EXAMINATION

23 November 2021 (am)

Subject F105 — Finance and Investment Fellowship Principles

Time allowed: *Three hours and fifteen minutes, plus an additional five minutes to allow for scrolling in the ASSA Exam Platform*

Total marks: *100*

INSTRUCTIONS TO THE CANDIDATE

1. *Ensure that you are logged in and authenticated through Examity before you attempt the examination.*

2. *Questions are only available in the ASSA Exam Platform and may not be printed.*

3. *Submit all of your answers in the ASSA Exam Platform only. No uploads of answers (handwritten or otherwise) to the ASSA Exam Platform will be accepted.*

4. *You may not use any other computer program (e.g. Email, MS Word or Excel) or files, nor open any other browser during the examination.*

5. *You may not make use of a Formulae and Tables book during the examination. Any such information that may be required will be provided to you within the examination.*

6. *You are strongly encouraged to use the first 15 minutes as reading time only, however, you may commence answering the paper whenever you are ready.*

7. *Mark allocations are shown in brackets.*

8. *Attempt all nine (9) questions.*

9. *Show calculations where this is appropriate. You may use blank paper to carry out rough work calculations. You may use a calculator from the approved list only.*

10. *You may return to your answers to review and amend during the allotted examination time. Once you are happy with your answers you need to* ***Finish all and Submit*** *your work. Once you have submitted you will not be able to make any more changes to your answers.*

11. *You must submit all work BEFORE the end of the allotted examination time. Take this into account when planning your review and submission. There will be no time announcements.*

12. *An option to opt out of the exam will become available 1 hour after the official exam start time. If you select the Opt-Out option, you agree and understand that your entire script/answers will be deleted and cannot be retrieved at a later stage and that your script or part thereof will not be put forward for marking.*

Note: Answers will be saved automatically during the examination if you are connected to the ASSA Exam Platform. However, 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

© Actuarial Society of South Africa

QUESTION 1

You are a hedge fund manager and are considering several alternative investments.

i. Define the term *hedge fund*.

[1]

ii. Describe what is meant by a *global macro fund*.

[2]

iii. For each of the following trends, give an example of a possible market-neutral investment strategy that will allow you to benefit from the trend and state a major risk attached to the strategy.

a. Satellite technology is resulting in an exponential increase in the number of internet users in developing nations.

b. The populations in many countries are ageing (due to decreasing birth rates and people living longer).

c. The global move to renewable energy is resulting in companies in the energy sector that still rely on fossil fuels becoming out of favour.

[6]
[Total 9]

QUESTION 2

CellX is a cell phone company. They buy cell phones from suppliers to resell, with airtime and data bundle contracts. CellX has a large book of monthly-paid cell phone contracts with terms ranging from 1 to 3 years.

i. Outline factors that would influence the risk of continued payment of the monthly instalments on a book of cell phone contracts.

[3]

CellX plans to securitise the income from some of these contracts.

ii. Explain how the securitisation could allow CellX to grow their sales and profit.

[2]

The securitisation will be issued with senior, mezzanine and equity tranches.

iii. Propose measures that will enhance security for investors in the senior and mezzanine tranches of the proposed securitisation.

[2]

iv. Outline further factors that would influence the risk and pricing of the different tranches of the securitisation.

[3]
[Total 10]

REMEMBER TO SAVE

© Actuarial Society of South Africa

QUESTION 3

i. State the aims of
   a. competition regulators and
   b. fair trading controls.

[2]

ii. Give two examples of business practices that would not be regarded as *fair trading*.

[2]

Two large local hospital groups are considering a merger.

iii. Outline the possible motives for this merger and give an illustrative example of the benefit expected in each case.

[4]

The national competition regulator must evaluate the proposed merger, as it would lead to a possible dominant market position.

iv. Explain how the possible abuse by the merged hospital group of its dominant position may affect its suppliers, patients and shareholders.

[3]

[Total 11]

QUESTION 4

A borrower with a variable interest-only loan (i.e. the full principal is repaid at the end of the loan period) with an outstanding term of 6 months is concerned about the impact of rising prime interest rates on his monthly repayments due at the end of months five and six.

i. Explain how forward-rate agreements (FRA's) can be used to hedge this risk.

[2]

All rates mentioned and quoted below are nominal annual rates, compounded monthly.

The prime rate is pegged to the 1-month interbank rate with a margin of 3% p.a. added. The spot interbank rates are given below.

Months 1 - 4	**Month 5**	**Month 6**
5%	5.5%	6.0%

ii. Calculate the (per annum, monthly compounded) forward prime rates over month five and month six.

[2]

REMEMBER TO SAVE

© Actuarial Society of South Africa

Instead of entering into the two separate FRA's, the borrower enters into a forward swap over months 5 and 6.

iii. Calculate the fixed rate of the swap.

[2]

iv. Outline the impact on the borrower if the prime rate remains at the current level over the six-month period.

[1]

[Total 7]

QUESTION 5

A large, locally-listed and well-established car manufacturer recently completed the building and successful testing of their first electric-powered vehicle. The company now plans to expand their local manufacturing plant to start producing the electric vehicle in addition to their current offering. This expansion is to be financed with a rights issue.

i. List the industry that would include this company in terms of the FTSE industry classification system, and outline the key characteristics of this industry.

