INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

24 April 2018 (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 must not start writing your answers in the booklet until instructed to do so by the supervisor.*

3. *You have 15 minutes of planning and reading time before the start of this examination. You may make separate notes or write on the exam paper but not in your answer booklet. Calculators are not to be used during the reading time. You will then have three hours to complete the paper.*

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.*

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.

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) Describe the rights of the holder of:

(a) a European call option.

(b) a European put option.

[2]

(ii) Draw on separate diagrams, defining all notation used:

(a) the payoff from buying a call option.

(b) the payoff from selling a call option.

[3]

A derivatives trader has presented an option strategy to their manager for review. The trader believes that a lot of publicity surrounding a pharmaceutical company stock is unfounded and the stock price will remain stable over the coming months. They have suggested a strategy to profit from this which combines four option contracts with the same expiration date but three different strike prices:

- buying one call option for £8 at the lower strike price, £80 – A
- selling two call options for £10 (£5 each) at the middle strike price, £100 – B
- buying one call option for £4 at the higher strike price, £120 – C

(iii) Draw the payoff for A, B and C together with the payoff for the overall strategy suggested above. [3]

(iv) Comment on the strategy presented by the derivatives trader. [3]

[Total 11]

2 (i) Describe prospect theory. [2]

The performance of Abacus Fund Management, a fund manager who has been managing an international equity investment trust, is:

Performance in:	*Year 1*	*Year 2*	*Year 3*
Abacus Fund Management	–1%	3%	10%
Benchmark	–1%	7%	12%

Every three years the independent directors of the investment trust need to ask shareholders whether or not the trust should change the fund manager. The directors have received offers from two other fund managers, Bright Fund Management and Calculating Fund Management, to manage the trust instead of Abacus.

The directors of the investment trust are now drafting the question that will be sent to the shareholders and the marketing manager of Abacus Fund Management has suggested that the communication should read:

Dear shareholders,

Every three years we are required to ask whether or not you wish to retain the current fund manager or appoint a new fund manager. The current fund manager, Abacus Fund Management, has managed the fund over the last three years and last year your investment grew by 10%. Over three years, Abacus has outperformed the UK stock market by 3%. We have also had offers to manage the investment trust from Bright Fund Management and Calculating Fund Management. Please indicate which fund manager you wish to select on the form below.

Which option do you wish to select?

1. Retain Abacus Fund Management.
2. Appoint Bright Fund Management.
3. Appoint Calculating Fund Management.

Yours sincerely,

The Directors of the Investment Trust.

(ii) Discuss why the marketing manager has suggested that the question to shareholders be put in this form. [6]

(iii) Suggest how the communication from the directors of the investment trust could be improved. [4]

[Total 12]

3 A wealthy investor is considering investing in a range of hedge funds.

(i) Describe the principal characteristics of a hedge fund. [4]

(ii) Describe FOUR types of common hedge fund strategies. [2]

Before deciding on her investment, the investor has been studying the past performance of a range of 20 different hedge funds. Data has been provided by one market analyst group on four of these hedge funds:

Hedge fund	*Fund added to dataset*	*5-year performance*	*Latest valuation*
Axe capital	September 2011	12% p.a.	£10.5 billion
Edgy stock pick	April 2014	8% p.a.	£20.0 billion
Easy profit	January 2009	14% p.a.	£5.5 billion
Fund max	July 2015	11% p.a.	£45.9 billion

(iii) Explain the difficulties which may be encountered when trying to gain an insight into these hedge funds. [5]

(iv) Suggest possible ways of mitigating these difficulties. [2]
[Total 13]

4 (i) List the factors involved in the contract specification of a futures contract for a commodity. [3]

(ii) Describe contango and backwardation, giving formulae and stating any conditions necessary for these market situations to exist. [4]

(iii) Suggest possible reasons why an institutional investor may want exposure to commodities. [2]

A large multinational fund manager believes that metal prices are likely to rise rapidly in the future.

(iv) Discuss how the fund manager may gain exposure to metal prices. [3]
[Total 12]

5 An investor wishes to invest in a newly emerging economy through an existing fund manager.

(i) Describe the restrictions that the investor is likely to want to include in the investment agreement. [5]

One year after making the initial investment with the fund manager, the investor becomes concerned that the market has overpriced the emerging economy, which may lead to a significant fall in value through a market correction.

(ii) Describe different strategies that could be used to protect the value of the investment. [6]

(iii) Discuss the risks inherent in each strategy. [6]

[Total 17]

6 United Stores, a large long standing retailer, has provided the following extracts from its most recent report and accounts:

	$000
Income statement	
Revenue	600
Operating profit	75
Interest paid	50
Profit before tax	25
Balance sheet	
Property	400
Inventories	50
Cash	10
Total assets	460
Bank loans and overdrafts	100
Corporate bonds	300
Dividends payable	50
Total liabilities	450
Net assets	10
Total equity	10
Cash flow statement	
Net cash from operations	15
Net cash from investing operations	(25)
Net cash from financing operations	(75)
Net (decrease)/increase in cash and cash equivalents	(85)

(i) Comment on these figures, including an assessment of the company's balance sheet and the composition of its income statement. [8]

United Stores has decided to refurbish its stores in an effort to attract new customers. To achieve this, the management believes the company will need $20,000.

(ii) Describe how the company may be able to raise this sum. [2]

A rival of United Stores offers to buy the company for $20,000.

(iii) Suggest reasons why the rival is prepared to pay double the net asset value for United Stores. [5]

[Total 15]

7 (i) Describe the FIVE principal active management styles. [5]

The trustees of a pension scheme want to evaluate two active equity managers to ascertain which manager generates the higher return per unit of risk taken.

The table below sets out the managers' performance and the benchmark return over the year, as well as some summary statistics.

	Equity manager X	*Equity manager Y*	*Benchmark index*	*Risk free rate*
Return	7% p.a.	9% p.a.	6% p.a.	3% p.a.
Standard Deviation	10% p.a.	15% p.a.	9% p.a.	
Correlation with benchmark	0.8	0.6	1.0	

(ii) Calculate FOUR different risk adjusted performance measures for each equity manager. [8]

(iii) Comment on the results from part (ii) in relation to each equity manager. [2]

(iv) Comment on the choice of an appropriate risk-adjusted performance measure. [3]

(v) State FOUR reasons why the performance of an investment portfolio is measured. [2]

[Total 20]

END OF PAPER