ACTUARIAL SOCIETY OF SOUTH AFRICA

EXAMINATION

5 June 2024 (am)

Subject F105 — Finance and Investment Fellowship Principles

Time allowed: *Three hours and twenty minutes (which includes five minutes for downloading and uploading your answer document)*

Total marks: *100*

INSTRUCTIONS TO THE CANDIDATE

1. *Ensure that you are logged in and authenticated through Examity before you attempt the examination.*
2. *The question paper is only available in the ASSA Exam Platform as a PDF download and may not be printed. Copy/paste of questions or parts thereof is allowed from the question paper to your Word answer document only.*
3. *Download the Word answer document template from the ASSA Exam Platform. Save this Word answer document on your desktop using your Candidate Number as filename. You are required to submit your answers in Word format ONLY using this document. No answers in any other format (e.g. handwritten) will be accepted. Save work regularly.*
4. *Ensure that your Candidate Number appears in the "header" of your Word answer document. [Double-click on the header at the top of the Word document, input your Candidate Number only in the header, then press "Esc" to close the header.]* ***Do not use your name or member number anywhere in your Word answer document.***
5. *You may not access any file from your computer, use any other computer app (e.g., Email or Excel) or open any other browser during the examination. Nor may you use Grammarly, Grammarly Premium or similar add-ins. Microsoft Word spellcheck is allowed.*
6. *You may not use any other material (e.g., a Formulae and Tables book) during the examination. Any such information that may be required will be provided to you within the examination.*
7. *You are strongly encouraged to use the first 15 minutes as reading time only, however, you may start answering the paper whenever you are ready.*
8. *Mark allocations are shown in brackets.*
9. *Attempt all eight (8) questions, starting each on a new page (as provided for in the Word answer document).*
10. *Show calculations where appropriate. You may use blank paper to carry out rough work calculations. You may use a calculator from the ASSA-approved list only.*
11. *Upload your Word answer document only into the ASSA Exam Platform. Once you have uploaded your document, you must click on* ***Finish Attempt*** *to save your document. You will still be allowed to go back and make changes (****Review Attempt****) if you have time.*
12. *Once you are satisfied with your uploaded document, click* ***Finish Attempt*** *and* ***Finish all and Submit****. Once you have submitted you will not be able to make any changes.*
13. ***You must submit your Word answer document BEFORE the end of the allotted examination time.*** *You should stop writing and start uploading during the last five minutes. Take this into account when planning your review and submission. There will be no time announcements.*

Note: The Actuarial Society of South Africa will not be held responsible for loss of data where candidates have not followed instructions as set out above.

END OF INSTRUCTIONS

QUESTION 1

An active fund manager responsible for an equity portfolio of R500 million mostly applies consumption-based models for asset pricing. The investment style is described as ‘contrarian’.

i. List four additional modelling approaches to asset pricing.

[2]

ii. Explain a ‘contrarian’ investment style.

[2]

iii. Describe the main investor behavioural bias that a contrarian investor aims to benefit from.

[1]

iv. Suggest typical characteristics of a ‘contrarian’ investor portfolio.

[2]

Expectations are that in the next 6 months equity values might fall and the manager hedges 10% of the portfolio with a 6-month futures contract on the local index which is currently at 2 500. The futures contract price is 2 550 and the payoff is based on R10 per index point.

v. Calculate:

a. the number of contracts the investor needs to short if the portfolio’s beta (β) is 0.8 relative to the index.
b. the payoff from the futures contracts if the value at expiry is 2 250.

[3]
[Total 10]

QUESTION 2

The investment mandate of a South African actively managed equity portfolio, with the Top 40 Index as its benchmark, allows for the use of derivatives.

To protect the portfolio against a potential capital loss, the asset manager has just bought listed put options on a Top 40 futures contract that expire in 3 months. The number of options bought was calculated assuming the portfolio is fully invested in the domestic equities.

i. Explain why the buyer of an option is not required to deposit margin.

[2]

ii. Outline the key risks of this derivative strategy in protecting the portfolio´s capital.

[4]

iii. Suggest two alternative over-the-counter derivative strategies that are based on the portfolio’s actual share holdings, and in each case, outline a risk specific to that alternative.

[2]
[Total 8]

PLEASE TURN OVER

QUESTION 3

A listed company that issued loan capital through a private debt offering some time ago now intends to list new debt on the local exchange to raise further finance. The fixed-income team of an investment bank advised the company that there are restrictions attached to the existing private debt issue that might influence the listing of the new debt.

i. Briefly outline the role of the investment bank in assisting the company with the primary market issuance of the listed debt.

[4]

ii. Explain why financial covenants may be attached to the existing private debt issue and give four examples of financial covenants.

[4]

An investor needs to reduce their current private debt exposure in the company to create capacity for participating in the listed debt issuance.

iii. Outline how the reduced exposure can be achieved through a:

a. credit default swap
b. credit-linked note

[4]

The company issues a 5-year listed debt instrument with a credit rating of BBB.

Over the last five years, four out of the 117 publicly issued 5-year BBB-rated debt instruments defaulted, with an average recovery of 50%. Based on this, a junior analyst suggests that the current credit spread on 5-year BBB-rated public debt instruments should be 3.4% (≈ 4/117).

iv. Define ‘credit spread’ and explain why the above calculation is not correct by outlining additional factors that should be considered to determine a credit spread.

