:

2.2.1 *know* the essential details of the trading mechanisms:

- open outcry, telephone and electronic platforms
- whether quote or order driven
- how the trading host matches orders
- the order types accepted by the markets
- the trading strategies that are recognised
- record keeping

2.2.2 *know* the essential details of wholesale trading facilities

- block trades & basis trades
- exchange for physical, exchange for swaps
- flex facilities

2.2.3 *understand* the significance, implications and uses of wholesale trading facilities

2.3 Clearing Mechanisms

On completion, the candidate should:

2.3.1 *understand* the matching and clearing arrangements requirements:

- trade capture processes / order matching processes
- how contracts are delivered and settled
- physical or cash
- establishment of settlement price
- options into futures
- sellers initiate delivery

2.3.2 *know* the main exchanges and contracts that have common settlement prices and links and the extent to which these allow investors to transfer open positions from one exchange to another:

- CME Group
- SGX

2.3.3 *be able to calculate* the profit / loss on delivery / expiry of futures and options

ELEMENT 3 PRINCIPLES OF EXCHANGE-TRADED FUTURES AND OPTIONS

3.1 Futures Pricing

On completion, the candidate should:

3.1.1 *understand* the mechanisms for futures pricing and the relationship with the underlying cash prices together with the significance of contributing factors:

- price convergence at maturity
- the concept of fair value

3.1.2 *be able to calculate* the fair value of a future from relevant cash market prices, yields and interest rates

3.1.3 *understand* the importance of basis:

- behaviour at expiry
- significance of changes
- basis risk

3.1.4 *understand* the principles of cash / futures arbitrage:

- what should be included in arbitrage calculations
- cash and carry arbitrage
- when arbitrage opportunities exist
- arbitrage possibilities
- arbitrage risk

3.2 Options Pricing

On completion, the candidate should:

3.2.1 *understand* the factors of options pricing:

- option premium
- time value
- intrinsic value

3.2.2 *understand* the factors determining option premiums:

- volatility
- interest rates
- currency
- strike or exercise price
- time to expiry
- underlying asset price
- dividends / coupons

3.2.3 *be able to calculate* the Put / Call Parity Theorem:

- what is the Put / Call Parity Theorem
- identifying arbitrage opportunities
- risk free interest rate

3.2.4 *be able to calculate* the sensitivity of the option premium to changes in price by applying delta values to cumulative positions:

- what is delta
- uses of delta

3.2.5 *understand* the following greeks and their uses

- delta
- gamma
- theta
- vega
- rho

3.2.6 *know* the requirements of, and process for, premium payment:

- when paid, immediately or marking to market
- the roles of the clearing house and broker
- what the seller receives

3.3 Market Transparency, Transaction Reporting and Monitoring

On completion, the candidate should:

3.3.1 *know* the purpose and requirements of transaction reporting in markets:

- information to be reported
- process for reporting
- responsibility for reporting

3.3.2 *know* the advantages and main sources of Exchange Price Feeds:

- price transparency
- current bids and offers
- high / low prices
- last night closing price
- traded volume

3.3.3 *understand* the importance of monitoring volume and open interest information and settlement:

- purpose of monitoring open interest
- breach of credit limit
- guarantee in the event of settlement failure
- effect of client's failure to monitor open interests

3.4 Order / Instruction Flow and Order Type

On completion, the candidate should:

3.4.1 *know* the principles of order flow:

- how clients, brokers and exchange members are linked
- electronic and open outcry markets
- audit trail

3.4.2 *know* the definition, significance and differences between principal and agency orders (i.e. of dual capacity versus agency orders):

- dealing as a principal
- cross trading
- advantages to the client

3.4.3 *understand* the range of types of orders, their uses and effects:

- market order
- limit order
- market if touched order
- opening and closing orders
- good 'til cancelled
- immediate or cancel / fill or kill order
- stop order
- stop limit order

3.5 Trade Registration

On completion, the candidate should:

3.5.1 *know* the processes involved in trade registration, trade input and trade matching and differing requirements of electronic and open outcry markets

3.5.2 *understand* the purpose and importance of give-ups / allocations:

- reasons to allocate a trade to an account
- use of give-up agreements
- risk implications

