

EXAMINATION

30 October 2012 (am)

Subject F105 — Finance and Investment Specialist Technical

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 at 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 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.

QUESTION 1

A general two-period equation for asset pricing is as follows:

$$p_t = E_t(m_{t+1}x_{t+1}).$$

- i. Define and interpret each of the terms in the above equation.

[3]

Assume that individuals have utility functions defined over consumption in this and the next time period as follows:

$$U(c_t, c_{t+1}) = u(c_t) + \beta E_t[u(c_{t+1})]$$

where c_t denotes consumption in time period t , $u(x)$ denotes the utility received from consumption x and $\beta < 1$ is a subjective discount factor. Individuals are endowed with amounts e_t and e_{t+1} in each of the respective periods, and may purchase or sell unlimited quantities of the risky asset at the equilibrium price.

- ii. Show that m_{t+1} in the general asset pricing equation is given by $\beta \frac{u'(c_{t+1})}{u'(c_t)}$ for an investor with consumption utility defined as above.

[4]

[Total 7]

QUESTION 2

Horizon is a very large, listed domestic financial services company. Horizon has historically outsourced its information technology (IT) requirements to third party service providers. Horizon's Board of Directors has decided rather to bring the IT capabilities in-house through the purchase of a small, listed domestic IT company, Databin. The due diligence has been comprehensive and the transaction has now been formally approved. The moment before the news is made public, the companies' key financial values are as follows:

	Horizon	Databin
Assets	R100 billion	R100 million
Liabilities	R80 billion	R90 million
Number of shares	100 million	1 million
Price per share	20,000c	2,000c

Horizon will pay for Databin by giving Databin shareholders one Horizon share for every ten Databin shares held. The ratio will be adjusted to retain value parity if the share prices change before payment.

- i. Explain whether the proposed transaction is a merger or acquisition. Classify, with reasons, the type of transaction from Horizon's perspective.

[3]

On the day that the news of the transaction is made public, Horizon's share price closes at 19,990c. Horizon does not release any other news during the day.

- ii. Discuss the factors the market would take into account in reacting to the announcement, giving plausible reasons for the change in Horizon's share price.

[6]

After the transaction, a large number of Databin's senior staff leave. The staff turnover reflects the most pessimistic scenario of several considered when appraising Databin's purchase.

- iii. Discuss behavioural reasons that might explain why the high staff turnover was considered in only the most pessimistic scenario.

[5]

[Total 14]

QUESTION 3

The regulator of financial markets in a developing country has been tasked to investigate a case of potential money-laundering following a tip-off received from the listings authority, which is incorporated in the stock exchange.

- i. Discuss a suitable regulatory structure for the regulation of the stock exchange.
- ii. Outline the role of the listings authority and discuss likely reasons for its tipping off the regulator.

[4]

[6]

[Total 10]

QUESTION 4

A life office is interested in the information ratio of one of its funds, which consists of underlying asset-class portfolios in equities, bonds and cash, each with its own defined benchmark.

- i. Define the information ratio of a portfolio, setting out an equation for calculating the information ratio for a portfolio consisting of three underlying single-asset-class portfolios.

[4]

- ii. Hence, calculate the information ratio for the life office's portfolio given the following information and given that the tracking errors of the bonds and cash portfolios have a correlation coefficient of 0.3 while the equity portfolio's tracking error is uncorrelated with that of either of the other portfolios:

Asset class	Portfolio weight	Return above benchmark	Tracking error
Equities	20%	0.5%	1.6%
Bonds	60%	0.8%	0.9%
Cash	20%	-0.1%	0.3%

[4]
[Total 8]

QUESTION 5

A five-year zero-coupon bond of a local retail company is listed on the bond exchange. You work for a large bank that has been approached by the retailer to fund its planned expansion programme. You have been asked by the bank's credit manager to calculate the current value of the retailer's current debt obligations, and hence the implied credit spread, based on the following information from the bank's trading desk:

- The current value of the firm's assets is R100m
 - The bond will be redeemed at 1.2x par (with par at R70m), and the company has no other debt
 - Assume that the volatility of the firm assets is 25% per annum
- i. Assuming that the continuously compounded 5-year risk-free spot rate is 8% per annum, calculate the continuously compounded spread due to default risk on the above bond. [9]

The quoted price of the bond is currently 70% of par.

- ii. Calculate the continuously compounded spread implied by the quoted price, and explain the main reasons why this spread is different from the spread calculated in (i). [2]
- iii. Briefly describe the macro-considerations and the company-specific issues that need to be considered before approving the financing of the retailer. [3]

[3]
[Total 14]

QUESTION 6

You work for a large fund manager that manages several equity funds. Your role is to manage the actively managed fund (based on fundamental analysis).

- i. Describe the key investment features of insurance companies.

[3]

Your junior analyst has calculated the daily Price-Earnings Ratio (PER) for a short-term insurer over the last 3 years. The mean is 7.5 and standard deviation 1.5. He argues that the share should be purchased when the PER falls to 6, and sold when the PER rises to 9.

- ii. Briefly outline the points you would make in your response.

[3]

The firm's other funds include a fund based on technical analysis, a fund based on quantitative analysis and a passive fund tracking a broad market index.

- iii. Summarise the main features of fundamental analysis and explain how the strategies of these other funds differ from the actively managed fund (based on fundamental analysis).

[6]

[Total 12]

QUESTION 7

You are responsible for a specialist equity portfolio amounting to US\$50 million for one of your firm's large US-based institutional clients. The portfolio is invested in motor manufacturing companies domiciled within the following countries:

Country	% of portfolio
France	20%
Germany	15%
India	15%
Japan	20%
USA	30%

- i. Describe the two main Japanese stock indices.

[4]

- ii. For the purpose of performance measurement, justify which of the indices described in (i) would be more suitable and highlight the main limitations of using this index for this purpose.

[3]

Your client has been impressed with your firm's performance and investment philosophy, and now wishes to invest a further US\$200 million with you, with the scope of the investment extended beyond the narrow confines of the specialist mandate: you will be given freedom to pursue a diversified investment strategy in the pursuit of higher returns, subject to constraints imposed by the client which are in line with its risk tolerance.

- iii. Outline the likely targets and constraints that will be set out in the revised mandate, and discuss the ways in which you might substantially increase the diversification of the larger portfolio.

[10]

[Total 17]

QUESTION 8

You manage two bond funds, one of which is marketed primarily to mature defined benefit pension funds and the other to high net-worth private investors.

- i. Discuss likely differences in portfolio composition between the two bond funds. [4]
- ii. Distinguish between anomaly switching and policy switching, briefly describing three techniques which can be used to identify switching opportunities for each. [9]
- iii. State with reasons which type of switch would be more likely to be employed in each of the two bond funds. [2]
- iv. You are considering a policy switch on the bond fund for which such a strategy would be permissible. Discuss the factors you would consider before going ahead with the proposed strategy. [3]

[Total 18]

END OF PAPER