CISI
CHARTERED INSTITUTE FOR SECURITIES & INVESTMENT

DIPLOMA WINTER 2011 EXAMINATION

BONDS AND FIXED INTEREST MARKETS

DATE OF EXAM	Wednesday 7 December 2011
3 HOURS	10.00 am – 1.00 pm
RUBRIC	SECTION A - ***ALL*** questions in this section are to be answered
	SECTION B – ***ALL*** questions in this section are to be answered
	SECTION C – ***TWO*** questions in this section are to be answered

Candidates are reminded that no marks will be awarded for illegible work

NOTES TO CANDIDATES

1. Please insert your Candidate Number on the Answer Book cover. *Do not insert your name*.
2. Show *all* workings in your Answer Book.
3. Candidates may attempt the sections in any order. Please indicate clearly in your Answer Book which questions you are answering.
4. Please insert in the box provided on the cover of your Answer Book the numbers of the questions you have attempted in the order in which they appear in the Answer Book.
5. You may use the calculator provided or one approved by the Chartered Institute for Securities & Investment.
6. You must hand your Answer Book to an invigilator before you leave the Examination Hall. *Failure to do so will result in disqualification*.
7. Once submitted, the examination scripts become the property of the Chartered Institute for Securities & Investment and will not be returned to candidates.

PLEASE TURN OVER WHEN INSTRUCTED

SECTION A TOTAL 45 MARKS

Answer ALL questions in this section

1 You are a Gilt Edged Market Maker who has purchased £100m nominal of the 8.75% coupon 25 August 2017 maturity UK Gilt at a clean price of 141.39 for settlement 6 September 2011.

You decide to repo the whole £100m for seven days at a repo rate of 0.55% p.a. The repo market applies a haircut of 2.5%.

a) Calculate the amount of money you can borrow from the repo market using these bonds as general collateral. *(2 marks)*

b) What is the repo repayment amount due on 13 Sept 2011? *(2 mark)*

2 Calculate the fair price of the coupon strip, on the coupon payment date, from a three year maturity semi annual ACT/ACT government bond with a 3% coupon and a yield to maturity of 2.85%. Show your workings. *(2 marks)*

3 With reference to a 6 month maturity option on a 5 year interest rate swap:

a) Describe what is meant by the term "swaption". *(2 marks)*

b) Distinguish between a payer's swaption or the receiver's swaption. *(1 mark)*

c) Price a bullish risk reversal (which profits if rates rise) with strike prices set 10% out of the money if you are given the following prices for the swaptions:
Payer's swaption 0.74% to 0.84% flat paid up front
Receiver's swaption 0.67% to 0.71% flat paid up front *(1 mark)*

4 Today is 24 August 2011. A bond fund owns £10m nominal of the Tesco Personal Finance plc 5.20% semi annual ACT/ACT coupon 24 August 2018 maturity bond pricing at 104.80 giving a yield to maturity of 4.44%. The seven year sterling interest rate swap is trading at 2.30% versus 6m £ LIBOR.

a) The fund manager believes that government bond yields are set to rise but wants to maintain exposure to this name because it gives a good credit spread. Describe how the swap could be used to reduce the fund's exposure to a rise in yields, including a flow of funds diagram. *(3 marks)*

b) What return does the fund earn after this transaction has been completed? *(2 mark)*

c) Describe two other ways in which a fund a manager could hedge the fund's interest rate exposure. *(2 marks)*

5 It is August 2011. The Bank of England Monetary Policy Rate is 0.50% and 3 month sterling LIBOR is set today at 0.85%.

The nearest four STIR (3 month LIBOR) Futures contracts are trading at:

September	99.12
December	99.15
March 12	99.16
June 12	98.90

a) What action are the futures prices predicting that the Bank of England Monetary Policy Committee will take over the next year? *(2 marks)*

b) Describe how you arrived at your conclusion. *(2 marks)*

6 You are the manager of a bond fund which has three Eurobonds due to mature at the end of this month. On the basis of the terms and share prices shown below, describe what action you expect to take at maturity, giving your reasons and what amount of money or shares you will receive.