[5]
[Total 17]

PLEASE TURN OVER

QUESTION 4

Glo, a successful listed conglomerate, is considering expanding the company through either one of the following acquisitions:

X – purchasing a supplier to one of Glo’s subsidiaries.

Y – purchasing a profitable business unrelated to Glo’s current operations.

i. Discuss the relative merits to Glo of Acquisition Y over Acquisition X.

[4]

Glo has expressed a commitment to sustainable and socially responsible investment practices.

ii. Discuss with examples, how this commitment will impact Glo’s decision as to which acquisition to make.

[4]

Glo proceeds with Acquisition Y and has the option to settle the transaction in cash or by raising finance by issuing of a fixed-interest bond.

iii. Discuss the considerations in deciding between the two options for financing the transaction.

[7]
[Total 15]

QUESTION 5

A crypto asset is a digital representation of value which can be traded, transferred and stored electronically for the purpose of payment or investment. Crypto asset service providers (CASPs) act as custodians of the funds used to purchase crypto assets.

The financial services regulator is bringing crypto assets within the regulatory remit by requiring the licensing of CASPs and proposing prescriptive rules for them.

i. List four functions that could be performed by a custodians of investment proceeds, such as CASPs.

[2]

ii. Outline the general aims of the regulation and the possible implications of this regulatory development on individual investors.

[6]

Licensed CASPs are required to adhere to requirements aimed at reducing financial crime.

iii. Suggest possible reporting obligations of CASPs to the financial services regulator to accomplish this aim.

[2]
[Total 10]

PLEASE TURN OVER

QUESTION 6

A company domiciled and exclusively operating in South Africa developed a unique and affordable solar energy solution. The company recently listed on the JSE and expects to be included in the Top 40 index within the next two years.

i. State the main characteristics of the FTSE/JSE Top 40 index.

[3]

ii. Discuss how the company should be classified comparing its key characteristics to those of a typical company in the energy sector.

[3]

Two fundamental analysts independently determined a P/E ratio for the company as 25 and 35 respectively, whereas the P/E ratio for the energy sector is 16.

iii. Suggest reasons for the differences in the values of the P/E ratio.

[4]

iv. Outline how the expected inclusion of the shares of the company in the index may influence the fundamental analysis of the company.

[3]

[Total 13]

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QUESTION 7

An active asset manager with a balanced mandate is responsible for managing the assets of a pension fund valued at approximately US$3 billion. As investment consultant to the Fund, outline the key points in formulating your response to each of the following discussion points that the trustees have raised, considering its historical investment performance:

i. The asset manager has requested approval for an increase in fees of 0.25% p.a. of assets under management.

[6]

ii. The Fund should introduce specialist managers or passive index tracking.

[6]

The historical investment performance information for the Fund for the periods as indicated, where "BM" represents the benchmark, is as follows:

	2022				2023			
	Weighting		Return		Weighting		Return	
Asset class	*Fund*	*BM*	*Fund*	*BM*	*Fund*	*BM*	*Fund*	*BM*
Cash	14%	10%	6.20%	6.15%	16%	10%	8.40%	8.30%
Bonds	21%	28%	5.50%	5.45%	25%	28%	7.40%	7.45%
Equities	34%	40%	7.25%	7.40%	28%	40%	-2.50%	-1.25%
Alternative	10%	7%	7.75%	8.00%	8%	7%	12.00%	9.00%
Foreign	21%	15%	9.00%	9.05%	23%	15%	12.00%	12.10%
	Sharpe Ratio		1.02		Sharpe Ratio		0.24	
	Asset Allocation		0.20%		Asset Allocation		1.48%	
	Stock Selection		-0.07%		Stock Selection		-0.13%	

[Total 12]

PLEASE TURN OVER

QUESTION 8

The trustees of a defined benefit (DB) pension fund are reviewing its investment performance and risk over the last 5 years in preparation for the next risk budgeting process.

The following investment return statistics have been made available, expressed as % p.a.:

	2019	2020	2021	2022	2023	Average
Actual fund portfolio	8%	12%	0%	4%	4%	5.6%
Strategic benchmark portfolio	9%	14%	-4%	4%	2%	5%
Matching portfolio	8%	12%	-2%	5%	10%	6.6%

i. Define the following terms as these relate to investment portfolio management:

   a. Risk budgeting
   b. Strategic risk
   c. Active risk

[3]

ii. Calculate, using standard deviation of relative returns, the strategic risk and the active risk for the fund over the 5-year period, and comment on the results.

[5]

Despite the fund's asset managers maintaining active risk within budget, one of the trustees is concerned about the level of active risk and proposes a reduction of the fund's exposure to this risk.

iii. Suggest restrictions that could be placed on the asset managers to reduce the fund's active risk exposure.

[3]

In response to the suggestion, one of the asset managers suggests that rather than reducing the fund's exposure to active risk, more of the total risk should be allocated to active risk.

iv. Discuss the factors to be considered in increasing the allocation of total risk to active risk.

[4]

[Total 15]

END OF PAPER