[3]

ii. Explain eight key factors that should be considered in order to derive a fundamental value for the share post rights-issue.

[8]

The ratio of the current share price to prior 12-month earnings (i.e. the P/E ratio) for the company is 15 (compared to the long-term average PE of 10 and standard deviation of 3).

iii. Explain briefly why, despite the high P/E ratio, the company might not be overvalued relative to its fundamental valuation for an investor.

[2]

The bank underwriting the rights issue expects that most, but not all, of the new shares available will be taken up by investors. As the bank does not wish to have any exposure to the car manufacturer post rights-issue, it puts into place a hedge arrangement for the unplaced shares using futures contracts.

iv. Explain the risks that the bank may be exposed to on the hedge.

[2]

Post the rights-issue, the weighting of the company in the local market-capitalisation overall share index increases to 14%, making it by far the largest listed company in the index. Local fund managers suggest that share weights in the index should be capped at 10%.

v. Discuss this suggestion.

[3]

vi. Outline two other relative approaches for assessing the performance of a fund, in addition to comparing the performance relative to a published index.

[2]

[Total 20]

REMEMBER TO SAVE

© Actuarial Society of South Africa

QUESTION 6

i. For each of the companies listed below, state two reasons unique to that industry why the market capitalisation of the company would differ from the Net Asset Value (NAV), as at the calculation date.

   a. A life insurance company
   b. An investment trust company, investing in unlisted assets
   c. A general retailer

[3]

You are a market analyst considering the performance of a company for 2020, based on the extract below from the financial statements. You may ignore tax.

Balance Sheet	**31 December 2019**
Total Shareholder Funds	R100m
Fixed Assets	R90m
Net short-term assets	R10m

Income Statement	**2020**
Net operating profit	R18m

The equity market return for 2020 was 14%, the risk-free rate was 4% and the company beta (β) is estimated to be 1.6.

ii. Calculate the risk-adjusted return on capital for the company for 2020, based on the information given above, and comment on your answer.

[2]

An analyst estimates internally generated goodwill to be R40m and R60m at the start and end of 2020 respectively. She further estimates that R15m of the 2020 marketing expense in the financial statements resulted in this increase. The company's market capitalisation on 31 December 2019 was R140m.

iii. Define, and explain the origins of, *internally generated goodwill* and *other types of goodwill*.

[3]

iv. Define *economic value added* and calculate this measure for the company for 2020 based on the analyst's estimates above.

[2]

[Total 10]

REMEMBER TO SAVE

 © Actuarial Society of South Africa

QUESTION 7

A newly-established investment bank is considering how to control and monitor market risk for a portfolio of assets.

i. State how the investment bank might define market risk.

[1]

ii. Outline the modelling the bank might do, in order to measure market risk.

[2]

The bank has developed an investment strategy for the portfolio, based on a suitable risk measure and risk appetite.

iii. Explain how the commercial environment might further influence the investment strategy for the portfolio.

[2]

iv. Describe the additional steps the bank should take to *control* and *monitor* its market risk.

[4]

The bank is contemplating making a private debt investment that amounts to 10% of the portfolio by reducing the exposure to listed equity.

v. Explain the impact of this investment on the portfolio's overall riskiness by giving consideration to the various financial risks it is exposed to.

[5]

[Total 14]

QUESTION 8

A South African mining company has opened a mine in Brazil. The mine has a finite expected life. The conditions attached to the mining license awarded by the Brazilian government are that the mining company must restore the surrounding environment to its original state within 5 years of the mine closing.

South African accounting standards require that the mining company account for this future expense as a liability on their balance sheet. The value of the liability is to be determined using a discounted cashflow approach, with projected rehabilitation expenses discounted using an appropriate yield curve in the country where the mine is located.

An actuary has calculated the value of the liability on behalf of the mining company and an equivalent amount has been set aside in a South African money market fund which is ring-fenced for this liability.

i. Outline why this investment strategy may not be appropriate.

[3]

ii. Discuss how this investment strategy could be improved by implementing liability driven strategies, including the use of derivatives.

[5]

[Total 8]

REMEMBER TO SAVE

© Actuarial Society of South Africa

QUESTION 9

i. State the taxation factors, and influences on these factors, that need to be considered when selecting investments which maximise after tax returns.

[5]

Investors in equity unit trusts in a particular tax jurisdiction only pay capital gains tax when they sell their units in the unit trust. The taxable gain is then calculated using the difference between the price units are sold at and the average purchase price of those units.

The tax authority has proposed an amendment to taxation of capital gains within unit trusts such that the net capital gains for all underlying equity trades taking place during the tax year will be aggregated and will be taxable in the hands of the unit trust investor at the end of that particular tax year.

ii. a. Explain the rationale for this proposed tax amendment

[2]

b. Discuss the potential disadvantages and difficulties associated with this proposal from the various stakeholders' perspectives.

[4]

[Total 11]

END OF PAPER

 © Actuarial Society of South Africa