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Report to ECC from the Board of Examiners

SEMESTER 1 2012

PART III

BOARD OF EXAMINERS' REPORT

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SUMMARY

Examination Administration

The Semester 1 2012 Part III examinations of the Actuaries Institute ("Institute") were held from the 23rd April to 2nd May 2012.

Pass Rates

The number of candidates presenting for the Semester 1 2012 Part III Exams, the recommended passes and the resulting pass rates are shown in the table below, together with the corresponding numbers for the previous three exam periods:

Table A: Recommended Number of Passes by Part III Course

	2012 (1)			2011 (2)			2011 (1)			2010 (2)		
	Sat	**Pass**	**%**	**Sat**	**Pass**	**%**	**Sat**	**Pass**	**%**	**Sat**	**Pass**	**%**
1 Investments	56	17	30%	67	21	31%	80	26	33%	88	27	31%
2A Life Insurance	67	22	33%	49	10	20%	60	18	30%	55	17	31%
2B Life Insurance	52	13	25%	41	6	15%	41	16	39%	39	16	41%
3A General	103	29	28%	78	18	23%	72	24	33%	66	24	36%
3B General	71	27	38%	65	20	31%	58	20	34%	53	21	40%
5A Invest. Man. &	n/a	n/a	n/a	26	16	62%	n/a	n/a	n/a	38	20	53%
5B Invest. Man. &	22	13	59%	n/a	n/a	n/a	16	6	38%	n/a	n/a	n/a
6A GRIS	16	5	31%	n/a	n/a	n/a	18	9	50%	n/a	n/a	n/a
6B GRIS	n/a	n/a	n/a	8	5	63%	n/a	n/a	n/a	13	7	54%
7A ERM	TBC	TBC	TBC[1]	82	21	26[2]	82	17	21%[3]	63	22	34%[4]
ST1 Health & Care	TBC	TBC	TBC[5]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
C10 CAP	82	47	57%	87	48	55%	79	47	59%	102	56	55%
Total	**469**	**173**	**37%**	**421**	**144**	**33%**	**424**	**166**	**39%**	**517**	**210**	**41%**

The Chief Examiners aim to produce consistent standard of passing candidates, rather than a consistent pass rate from year to year. This semester, the recommended overall pass rate of 37% is higher than the previous semester. The number of candidates sitting the Part III exams in the latest period shows a 11% increase over the previous semester.

The pass rates for 2A and 2B for this semester show an improvement on the poor pass rates for the previous semester. However, the 25% pass rate for 2B is still relatively low compared to other subjects.

[1] Results not yet known
[2] Figure represents pass rate in respect of non-Fellows only. The pass rate for fellows was 29%.
[3] Figure represents pass rate in respect of non-Fellows only. The pass rate for fellows was 0%.
[4] Figure represents pass rate in respect of non-Fellows only. The pass rate for fellows was 80%.
[5] This is the first semester the ST1 Health & Care exam is offered as part of module one. Results not yet known.

Fellows

If ECC adopts the recommended passes, the number of members that will be made Fellows (subject to attendance at a Professionalism Course and paying any relevant exemptions) will be:

Table B: Recommended Number of Fellows

Category	2012 (1)	2011 (2)	2011 (1)	2010(2)	2010(1)
New Fellows	**43**	**36**	**40**	**40**	**51**

Prizes

Prizes are awarded only once in a calendar year following the Semester Two examinations. Chief Examiners have identified candidates that meet these criteria with regards to their current exam for evaluation following Semester 2 exams.

Major Prize

Analysis done following Semester 2 exams will include candidates completing their exams this semester to assess eligibility.

New Online Forum Participation

For this semester an online forum participation mark was introduced for all subjects except Access Macquarie subjects (C1 and 5B) and C10, replacing the previous assignment assessment.

Students were required to post three original posts and reply to three posts from other students. A participation mark was awarded based on the quality of these posts.

