EXAMINATION

26 May 2022 (am)

Subject F107/B100 — Banking Fellowship Principles

Time allowed:	*Three hours and fifteen minutes, plus an additional five minutes to allow for uploading your file 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. *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 only allowed between the Exam Platform and the Word answer document.*

3. *You are required to submit your answers in Word format ONLY using the answer template provided. No uploads of answers (handwritten or otherwise) will be accepted.*

4. *Ensure that your Candidate Number appears in the "header" of your Word answer template. [Select "Insert", then "Header", input your candidate number on the blank header template and select "Close Header"].* ***Do not use your name or member number on your answer script.***

5. *You may not access any file from your PC, use any other computer program (e.g. Email or Excel), or open any other browser during the examination.*

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 questions.*

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

11. *Upload your Word answer file only into the ASSA Exam Platform. Once you have uploaded your file, you must click on* ***Finish Attempt*** *to save your file. 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 file, click* ***Finish attempt*** *and* ***Finish all and Submit****. Once you have submitted you will not be able to make more changes.*

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

14. *An option to opt out of the exam will become available 1 hour after the official examination 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: 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

BankBSM is a medium sized bank offering a combination of retail and wholesale products. You have recently been appointed as the head of BankBSM's Balance Sheet Management team. The Bank's CRO has asked you to outline the principles of capital management.

i. Explain what is meant by Expected and Unexpected Losses in the context of setting regulatory capital requirements for credit risk.

[5]

ii. Briefly describe the Pillar 2 Supervisory Review and Evaluation Process, under the Basel framework.

[5]

iii. Describe the two types of capital assessment required as part of an ICAAP exercise.

[3]

BankBSM is in the midst of finalising the adoption of Basel III for the purposes of capital management.

iv. Outline the main shortcomings of Basel II.

[2]

[Total 15]

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QUESTION 2

LargeCorp is an established bank that focuses on the non-retail (corporate customers) lending market. Since inception, loan originations have been assessed through using a purely qualitative application scorecard that is performed by the Credit Risk Managers. LargeCorp's management have become concerned about the inability of this purely qualitative scorecard to adequately assess credit risk in this portfolio.

Over its years of operation, LargeCorp has been focused on collecting the necessary data to make use of a more statistical approach to credit assessment at origination for non-retail customers.

i. Outline the considerations with respect to establishing a data set for the purpose of developing a statistical non-retail scorecard.

[5]

ii. Discuss the steps you would follow in developing a statistical application scorecard model for the non-retail portfolio.

[8]

LargeCorp has successfully developed a statistical non-retail scorecard.

iii. Outline some of the considerations in the application of this new scorecard in loan originations.

[5]

Traditionally, LargeCorp has made use of multiple product level scorecards for its customers (i.e. each loan application is scored separately for different products and a customer may have two different credit scores across two products). One year after implementation of the statistical scorecard, LargeCorp has further refined their credit originations process to make use of a single customer score.

iv. Outline some of the benefits and challenges of using a single customer score at the point of origination. Note, no comparison to the qualitative model is required.

[4]

[Total 22]

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QUESTION 3

A model development team in a bank is currently developing forecasting models for the retail portfolio. They are constructing an economic indicator function based on macroeconomic variables to support forecasting for multiple purposes.

The economic indicator (EI) function is as follows:

$$EI_t = w_1 . \widetilde{GDP}_{t-3} + w_2 . \widetilde{PPI}_t + w_3 . \widetilde{RIR}_{t-1}$$

where:

w_1, w_2, w_3 represent calibrated weight parameters
$\widetilde{GDP}_{t-3}$ is the standardised variable for the Gross Domestic Product (GDP), with a 3 quarter lag.
$\widetilde{PPI}_t$ is the standardised variable for the Property Price Index (PPI), with no lag.
$\widetilde{RIR}_{t-1}$ is the standardised variable for the Reference Interest Rate (RIR), with a 1 quarter lag.

The interpretation of the function is that a positive value of EI represents an improving economy, and a negative value represents a declining economy.

A variable (Y) is standardised by using the formula, where the mean and standard deviation are obtained from historical observations:

$$\tilde{Y}_t = \frac{Y_t - mean(Y)}{standard\ deviation\ (Y)}$$

The values of the macroeconomic factors and the relevant parameters are shown in the table below, together with a forecasted scenario.