3.5.3 *understand* the use of different types of accounts:

- use of house accounts
- customer accounts – segregated and non-segregated

ELEMENT 4 PRINCIPLES OF OTC DERIVATIVES

4.1 Concepts and Characteristics

On completion, the candidate should:

4.1.1 *understand* the basic concepts and fundamental characteristics of:

- Forwards
- FRAs
- caps
- floors
- collars

4.1.2 *understand* the basic concepts and fundamental characteristics of Interest Rate swaps and swaptions:

- underlying (fixed / fixed, fixed / floating, floating / floating)
- interest calculation (compared to bond markets)

4.1.3 *understand* the basic concepts and fundamental characteristics of FX and Currency forwards, swaps and swaptions:

- FX forward (outrights quotes v pips)
- FX and Currency swap / swaption

4.1.4 *understand* the basic concepts and fundamental characteristics of Equity forwards, swaps and swaptions:

- equity baskets / index
- equity forwards
- equity swaps / swaption

4.1.5 *understand* the basic concepts of Total Return and Asset Swaps

4.1.6 *understand* the basic concepts and fundamental characteristics of credit derivatives and the main credit events:

- default events
- ratings transitions

4.1.7 *understand* how spread betting differs from other contract for differences

4.1.8 *understand* the basic concepts and fundamental characteristics of flex options:

- how do they differ from standard exchange traded options
- how do they differ from OTC options

4.1.9 *understand* the main ISDA documents supporting OTC derivative activities:

- Master Agreements and Bridges
- Credit Support Documentation
- Master Give Up Agreements
- Equity
- FX & Currency
- Inflation and Interest Rate Swaps definitions
- Protocols

4.2 Forwards and Swaps

On completion, the candidate should:

4.2.1 *understand* the mechanisms for OTC derivative pricing and the relationship with the underlying cash prices together with the significance of contributing factors:

- forward and forward / forward rates
- cash flow analysis and the zero curve
- the role of interest rates and yields
- other factors affecting pricing

4.3 Credit Default Swaps

On completion, the candidate should:

4.3.1 *know* the common credit derivative instruments and their relationships to other markets and products:

- Credit default swaps
- credit linked notes
- CDOs / CBOs
- Synthetic CDOs
- CDO^2

4.3.2 *understand* the mechanisms for pricing credit derivatives and the relationships with asset swap prices

4.4 Other Swap Types

On completion, the candidate should:

4.4.1 *know* common equity swap instruments and their relationship to other markets and products

- total return
- volatility
- variance
- dividend swaps

4.4.2 *know* the common rates swap instruments and their relationships to other markets

- interest rate
- amortising
- accreting
- rollercoaster
- forward start

4.5 Inflation swaps and Structured Products

On completion, the candidate should:

4.5.1 understand how structured products utilise embedded derivatives to achieve a risk / return profile:

- convertible bonds
- index linked notes
- capital protected products
- callable / puttable bonds

4.5.2 *know* the basic purpose of the following

- commodity swaps
- property swaps
- environmental swaps

4.6 Options

On completion, the candidate should:

4.6.1 *know* the common OTC option products:

- European, American, Bermudan, Asian
- lookbacks and variants
- ratchets / cliquets

4.6.2 *understand* the mechanisms for option pricing and the relationship with the underlying cash prices together with the significance of contributing factors:

- structure
- arbitrage restrictions
- valuations inputs
- Black Scholes model
- Binomial model

4.6.3 *know* the requirements of, and process for, premium payment:

- when paid
- credit exposure
- the collateral process

4.7 Market Platforms and Trade Processing

On completion, the candidate should:

4.7.1 *know* the trading mechanisms for common OTC Derivatives along with processing requirements and platforms:

- MarketWire
- SwapClear
- DTCC Deriv/SERV and TIW
- SwiftNet FpML
- TriOptima
- T-Zero
- DTCC AffirmXpress

4.8 Settlement, Processing and Collateral of OTC Contracts

On completion, the candidate should:

4.8.1 *understand* the importance of accurate and timely settlement processes and the potential impact of credit exposures on OTC products:

- trade confirmations
- reconciliation processes (internal and external)
- Credit Support Agreements
- acceptable forms of collateral (certainty and currency of asset)
- the collateral process (mark to market, hurdle, minimum cashflow, parties involved)

ELEMENT 5 PRINCIPLES OF CLEARING AND MARGIN

5.1 Definition and Purpose of Clearing

On completion, the candidate should:

5.1.1 *understand* the purpose of clearing and the function of novation:

- mutual offset system
- principal to principal
- broker's position

5.1.2 *understand* the risks usually associated with the clearing process:

- settlement risk
- counterparty risk
- currency risk

5.1.3 *understand* the role played by the clearing house in the clearing process:

- clearing house relationship with members in settlement
- use of protected payments systems
- automatic debit to members' accounts

5.1.4 *understand* the backing arrangements in place in the event of a member default:

- novation
- guarantee of performance of the contract
- default fund
- insurance cover
- members' contributions
- principal to buyer and seller
- control of funds to clearing members' accounts
- requirement for members to use an approved bank

5.1.5 *understand* the relationship between clearing members and non-clearing members:

- clearing versus non-clearing member
- use of general clearing members to clear trades
- use of clearing member to clear non-member trades

5.1.6 *understand* the principles of mutual and independent guarantees:

- mutual guarantees versus independent guarantees
- purpose of the guarantees
- funding of the default fund at the clearing house

5.1.7 *know* which exchanges / clearing houses offer OTC clearing arrangements and for which major products

5.1.8 *understand* how OTC products can be centrally cleared:

- eligibility and credit standing of counterparts
- constraints placed upon contract terms
- the margin processes
- advantages and uses of centralised clearing of OTC products

5.2 The Principles of Margin

On completion, the candidate should:

5.2.1 *understand* the differences between initial and variation margin and the significance of mark to market and withdrawal of variation margin profits:

- mark to market
- trigger levels
- offsetting long and short positions
- when paid

5.2.2 *know* the means by which exchanges establish settlement prices:

- what are settlement prices
- closing ranges / prices

5.2.3 *understand* the nature and use of offsets for spread / spot month margining:

- purpose of offset
- purpose of spot month margins
- purpose of spread margins

5.2.4 *understand* why the clearing house might call intra-day margin:

- purpose of intra-day margin
- when intra-day margin is paid

5.2.5 *know* methods of margining involving delta and SPAN and their implications:

- use of delta
- use of SPAN
- effect of price change in the underlying
- use of Net Liquidation Value

5.2.6 *know* methods of margining centrally cleared OTC products and their implications:

- how exposure is calculated
- what margins are applied
- how and when margin payments are made

ELEMENT 6 TRADING, HEDGING AND INVESTMENT STRATEGIES

6.1 Derivative Users

On completion, the candidate should:

6.1.1 *understand* the categories of users of derivatives and their respective use of derivative products:

- hedger
- speculator
- arbitrageur

6.2 Futures Spread Trading

On completion, the candidate should:

6.2.1 *know* the distinctions between intramarket spreads and intermarket spreads and the scenarios in which they may be appropriate:

- use in differing market conditions
- situations resulting in profitability / loss

6.3 Options Strategies

On completion, the candidate should:

6.3.1 *understand* the use of derivatives for speculation and hedging:

- speculation: long calls, short puts (bullish)
- speculation: short call, long puts (bearish)
- hedging: covered calls and protective puts
- recognise diagrammatic representation of each strategy
- maximum upside and downside for each strategy

6.3.2 *understand* and be able to create basic synthetic options and futures:

- synthetic long
- synthetic short
- synthetic put
- synthetic call

6.3.3 *understand* the characteristics and effects of vertical spreads:

- bull call and bear call spreads
- bull put and bear put spreads
- use in differing market conditions
- anticipating modest market rises / falls (bull / bear markets)
- risks

6.3.4 *understand* the characteristics and effects of long and short straddles and strangles:

- use in differing market conditions
- anticipating modest market rises / falls (bull / bear markets)
- risks

6.3.5 *be able to calculate* maximum profits / losses in simple examples of long and short straddles and strangles

6.3.6 *understand* the uses, characteristics and effects of horizontal and diagonal spreads:

- use in differing market conditions
- anticipating modest market rises / falls (bull / bear markets)
- risks