The following table provides a distribution of the participation marks received by students:

Participation Mark	2A	2B	3A	3B	6A	Total
10	19	12	33	57	6	127
9	30	15	9	6	2	62
8	9	9	18	6	3	45
7	3	11	18	1	1	34
6	1	2	17	0	0	17
5	0	1	1	0	0	2
4	0	0	0	0	0	0
3	0	0	0	0	0	0
2	0	0	0	0	0	0
1	0	0	0	0	0	0
0	6	2	11	1	4	24
No. of Candidates	**68**	**52**	**104**	**71**	**16**	**311**
Average Mark	**8.0**	**8.1**	**7.4**	**9.6**	**6.8**	**8.1**

Observations:

- For most subjects the average participation mark was high, higher than the average mark achieved previously for the assignments.
- A high 38% proportion of students across all subjects were able to achieve the maximum mark of 10/10. This was a very good outcome.
- For those candidates who passed the exam, they were generally helped by the high participation mark they received for the online discussion forum.
- Of all the borderlines and highest fails across all subjects, there was only one candidate who did not participate in the online forum and thus received 0/10. Although this candidate was satisfactory on the exam, the non-participation in the online forum meant this candidate was deemed a fail.
- The poorer candidates in the exam generally had lower participation marks for the online forum.
- These results indicate that there was a high level of student engagement in the new online assessment. A very good and welcoming outcome.

New Pass Criteria

Starting with this semester, the pass criteria has now been simplified to satisfying a single criteria of achieving a minimum scaled mark of 120 (i.e. a pass mark of 60%).

The previous pass criteria required candidates to satisfy a primary criteria of satisfying a minimum scaled mark of 120 with secondary criteria (covering passing half the exam questions, only 1 D, no E's or X's and a raw mark at least equal to the sum of the question pass raw marks).

The definition of a borderline was also changed to be any candidate with a scaled mark greater than 115 but less than 120.

Most Chief Examiners indicated that the new pass criteria and the new definition for borderlines increased the amount of time they spent reviewing the lowest passes, borderlines and highest fails. This is because all the candidate's questions needed to be reviewed, whereas previously only selected questions needed to be reviewed. However, I do not consider this a bad outcome. If we want to be fair to candidates we should review their whole paper.

Examination Administration

1. The Board

The Board of Examiners oversee the Part III examination process of the Actuaries Institute. The Board of Examiners consist of the Chair and the Chief Examiners for each subject, supported by Institute staff.

1.1. *BoE Chair*

Chair Gary Musgrave

1.2. *Chief Examiners*

Course 1:	Investments	David Pitt
Course 2A:	Life Insurance	Warwick Young
Course 2B:	Life Insurance	Gary Musgrave
Course 3A:	General Insurance	David Gifford
Course 3B:	General Insurance	Frankie Cahn
Course 5B:	Investment Management & Finance	David Pitt
Course 6B:	Global Retirement Income Systems	Stephen Woods
Course 10:	Commercial Actuarial Practice	Bruce Thomson

1.3. *External Examiners*

Course 1:	Investments	Bruce Graham
Course 5B:	Investment Management & Finance	Jack Ng

I would like to take this opportunity to thank all of the members of the Board of Examiners and their assistants for their efforts in preparing and marking the examination papers. The management of the examination process is an extremely important function of the Institute and it is currently being run by a small group of committed volunteers.

1.4. *Meetings of the Board*

The Board met on three occasions this semester as part of the exam process as follows:

Table 1: Meetings of the Board

Meeting	Purpose
11 January 2012	• Update on enrolment numbers and course offerings for this semester. • Identify Chief & Assistant Examiners and Course Leaders for each course for this semester. • Outline the responsibilities of Chief Examiners and this semester's schedule. • Review progress on the drafting of the exams to date
28 March 2012	• Discuss the status of this semester's examination papers, model solutions and sign-off process. • Discuss the marking spreadsheets and review the recruitment of markers.
6 June 2012	• Review the recommended pass lists and treatment of borderline candidates. • Review the recruitment of Chief Examiners and Assistant Chairs for next semester.

2. Administration and Exam Supervision

The Board of Examiners was ably assisted by a number of Institute staff, in particular Mr Philip Latham and Ms Rebecca Moore. Philip and Rebecca were responsible for administering the entire process and ensuring key deadlines were met, compiling and formatting the

examination papers, distributing material to candidates and to exam centres, processing results and collecting historical information for the production of this report. They did a great job and the Board of Examiners team is indebted to them both.

The Part III Sydney and Melbourne examinations delivered by the Institute were once again run by an external consultancy – Language and Testing Consultancy (LTC). The Part III examinations delivered by Access Macquarie were arranged with the Macquarie University Applied Finance Centre and the Centre for Adult Education in Melbourne as venues. Other examinations were administered by Fellows or other approved supervisors.

