

INSTITUTE AND FACULTY OF ACTUARIES



EXAMINATION

9 October 2015 (pm)

Subject ST5 – Finance and Investment Specialist Technical A

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *You have 15 minutes before the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all seven questions, beginning your answer to each question on a new page.*
6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

- 1** (i) Define the following terms:
- (a) trade cycle
 - (b) price earnings ratio
 - (c) defensive company
 - (d) cyclical company
- [4]
- (ii) Describe how the price earnings ratios of defensive and cyclical companies might evolve over the trade cycle.
- [4]
[Total 8]
- 2** A European call option is being written for a 9-month option on a 10-year bond with a face value of £1,000. The bond pays a semi-annual coupon of 8% p.a. and coupon payments are due in 2 months and 8 months. The current “dirty” bond price is £960, the strike price is £1,000, the risk-free force of interest is 5% p.a. for all durations up to one year and the volatility of the lognormal distribution of forward bond prices in nine months is 10% p.a.
- Calculate the price of the call option, where the strike price is the “dirty” cash price that will be paid for the bond on exercise.
- [8]
- 3** (i) Describe the different corporation tax systems which a country may adopt. [6]
- An investment consultant has recently been offered a job in a country which does not levy income tax. Holders of the job will be required to move to the country and be registered as a resident there. The consultant is independently wealthy and married with two small children. The consultant’s family will not be relocating.
- (ii) Discuss potential reasons why accepting the job might not be advantageous for the consultant from a net of tax perspective.
- [6]
[Total 12]

- 4 (i) State the main uses of investment indices that track equity markets. [4]
- (ii) Describe the main features of two Japanese equity indices. [4]

You have been given the following information in relation to an index that tracks Japanese equities:

<i>Time t</i>	<i>Capital index value $I(t)$</i>	<i>Accumulated XD adjustment at time t</i>
1 January 2010	670	26
1 January 2011	684	40
1 January 2012	676	48

- (iii) Calculate the total return on this index over 2011. [2]
- (iv) Comment on the result from part (iii). [2]
- (v) Describe an alternative method and formula that could be used to calculate the total return if the ex-dividend adjustment is not available. [2]
- (vi) Comment on a possible limitation of each of the approaches in parts (iii) and (v). [2]

[Total 16]

- 5** The financial regulator who oversees retail investments has received a number of complaints regarding an investment manager who manages money on behalf of private investors. As a result, the regulator has carried out an inspection visit to the investment manager's offices. Some of the findings from the report were:
- (a) Boxes of documents containing client addresses and personal details left in hallways, under desks and in the staff canteen.
 - (b) Empty files in the Know Your Customer directory on the computer's main server.
 - (c) Only one registered bank account. The bank account was in the name of the investment manager.
 - (d) An employee incentive scheme which invested in the investment manager's best stock ideas one day prior to client monies being invested in the stocks.
 - (e) Marketing materials which gave information on only 70% of the asset classes that the investment manager actually invested in.
 - (f) A \$1m loan from a local bank which was due for payment in 30 days. The company had no provisions set aside to meet this payment.
 - (g) No written procedure documents.

Explain, for each issue, the potential breaches in the principles which financial services legislation seeks to address. [16]

- 6** An established life insurance company primarily writes annuity business but has been struggling to maintain adequate capital reserves. A competitor insurance company is performing due diligence on the insurance company with a view to making a take-over offer. The risk of future insolvency is to be analysed using asset-liability modelling techniques.

- (i) State the steps that would be taken to construct the model. [3]

The results of the asset-liability modelling suggest that there is insufficient interest rate hedging at the longer durations.

- (ii) Assess the advantages and disadvantages of TWO methods that could be used to hedge this risk. [15]

[Total 18]

- 7 (i) Describe the characteristics of Exchange Traded Funds. [4]

A retail investor is planning to make modest regular cash contributions in order to create investment portfolios to provide infant grandchildren with finance for university fees and house purchase.

- (ii) Assess which asset classes might be most suitable for investment of these contributions. Consideration of tax issues is not required. [10]

- (iii) Discuss appropriate ways in which investment in the chosen investment classes might be achieved. [8]

[Total 22]

END OF PAPER