

# Actuarial Society of South Africa

## EXAMINATION

19 May 2016

### Subject F206 – Banking Fellowship Applications

Time allowed: Three hours

#### *INSTRUCTIONS TO THE CANDIDATE*

- 1. Candidates will be issued with instructions to log-in using a password (which you will be provided with at the exam center).*
- 2. Candidates are required to submit their answers in Word format only using the template provided. You MAY NOT use any other computer program (e.g. Excel) during the examination.*
- 3. Save your work continuously throughout the exam, on your computer's hard drive with which you have been provided.*
- 4. 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.*
- 5. You must not start typing your answers until instructed to do so by the invigilator/supervisor.*
- 6. Mark allocations are shown in brackets on exam papers.*
- 7. Attempt all questions, beginning your answer to each question on a new page.*
- 8. Candidates should show calculations where this is appropriate.*

**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.**

#### *AT THE END OF THE EXAMINATION*

**Save your answers on the hard drive.**

**Hand in your question paper with any additional sheets firmly attached.**

<p>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.</p>
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## QUESTION 1

You are the head of the Retail division within a large bank. A customer complaint has come across your desk stating that there are no banking services in a prominent town to the East of Johannesburg. After investigation, you discover all of the other large banks have some presence in the area (ATMs or branches, but most have both).

- i. Explain the items you would consider when deciding whether or not you should create a presence in the area.

[6]

After investigating your considerations, the bank decides to open a branch in a large prominent local shopping centre and install three ATMs across the town (one ATM is installed in the same shopping centre as the branch that has been opened, but is located in a different area within the shopping centre). After several months of operation, sales volumes (general customer volumes) are particularly low at this branch, however, usage of all three ATMs are line with expectations.

- ii. As part of an investigation to assess the continued viability of the branch, you are tasked to investigate potential issues leading to the lower than required sales and to suggest possible solutions. Explain the potential issues and possible solutions you may find.

[5]

[Total 11]

## QUESTION 2

You are the head of Transactional Banking for a large commercial bank. You are investigating your current account offering to customers specifically earning less than R150k per annum. This product has two pricing options - a flat monthly fee of R11 (with pay as you go transactions and benefits) and a flat monthly fee of R55 (which includes unlimited ATM withdrawals, internet banking and unlimited debit orders).

The profitability of the product has reduced significantly over the last year (please see the income statement for the current account product below for the 2014 and the 2015 financial years).

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Rand	Book information	
	2014	2015
Active Accounts	1 200 000	1 250 000
Average Debit Balances for the Year	R 750 000 000	R 823 000 000
Average Credit Balances for the Year	R 2 000 000 000	R 2 194 666 667
Average Client Limits for the Year	R 1 700 000 000	R 2 250 000 000
CPI	4%	4.5%

Rand	Financial information	
	2014	2015
Interest income	R 145 000 000	R 146 000 000
Fee income	R 401 000 000	R 376 000 000
Cost of Funding	R 45 000 000	R 55 000 000
Branch Costs	R 125 500 000	R 135 000 000
ATM Costs	R 77 500 000	R 89 000 000
Debit ordering processing costs	R 22 500 000	R 30 000 000
Direct Costs	R 11 000 000	R 12 100 000
Opening Provision balance	R 50 000 000	R 52 500 000
Closing Provision balance	R 52 500 000	R 57 225 000
Write offs	R 32 300 000	R 36 499 000
Additional Provisions / overlays		R 10 000 000
Total Capital Required	R 235 000 000	R 310 000 000

- i. a) Define and calculate the following measures for this product: interest margin percentage, bad debt charge percentage, profits per annum and return on equity (ROE) for each financial year.  
b) Briefly describe the information value of each of these measures. [6]
- ii. Discuss and explain the main contributing factors to the changes in profitability and ROE. [15]
- iii. Discuss ways in which this financial situation can be improved in the coming financial year. [9]

[Total 30]

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### QUESTION 3

The following definitions, with reference to counterparty credit risk exposure in the trading book, are provided from the Bank for International Settlement document *International Convergence of Capital Measurement and Capital Standards* (2006):

**Expected Exposure** is the mean (average) of the distribution of exposures at any particular future date before the longest-maturity transaction in the netting set matures. An expected exposure value is typically generated for many future dates up until the longest maturity date of transactions in the netting set.

**The Peak Exposure** is a high percentile (typically 95% or 99%) of the distribution of exposures at any particular future date before the maturity date of the longest transaction in the netting set. A peak exposure value is typically generated for many future dates up until the longest maturity date of transactions in the netting set.

Consider a netting set containing the following derivative instrument:

Interest rate swap

- Pay floating receive fixed
- R1bn nominal
- Effective date 31 January 2016
- Termination date 31 January 2021

- i. Explain the Expected Exposure and Peak Exposure of this netting set in an increasing yield curve environment as well as an inverting yield environment.

[8]

You are the actuary working on a credit portfolio desk at a large Pan-African bank. One of the senior managers has approached you regarding the profitability of the rates business in light of the regulatory changes implemented under Basel III. She has asked you for an assessment of the impact and the mitigating actions you would propose to manage the sustainability of the business going forward.

- ii. Discuss the points you would make to her under the following headings:
- (a) Capital supply
  - (b) Capital demand
  - (c) Leverage
  - (d) Liquidity

[26]

[Total 34]

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#### QUESTION 4

A large South African bank is considering moving from the Basic Indicator Approach to the Advanced Measurement Approach for the calculation of Operational Risk Capital (under Basel II). It currently offers a wide range of lending products, however, its primary exposure is to Retail Mortgages, Credit Cards and Vehicle Finance. The Bank currently only operates in South Africa.

- i. Explain the 3 approaches for calculating Operational Risk capital under Basel II. [9]

The Bank's CFO has indicated that she is concerned that moving to a more advanced approach could be difficult for the Bank to achieve, and has asked you to provide her with more information on the potential implications of the change to the Bank. She has specifically requested a brief report discussing the main advantages and disadvantages of moving from the Basic Indicator Approach to the Advanced Measurement Approach.

- ii. Discuss the points you would make in your report. [12]

The Bank's Operational Risk Management department has not traditionally modelled operational risk. The department has approached an external consultancy to understand the potential modelling options.

- iii. Explain the common methodologies for calculating the frequency and severity of the operational risk loss model. [4]

[Total 25]

**[GRAND TOTAL 100]**

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**END OF EXAMINATION**