

# INSTITUTE AND FACULTY OF ACTUARIES



## EXAMINATION

27 April 2015 (am)

### **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 eight questions, beginning your answer to each question on a new page.*
6. *Candidates should show calculations where this is appropriate.*

***Graph paper is required for this paper.***

#### ***AT THE END OF THE EXAMINATION***

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

<p><i>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.</i></p>
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- 1** (i) Describe the role of credit rating agencies in the fixed income markets. [4]
- (ii) Assess the consequences of investors placing less reliance on credit ratings, following a period of stress in the fixed income markets. [4]
- [Total 8]

- 2** (i) Describe the main limitations of portfolio performance measurement. [4]
- (ii) Propose an action that could be taken to address each of the limitations described in part (i). [4]
- [Total 8]

- 3** (i) State why pension funds generally have investment restrictions. [3]
- (ii) Outline reasons why a pension scheme's investment restrictions might limit exposure to hedge funds. [4]
- (iii) Suggest other issues that pension fund trustees might have regarding hedge fund investment. [3]
- [Total 10]

- 4** A bond fund manager is considering an anomaly switch between two gilts. The data he has concerning current market values are:

	<i>Redemption Date</i>	<i>Clean price</i>	<i>Yield %</i>
4¾% Treasury Stock 2020	7 March 2020	113.84	2.33
3¾% Treasury Gilt 2020	7 September 2020	107.88	2.46

- (i) Demonstrate three methods to assess whether there is an opportunity here for an anomaly switch. [4]
- (ii) Outline additional factors that would need to be considered by an institutional investor considering a large anomaly switch. [5]
- (iii) Outline two methods by which an investor could take advantage of an anomaly whilst maintaining no overall market exposure (i.e. having a market neutral position) to the bond markets. [2]
- [Total 11]

- 5 The following total return data is provided for a fund and relevant indices:

	<i>Year 1</i>		<i>Year 2</i>		<i>Year 3</i>	
	<i>Index</i>	<i>Fund</i>	<i>Index</i>	<i>Fund</i>	<i>Index</i>	<i>Fund</i>
Index-linked bonds	−5%	−1%	+27%	+29%	+34%	+38%
Domestic equities	+14%	+11%	+4%	+5%	+17%	+16%
Overseas equities	+14%	+13%	+10%	+10%	+14%	+15%

The fund's strategic benchmark was set at the start of Year 1 as 40% index-linked bonds, 40% domestic equities and 20% overseas equities. It was not amended during the three year period.

The fund manager adopted a strategy of 50% index-linked bonds, 25% domestic equities and 25% overseas equities at the start of the period and did not rebalance.

Ignoring the fund's cash flows and stating any assumptions that you make:

- (i) Calculate the total returns on the fund and the strategic benchmark over the period and state the relative performance. [3]
  - (ii) (a) Calculate how much of the fund's relative performance is attributable to stock selection and how much is attributable to asset allocation.
  - (b) Calculate the relative contributions of stock selection and asset allocation at the asset class level.
  - (c) Assess the most important areas for attention in order to reduce underperformance.
- [9]  
[Total 12]

- 6 An experienced business person has a successful restaurant chain with five locations in two major cities. He believes that the economy is about to come out of a deep recession and has therefore decided to pursue an aggressive expansion plan with five new restaurants planned over the next 12 months.

- (i) List the sources of financing that the individual could use to aid the expansion. [4]

The restaurant owner decides to raise a bond issue to finance the expansion. The bond issue is currently being marketed to potential investors.

- (ii) Describe the analysis that an investor might undertake prior to investing in this bond issue. [12]  
[Total 16]

- 7** An investor is comparing two possible investment strategies:

**Strategy A**

Buy £100 of equity shares.

Buy £100 notional of European calls at a strike price of 6,600.

Sell £200 notional of European calls at a strike price of 7,800.

Sell £100 notional of European puts at a strike price of 4,500.

It can be assumed that these options have zero premium.

**Strategy B**

Sell £100 notional of European calls at a strike of 5,400 (price £5 per £100 notional).

Buy £100 notional of European calls at a strike of 5,100 (price £3 per £100 notional).

Sell £100 notional of European calls at a strike of 6,600 (price £4 per £100 notional).

Buy £100 notional of European calls at a strike of 6,900 (price £3 per £100 notional).

The options are all written with a one year term on the same equity index, the current value of which is 6,000. Dividends can be ignored.

- (i) Plot a chart for each of these strategies that shows the value of the portfolio after one year. [8]
- (ii) Suggest why an investor might choose to follow Strategy A over a one year time horizon. [2]
- (iii) (a) Comment on why Value at Risk is a poor measure of the risk of this strategy.
- (b) Suggest an alternative approach.

[4]

[Total 14]

- 8** A large global charity provides long term care to the elderly whilst at the same time seeking to have minimal impact on the environment.

- (i) Determine what should be the main investment objectives for the charity's assets. [8]

Following a review of the current investments, it has been decided that a small proportion of the assets should be invested in infrastructure. A specialist investment manager has therefore been appointed.

- (ii) Describe the main features of an infrastructure investment. [6]
- (iii) Assess whether infrastructure might be considered a suitable asset class for the charity. [4]
- (iv) State what should be included in the explicit written mandate between the trustees of the charity and the investment managers. [3]

[Total 21]

**END OF PAPER**