a) Bond A – a 6% annual ACT/ACT coupon mandatory convertible bond which converts into 5,000 shares per €50,000 nominal of bond if the share price is below €10 or 3,571 shares if the share price is above €14. The current stock price is €9.40 and the fund owns €1m nominal of this bond. *(3 marks)*

b) Bond B – a 4% annual ACT/ACT coupon convertible bond with a conversion ratio of 21.28 shares per $1,000 nominal of bond. The current stock price is $39.50 and the fund owns $5m nominal of this bond. *(2 marks)*

c) Bond C – a 2% semi annual ACT/ACT coupon convertible bond with a conversion ratio of 25 shares per £100 nominal of bond. The current share price is £6.15 and the fund owns £500,000 nominal of this bond. *(2 marks)*

7 a) List FOUR effects of the inflation rate being consistently higher than its targeted rate. *(2 marks)*

b) List TWO effects of the inflation rate being consistently lower than its targeted rate *(1 mark)*

8 Define the terms:

a) Yield to maturity *(1 mark)*

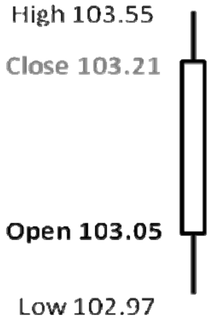
b) Par yield curve *(1 mark)*

c) Spot curve *(1 mark)*

d) Give a brief description of how each of these yields is used in fixed income investments. *(3 marks)*

9 a) Describe what has happened to the price of the following bond during the course of the trading day as evidenced by the day's candlestick below. *(1 mark)*

b) In which direction does this candlestick suggest that the price of the bond might be travelling and why? *(2 marks)*



10 a) Describe why a put may be included in the terms of a bond and what impact it has on the coupon when compared to the coupon on a straight bond of the same maturity. *(2 marks)*

b) Describe why a call may be included in the terms of a bond and what impact it has on the coupon when compared to the coupon on a straight bond of the same maturity. *(2 marks)*

SECTION B TOTAL 25 MARKS

Answer ALL questions in this section

11 Today is 24 October 2011. You have been asked by an affluent couple to devise a savings plan to cover their daughter's university fees. You have been advised that their daughter is currently 8 years old and it is planned that she will start university in 10 years. You have been given the following information:

Current tuition fees:	£9,000 per annum
Current living expenses:	£11,000 per annum
Projected average inflation to plan end date:	3% per annum

a) Calculate the annual fees and living expenses that will be required for the 4 year period at university using a table similar to Table 1 below:

Table 1	Future sum required
Year 1	
Year 2	
Year 3	
Year 4	

(2 marks)

b) Using the gilt yields in Table 2 below, calculate the amount that needs to be invested in the plan today:

Table 2	Gilt Yields	Amount needed today
Year 1	2.50%	
Year 2	2.58%	
Year 3	2.69%	
Year 4	2.80%	
	Total	

(2 marks)

After discussions with the couple you decide that the corporate bonds and gilts shown in Table 3 are suitable for inclusion in the fund.

c) What is your suggested asset allocation for the fund, choose at least FOUR bonds? *(2 marks)*

d) What is the annual yield to maturity of your fund and how does this relate to the gilt yields that you have used to calculate the funds required today to establish the fund? *(1 mark)*

e) Are there any risks that might cause the fund to produce less than the required future amounts? *(3 marks)*

f) Explain your chosen asset allocation to your customers including an explanation of how the funds will become available to meet the expenses. *(3 marks)*