		GDP	PPI	RIR
mean		240 000	100	10.0%
standard deviation		120 000	105	5.0%
weights		w1 = +0.7	w2 = +0.5	w3 = – 0.5
Historic values	t-4	255 000	122	10.25%
	t-3	246 000	130	10.25%
	t-2	248 000	112	10.25%
	t-1	250 000	115	10.25%
Forecasted scenario	t	230 000	112	9.50%
	t+1	220 000	108	8.50%
	t+2	210 000	98	7.50%
	t+3	208 000	95	8.00%

The forecast shown above represents a severe scenario over the next 12 months in which the central bank reduces interest rates to assist the general economy, while GDP and PPI drop sharply.

The team suggests that this economic indicator model could be used to forecast credit risk impacts for all products in the retail book. The retail portfolio includes: Credit Cards, Unsecured Personal Loans and Home Loans.

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i. Comment on the suitability of the economic indicator function, including its components, for this purpose.

[6]

ii. Calculate the economic indicator function values over the forecast period for the scenario provided, and comment on the results.

[6]

iii. The CFO has commented that the model is not producing the desired output when applied to the portfolio over the forecasted scenario. Suggest reasons as to why this may be the case.

[4]

iv. Describe briefly some suggestions that you could put forward to the CFO to meet her current needs, given that the current model is not producing the desired output.

[6]

[Total 22]

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QUESTION 4

i. Define the following in the context of banking: liquidity risk and the Liquidity Coverage Ratio (LCR).

[3]

ii. Outline reasons as to why corporate deposits usually have a higher outflow rate assumption than compared to retail deposits in the LCR computation.

[4]

A bank's assets, liabilities and equity (in local dollar currency) are shown in the balance sheet below.

Assets	**(L$ million)**	**Liabilities and Equity**	**(L$ million)**
Retail loans	900	Retail deposits (stable)	500
		Retail deposits (non-stable)	850
SME (small business) loans	350	Retail term deposits (> 3 months)	100
High Quality Liquid Assets		SME (small business) deposits	100
-- Cash	100		
-- Domestic sovereign debt securities	100	Non-financial corporate deposits	50
-- Qualifying corporate debt securities	50		
Other assets	300	Equity	200
Total Assets	**1 800**	**Total Liabilities and Equity**	**1 800**

iii. The liquidity measurement team is planning on drafting an estimate of the LCR. In the next 30 days, the Bank is expecting L$ 50m in contractually due loan repayments from fully performing retail and non-financial corporate customers, and L$ 10m from the central bank. Given this information, and stating any assumptions made with respect to LCR factors, calculate the LCR for the bank.

[5]

iv. The CFO of the bank has suggested that maintaining an LCR ratio over 150% is not optimal for the bank. Briefly discuss this comment.

[4]

v. Describe three other liquidity risk metrics that are often used in a bank's liquidity risk function.

[6]

[Total 22]

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QUESTION 5

BigBank is one of the largest multinational banks globally. BigBank's management believes that there are opportunities for further expansion either through organic growth or through the acquisition of other banks, especially as some of their competitors are exiting certain markets.

i. Outline the considerations to take into account when choosing which market(s) to expand into.

[9]

After careful consideration the BigBank decides to expand into Country B, through acquisition of a local bank. There are only four banks operating in Country B. The target bank currently provides the following products: Transactional Accounts (Retail and Business Current Accounts) and Unsecured Loans. The market share of the target Bank within the local market (share of advances and profit share per product as a percentage of the whole industry) is as provided below:

Market Share for Target Bank as a % of whole industry		
Product	**Loans and Advances**	**Profit**
Transactional Accounts	45%	30%
Retail	*55%*	*25%*
Business	*40%*	*40%*
Unsecured Loans	25%	10%

The bank's profits are split between the products in the following proportions:

Product	**Target Bank Share of Profit after Tax**
Transactional Accounts	80%
Retail	*40%*
Business	*40%*
Unsecured Loans	20%

ii. Discuss the considerations in purchasing this specific bank.

[10]

[Total 19]
[Grand Total 100]

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END OF PAPER

