

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2022

CM2 - Financial Engineering and Loss Reserving Core Principles Paper B

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the Specialist Advanced (SA) and Specialist Principles (SP) subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Sarah Hutchinson
Chair of the Board of Examiners
July 2022

A. General comments on the *aims of this subject and how it is marked*

The aim of Subject CM2 is to develop the necessary skills to construct asset liability models, value financial derivatives and calculate reserves for insurance or guarantees. These skills are also required to communicate with other financial professionals and to critically evaluate modern financial theories.

The marking approach for CM2 is flexible in the sense that different answers to those shown in the solution can earn marks if they are relevant and appropriate. Marks for the methodology are also awarded including marks for using the right method even if an error in an earlier part of the question prevents the final answer from being correct. The marking focusses on rewarding candidates' understanding of the concepts, including their ability to articulate arguments clearly.

B. Comments on *candidate performance in this diet of the examination.*

Candidates who scored well were those who were able to set out their workings clearly and follow through later question parts even if they had made a mistake in an earlier part. This allowed them to score marks for their method even if their final answers were not correct.

Question 4 on option prices and the Greeks proved to be the most difficult question on the paper - this was a topic that is often examined but has perhaps appeared more often in the A paper in the past.

Candidates should note that showing their full calculations is vital in the B paper, including explaining any goal seek or other methods used. Any answers without workings scored zero marks.

C. Pass Mark

The Pass Mark for this exam was 60
1338 presented themselves and 506 passed.

Solutions for CM2B - April 2022 - please refer to Excel file

Q1

[Total 19]

In Parts (i) and (ii) of this question some candidates missed out on marks by not completing the 'comments' box in part (ii) to finish off their proof. Part (iii) caused more difficulty, with many candidates just producing a chart showing the figures from part (ii) when what we needed was a chart with standard deviation and expected return on the x and y axes respectively. Part (iv) also caused some difficulty, but most candidates picked up at least partial marks.

Q2

[Total 28]

In this question some candidates struggled to find the adjustment coefficient in part (ii) but still managed to score marks in the later question parts by following through the calculations correctly. Part (vi) was the most difficult and only the best candidates picked up these marks. The 'wordy' answers in parts (iv) and (vii) which required commentary, especially (vii) where the premium charged by the reinsurer is key to whether reinsurance will reduce the probability of ruin.

Q3

[Total 28]

Parts (iii) and (iv) tended to produce lower marks, especially (iii) where candidates were not awarded marks unless they could describe why.

Some candidates answered part (i) based on the accumulated value of a \$1,000 investment instead of the returns on the investment. This was awarded partial credit.

Q4

[Total 25]

Only well prepared candidates managed to calculate all of the Greeks correctly in part (i), and few managed to apply the Greeks (whether correct or incorrect) to the share price in part (ii). Most candidates picked up at least partial marks here though. In Part (v) some candidates suggested using another option to hedge the existing option which is unlikely to be appropriate if it just cancels out the position.

[Paper Total 100]

END OF EXAMINERS' REPORT