INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

25 April 2012 (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 separate sheet.*

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) Outline the characteristics of debentures. [3]

(ii) Explain the attraction of debentures for:

(a) issuers
(b) investors

[7]
[Total 10]

2 (i) State the differences between forward and future interest rate contracts. [2]

(ii) State the formula for converting a futures rate to a forward rate, defining any terms that you use. [2]

A Eurodollar futures quote is for a three-month contract and is expressed with quarterly compounding.

(iii) Calculate the forward rate consistent with a six-year Eurodollar futures price quote of 96, where the volatility of short-term interest rates is 1% p.a. [3]

(iv) State the procedure for valuing a swap using forward rate agreements. [3]
[Total 10]

3 (i) List the key industrial classification features of banks. [2]

(ii) Describe how domestic bank shares are expected to perform relative to consumer non-durable goods shares during:

(a) low economic growth
(b) high economic growth

[4]

A retired professional is deciding whether to invest part of his portfolio in a number of domestic bank shares. His requirement is for capital growth over a short horizon of one to two years.

Over the past year bank shares have fallen in value by an average of 60% due to concerns about global economic growth. The current forecast is for an economic recovery in three to four years' time.

(iii) Explain why the proposed investment might not be suitable for the individual. [5]

(iv) List other ways in which this investor could gain exposure to banks without investing directly in the underlying shares. [2]
[Total 13]

4 Explain why declines in property prices may create losses in other parts of the economy. [14]

5 (i) Outline three ways of minimising an investor's capital gains tax liability. [3]

A wealthy investor with multi-residency status is deciding which country to declare her personal wealth in to minimise taxes payable. Currently the investor’s portfolio consists of:

(All values in 000’s)

Asset	*Start Year 1*	*End Year 1*	*End Year 2*	*End Year 3*
Property – Main residence	2,000	2,000	2,500	2,500
Property – Investment portfolio	3,750	4,000	5,000	4,500
Share portfolio	2,800	3,000	6,000	5,000
Income from shares	-	300	500	500
Automobile collection	1,000	1,000	1,200	1,500
Art collection	150	250	300	0*

* The art collection was sold at the end of Year 2.

The investor is choosing between the tax regimes in two countries as set out below:

Tax	*Country A*	*Country B*
Income tax	50%	10%
Capital gains tax	30%, payable each year based on appreciation of asset value during the year	15%, payable only once every 3 years based on value of assets at end of 3rd year. Assets disposed of before 3 year period not subject to tax
Allowances	Main residence is exempt from tax	Depreciating assets (includes automobiles) can offset 25% of value from any tax payable
Capital loss	20%, claim back tax on depreciation of asset value during the year	No allowance made for capital losses

(ii) Calculate the total tax that would be payable in each of the three years and in total, in each country, split between income and capital tax. State any assumptions you make. [7]

(iii) Describe two ways the investor might be able to lower her future total tax burden, assuming the above tax regimes remain unchanged. [2]

(iv) Suggest reasons why an investor might decide to declare residency in a country where the capital gains tax rates are higher than in another country. [2]

[Total 14]

6 (i) Describe absolute and relative approaches to pricing assets. [4]

(ii) Explain the function of beta in the Capital Asset Pricing Model (CAPM). [3]

In a market where the CAPM holds, the following parameters are known:

Risk-free rate of interest = 5% p.a.
Expected market rate of return = 9% p.a.
Standard deviation of an efficient portfolio's returns = 0.10
Standard deviation of market returns = 0.2

(iii) Calculate the expected return on the portfolio. [2]

(iv) Outline reasons why the CAPM may not hold true. [5]
[Total 14]

7 (i) State how the MSCI style indices distinguish between value and growth stocks. [2]

(ii) List factors which identify:

(a) growth stocks
(b) value stocks

[4]

(iii) Describe other equity investment styles an investor might use. [3]

(iv) Assess whether the following stocks would be classified as value or growth stocks.

Company	*Products/Services*
Big Bang Theory Ltd	Develops computer software for mobile / cell phones
Power2u	Provides electricity to the northern region of a country
Classic Wooden Furniture Ltd	Has produced chairs and tables for schools for the last 100 years
Superfluid	An energy drinks company which has recently expanded into countries where energy drinks are new to the market
In the sticks	A regional supermarket with plans to introduce stores nationally
GiveMeSomeCredit.com	A bank with a stable client base

[6]

All these stocks have been included in an equally weighted portfolio (with no rebalancing).

You have been given the following investment performance results:

Company	*Year 1*	*Year 2*	*Year 3*
Big Bang Theory Ltd	12%	5%	2%
Power2u	7%	8%	8%
Classic Wooden Furniture Ltd	4%	7%	9%
Superfluid	21%	2%	–6%
In the sticks	5%	11%	1%
GiveMeSomeCredit.com	9%	8%	9%
Total Benchmark return	11%	5%	4%
Growth Benchmark return	14%	5%	–1%
Value Benchmark return	7%	7%	8%

(v) Calculate the following:

(a) Return of the total portfolio compared with the total benchmark return

(b) Return of the growth portfolio compared with the growth benchmark return and total benchmark return.

(c) Return of the value portfolio compared with the value benchmark return and total benchmark return.

[8]

(vi) Assess whether the returns in (v) indicate that the economy was growing or contracting during the period calculated. (You may assume that the portfolio is representative of the entire economy.) [2]

[Total 25]

END OF PAPER