6.4 Basics of Hedging (Futures)

On completion, the candidate should:

6.4.1 *know* the characteristics and implications of long and short positions

6.4.2 *understand* the importance of hedging ratios in Cheapest To Deliver bonds (CTDs):

- price factors
- highest implied repo rate
- number of contracts to hedge an exposure to the CTD bond
- duration based hedge ratios for non-CTD bonds

6.4.3 *understand* hedge ratio calculation for other short term interest rate futures:

- basis point value
- number of contracts to hedge an interest rate exposure

6.4.4 *understand* hedge ratio calculation for equity futures:

- stock and portfolio beta
- number of contracts to hedge an equity exposure

6.4.5 *understand* basis, basis trading and basis risk:

- problems caused by changes in basis
- how can changes in basis be used to advantage by an investor

6.5 Basics of Hedging (Options)

On completion, the candidate should:

6.5.1 *understand* the application and effects of delta hedging andbe able to establish an investor's net long / short position

6.6 Comparison of Exchange Traded and OTC Hedges

On completion, the candidate should:

6.6.1 *understand* the advantages and disadvantages of using exchange traded versus OTC products in hedge management:

- exposure flexibility versus contract specification
- ease / cost of closing OTC transactions versus Exchange Traded positions
- margins versus collateral processes
- counterparty exposure versus centralised clearing
- price transparency
- best execution
- documentation
- settlement mechanism

6.7 Applications of Derivative Strategies

On completion, the candidate should:

6.7.1 *be able to calculate,* through the knowledge gained above, to establish a derivatives position with an underlying market equivalency either to establish or hedge a required exposure.

- Long / short through futures
- Long / short through single options
- Long / short through option combinations
- Long / short through simple OTC derivatives
- Limits to upside and / or downside exposures

(Sufficient contract / product information will be provided to candidates in the exam to enable the required calculations)

6.7.2 *understand* the uses and advantages of covered calls and covered puts:

- motivation for the writer of a covered call
- motivation for the buyer of a protective put
- risks / maximum losses
- use in different market conditions

6.7.3 *be able to apply* knowledge of the relative attractiveness of derivative positions to specific client circumstances:

- Private Client investment portfolios
- High Net Worth / portfolios
- Institutional Asset Managers
- Corporate Treasurers
- Hedge Funds

ELEMENT 7 SPECIAL REGULATORY REQUIREMENTS

7.1 Principles Based Regulation

On completion, the candidate should:

7.1.1 *understand* in general terms the importance of the principles based approach to regulation:

- client classification
- treating customers fairly
- suitability and appropriateness of the transaction / product
- best execution

7.1.2 *understand* the differences between rules-based and principles based regulation

7.2 US – Main Differences Between EU and US Regulations

On completion, the candidate should:

7.2.1 *know* the role of European regulation on EU derivative markets including the UK:

- MiFID and the Transparency Directive
- clients' money
- clients' accounts
- margining practices
- unregulated markets
- access to overseas markets
- access to overseas clients

7.2.2 *know* the role of the Securities and Exchange Commission (SEC) in the regulation of derivatives:

- what is the SEC
- regulated investments
- regulated exchanges

7.2.3 *know* the role of the Commodity Futures Trading Commission (CFTC) and the National Futures Association (NFA):

- what is the CFTC
- what is the NFA
- NFA delegated functions including "screening and registration of all firms and individuals who want to conduct futures-related business with the public."
- regulated investments
- regulation of other entities
- dispute resolution

7.2.4 *know* the prohibitions of CFTC Part 30 (Foreign Futures and Segregation of Customer Funds)

7.2.5 *know* of the Commodity Futures Modernization Act 2000 and the principles governing trading of single stock futures in the US:

- what are single stock futures
- physical delivery or cash settlement
- market regulators
- restrictions

7.3 International Accounting Standards

On completion, the candidate should:

7.3.1 *know* the requirement under IAS 39 to disclose the 'fair value' of all derivative positions held:

- the impact fair value accounting may have on the derivative activities of banks and corporates

7.4 Merger and Acquisition Activities

On completion, the candidate should:

7.4.1 *know* the need to include derivative positions in calculations affecting M&A activities