Table 3

Corporate Bonds	**Rating**	**Coupon**	**Maturity Date**	**Years to Maturity**	**Dirty Price**	**YTM**
National Grid Plc 1.25 06 Oct 2021 MTN	BBB+	RPI +1.25%	06-Oct-21	10 yrs	101.55	
Prudential Finance	A+	6.875%	20-Jan-23	11 yrs 3 mths	116.56	4.860%
GE Capital Uk Funding	AA	5.125%	24-May-23	11 yrs 7 mths	97.97	5.290%
Scottish Power UK Plc	A-	6.750%	29-May-23	11 yrs 7 mths	116.24	4.820%
Roche Finance	A+	5.375%	29-Aug-23	11 yrs 10 mths	116.29	3.620%
RWE Finance Bv	A-	5.625%	06-Dec-23	12 yrs 2 mths	109.06	4.580%
National Grid Co Plc	BBB+	5.875%	02-Feb-24	12 yrs 4 mths	114.03	4.320%
Severn Trent Wtr Util Fin	BBB+	6.125%	26-Feb-24	12 yrs 4 mths	114.85	4.470%
KFW International Finance	AAA	5.000%	10-Sep-24	12 yrs 11 mths	119.30	3.130%
United Utilities	BBB	8.500%	31-Mar-25	13 yrs 5 mths	135.75	4.760%
European Investment Bank	AA+	5.500%	15-Apr-25	13 yrs 6 mths	121.05	3.480%
Kreditanstalt fuer Wiederaufbau	AAA	5.500%	18-Jun-25	13 yrs 8 mths	125.30	3.160%
Vodafone	A-	5.625%	04-Dec-25	14 yrs 2 mths	113.45	4.280%
United Utilities Electricity plc	BBB	8.875%	25-Mar-26	14 yrs 5 mths	140.75	4.810%
EDF	A+	5.500%	05-Jun-26	14 yrs 8 mths	106.40	4.820%
SNCF	AA+	5.375%	18-Mar-27	15 yrs 5 mths	112.00	4.250%
EDF	A+	6.125%	07-Jun-27	15 yrs 8 mths	111.90	4.940%
Gilts						
3¾% Treasury Gilt 2021	AAA	3.75%	07-Sep-21	9 yrs 11 mths	111.41	2.495%
4% Treasury Gilt 2022	AAA	4.000%	07-Mar-22	10 yrs 5 mths	113.95	2.521%
5% Treasury Stock 2025	AAA	5.000%	07-Mar-25	13 yrs 5 mths	125.34	2.777%

12 You see the following information concerning the 5yr annual coupon 5.25% GBP bond, issued by XYZ plc:

- Price 101.375
- Yield 4.93%

5 yr Gilt yields are 3.78%, and 5 yr GBP mid swaps (vs 6m £ LIBOR) are 4.02%.

a) What is the XYZ credit spread to Gilts? *(1 mark)*

b) Work out the asset swap spread versus 6 m £ LIBOR *(1 mark)*

c) The CDS spread for the 100bp fixed coupon 5yr quarterly contract is on the screen at 98bp. Is this too wide or to tight? Explain why. (*3 marks)*

d) Are there any other factors that need to be taken into consideration before you look at an arbitrage trade? *(1 mark)*

e) What trade would you put on to arbitrage this if the reverse repo on this bond is trading at 6m £ LIBOR -4 bps? *(2 marks)*

f) Is your proposed trade positive or negative basis? *(1 mark)*

g) What is your expected P&L expressed in basis points? *(1 mark)*

h) Would you execute this trade? *(1 mark)*

SECTION C — TOTAL 30 MARKS

Answer TWO of the FOUR questions in this section.

Each question carries 15 marks.

13 The UK Consumer Price Index (CPI) is currently running at 5.2%. The yield to maturity of the UK five year maturity benchmark gilt is 1.25% and the ten year maturity is 2.40%. The returns on the UK Index Linked Gilts 2016 and 2024 are -1.41% and -0.07% respectively.

The Governor of the Bank of England, Sir Mervyn King, has stated that “much of the inflationary pressures that we are seeing is due to high commodity prices and beyond the control of the Bank of England” and “we may see another move upwards in the CPI in the next few months as a result of gas and electricity prices, but once that's happened - from then on - inflation will start to come back. And it should fall quite sharply during next year, and there should be no further squeeze on living standards unless we see further rises in import or oil and commodity prices. I think, given where we are today, that seems less likely than it did even one month ago”. Discuss, with your reasons, whether you believe that:

i) The market is being too pessimistic about the inflationary outlook
ii) The Governor and MPC are being too optimistic
iii) They could both be right

14 UK Chancellor George Osborne has suggested that the Collateralised Loan Obligation (CLO) Market might be reactivated to encourage banks to increase their lending to small, medium sized entities (SMEs) and then remove the risk from their balance sheets by transferring it to CLOs. Discuss what safeguards need to be put in place to avoid the events of the Credit Crunch being repeated.

15 Discuss the advantages and disadvantages of the decision of a diversified pension choosing to switch the asset allocation of high yield debt from 10% to 30% of the portfolio by reducing exposure to investment grade.

16 Discuss the role of fixed income derivatives in the management of a large multi-currency bond fund with substantial inflows of new money.

How would your answer differ if the fund were gradually declining with net outflows of cash?