EXAMINATION

19 October 2021

Subject F206 – Banking
Specialist Applications

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. *Ensure that you have your candidate number handy to input as part of the examination.*

3. *Questions are only available in the ASSA Exam Platform and may not be printed. Copy/paste of questions or parts thereof is only allowed between the Exam Platform and the Word answer document.*

4. *You will be provided with a Word template to access and use to complete your questions. You may only use the file provided to you. No other file from your PC may be accessed.*

5. *Ensure that your Candidate number appears in the Header of your Word template. [Select "Insert", then "Header", input your candidate number on blank header template and select "Close Header"]. DO NOT USE YOUR NAME OR MEMBER NUMBER ON YOUR ANSWER SCRIPT.*

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

7. *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.*

8. *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.*

9. *Mark allocations are shown in brackets.*

10. *Attempt all questions.*

11. *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.*

12. *Upload your answer file into the ASSA Exam Platform BEFORE the examination time expires.*

13.   Once you have added 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.

*14.   Once you are satisfied with your uploaded file, click FINISH ATTEMPT **and** FINISH ALL AND SUBMIT whereafter you will not be able to make more changes. Take this into account when finishing early - once you have submitted, you will not be able to make any more changes to your answers.*

15.   It is the candidate's responsibility to ensure that all work is submitted BEFORE the end of the examination time. Take this into account when planning your review and submission. There will be no time announcements.

16.   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: 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

You are a consulting actuary working for Turn-It-Around Consultants and Actuaries. LendiT Bank has requested your services to assist them with substantially improving their business.

LendiT is a pure retail bank, using only retail deposits for funding and the only credit product they sell to the market are retail loans of less than R50,000 (micro loans). LendiT's financials for the last 5 years have been fully audited by a credible audit firm and they have provided assurance that all monies flowing into and out of the microlender have been accurately accounted for. In addition, they state that all IT systems are fully operational from a technical perspective.

LendiT has a R12bn portfolio which is the 3rd largest market share in small retail loans (micro loans). In the 2019 calendar year it generated a loss of R50m and in 2020 it generated a loss of R65m.

i.   Explain what information each of the following financial metrics, as derived from a bank's financial statements and financial disclosures, provides:
- ROA (return on assets),
- Cost to income,
- Bad debt charge to assets,
- NIR (non-interest revenue) to assets and
- NII (net interest income) to assets.   [5]

ii.   Describe how you would evaluate the following aspects of the business to inform the recommendations you would make to LendiT Bank:

a.   Financial results and standing   [8]

b.   Strategy, operating model, and operating environment   [9]

c.   Pricing methodology   [8]

d.   Credit risk models and credit outcomes   [12]

[Total 42]

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QUESTION 2

TechBank is a large bank that offers a full suite of Retail and Non-Retail products. TechBank prides itself on being at the cutting edge of innovation and technology and often introduces new products and technology to the market. The CRO of TechBank has asked you to write a short report detailing the potential benefits of adopting new technologies such as Artificial Intelligence (AI) and Machine Learning (ML) to better manage their credit and other risks.

AI seeks to complete human intelligence tasks. ML is a subset of AI that seeks to make applications more accurate in predicting outcomes without having to be specially programmed.

i.   Briefly discuss the potential advantages of using AI and/or ML in managing risk.

[7]

ii.   The CRO recently met with the CEO of a large South African Telco to discuss the potential use of alternative data sources, such as Telecom data, to enhance the AI / ML models further. Briefly discuss the advantages of using alternative data in credit risk modelling.

[5]

iii.   Before asking the modelling team to incorporate these new techniques (AI/ ML) and Alternative Data in its credit risk modelling, the CRO would like to understand the main challenges of using AI / ML models and Alternative Data to support business decisions. Outline these challenges, as well as ways in which they can be proactively mitigated.

[10]

[Total 22]

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QUESTION 3

i.   State what the main aims of IFRS9 are.

[5]

United Africa Bank (UAB) is a medium sized bank that operates across several African jurisdictions, offering retail lending products. The bank's model validation team is about to commence its annual assessment of its key IFRS 9 models. However, the head of the validation team is aware of the effect of COVID-19 on on-going model performance.

ii.   In particular, the head of validation is concerned about the effect of payment holiday programmes that have been offered to customers. Discuss the key aspects to be considered in the validation, and how some of these may be dealt with.

Note: Discussion regarding the Forward-Looking models are not required for this part of the question

[14]

To incorporate forward looking information into the provisions, UAB has developed the following 2 macroeconomic linkage models for its South African Mortgage and Credit Card portfolios.

$$PD_{Mortgages} = 0.02 - 0.07.(\Delta GDP) - 0.2.(\Delta PPI) + \varepsilon$$

$$PD_{Credit\ Cards} = 0.06 - 0.4.(\Delta GDP) + 0.15.(lagUE) + \varepsilon$$

The following variables have been used:

$PD_{Mortgages}$ is the expected probability of default of the mortgage portfolio at a forward looking time period.

$PD_{Credit\ Cards}$ is the expected probability of default of the credit card portfolio at a forward looking time period.

ΔGDP is the corresponding expected change in gross domestic product growth. You may assume that change is defined as the difference in the quarter-on-quarter macroeconomic variable.

ΔPPI is the corresponding expected change in a property price index inflation. You may assume that change is defined as the difference in the quarter-on-quarter macroeconomic variable.

$lagUE$ is a lagged level of unemployment. You may assume it is a one quarter lag macroeconomic variable.

ε is a random error term.

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The table below summarises actual historic Macro Economic Variable data and three quarters or forecasts:

	Long Run	Q1 – actual	Q2 – forecast	Q3 – forecast	Q4 – forecast
GDP growth	5%	3%	-2%	1%	1%
PPI inflation	3%	1%	1%	0.5%	0.2%
Unemployment	10%	15%	15%	17%	20%

iii. Discuss the appropriateness of the existing forward-looking models being used, including potential alternative approaches of incorporating economic forecasts in making allowance for forward-looking requirements in UAB's IFRS 9 provisions.

[12]

iv. Describe how UAB Bank can use a management overlay framework for dealing with risk not adequately captured in the models.

[5]

[Total 36]

[Grand Total 100]

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END OF EXAMINATION