3. Course Leaders

Since October 2004, Course Leaders have been appointed by the Institute to undertake a variety of tasks relating to modules 1-3 of the Part III education program. One of the roles of the Course Leaders is to draft examination questions in consultation with the Chief Examiners. The following is a list of the Course Leaders for this semester:

Table 2: Course Leaders

Course	Roles
1	Access Macquarie
2A	Steve Miles (exam) and Bruce Thomson (tutorials, forums and participation).
2B	Senthooran Nagarajan (4 exam questions), Gary Musgrave (1 exam question) and Steve Miles (tutorials, forums and participation)
3A	James Fitzpatrick (exam), Andrew Huszczo (tutorials) and Felix Tang(forums and participation).
3B	Rick Shaw (exam, tutorials, forums and participation).
5A	Access Macquarie
6B	David McNeice (exam, tutorials, forums and participation).
7A	This course is run completely external to the Institute.
ST1	This course is run completely external to the Institute.
CAP	David Service

Another role of the Course Leaders was to oversee the online forum and award marks for participation.

4. The Examination Process

This semester's examination process began with an initial meeting of the Board of Examiners. Once the Chief Examiners were appointed in all internally run subjects they met with Course Leaders (where applicable) to discuss the draft exam questions.

4.1. *Question setting*

The basic framework followed by each subject, excluding Course 7A and ST1 Health & Care, to setting exam papers is the same. This semester's Part III examinations were run on an open book basis. Each subject includes a rigorous review process. The general framework used to set examination papers is described as follows:

- The Course Leader (or equivalent) drafts the examination questions in consultation with the Chief Examiners.
- Draft exams and solutions are reviewed for coverage and fairness.
- A recently qualified Fellow scrutineer 'sits' the paper under exam conditions to assess the length of the paper.
- For the CAP Course a new Fellow scrutineer is appointed to check calculations in the case study exam questions.
- Exams are redrafted after feedback from the scrutineer.

- Exams, solutions and marking guides are finalised by the Chief Examiners and their Assistants.
- The Chief Examiner and an Assistant Examiner sign off the final examination papers and solutions.

4.2. *Exam marking*

The general framework used to mark examination papers, grade candidates and determine passes, except for Course 7A and ST1 Health & Care, is described as follows:

- Except for CAP two markers marked each question, with CAP only those candidates with a mark above 40% or below 60% were marked a second time. Inconsistencies in marks for a candidate were discussed by the markers and resolved (in most cases), before the results were forwarded to the Chief Examiner.
- Marks were scaled to allow for the fact that some questions were more difficult than others, in the CAP course the exam is only one question so no scaling was applied.
- Each candidate was awarded a grade for each question of A, B, C, D or E, where A was regarded as a strong pass and B an ordinary pass.
- Candidates' overall performance was determined using several metrics including total raw mark, total scaled mark, weighted average grade, weighted average rank and number of pass grades per question. The key determinant however was total scaled mark.
- Candidates were ranked based on these metrics, particularly total scaled mark.
- Candidates' online forum participation/assignment marks were added to the exam metrics as follows:

Subject	Assessment	Weighting
2A, 2B, 3A, 3B, 6A/6B	Online forum participation	10%
Access Macquarie (C1, 5A/5B)	Assignment	15%
C10	Post course report assignment	20%

- Candidates were divided into clear passes, clear failures and a middle group that required further consideration.
- The Chief Examiner reviewed the middle group individually. The pass/fail decision was made after assessing the candidate's whole exam paper, his/her performance in the judgement questions, how badly he/she performed in the questions he/she failed and whether they were 'key' areas of the course and his/her performance in the assignments.

5. The Online Forum and Assignment Process (Subject 1 and Modules 2-3)

5.1. *Online Forum Participation*

For this semester an online forum participation mark was introduced for subjects: 2A, 2B, 3A, 3B and 6B, replacing the previous assignment assessment. The online forum participation mark contributed 10% of the total assessment.

Students were required to post three original posts and reply to three posts from other students. A participation mark was awarded based on the quality of these posts, using the following marking guidelines:

Marks	Description
2	Candidate meets the minimum standard of 3 original posts and 3 responses to other students' posts
	PLUS
3	Posts are **usually** well communicated
2	Posts are **sometimes** well communicated
0	Posts are **never** well communicated
	PLUS
3	Posts **usually** discuss the issues and recommend a solution or practical difficulties, in the context of the current discussion (where relevant)
2	Posts **sometimes** discuss the issues and recommend a solution or practical difficulties, in the context of the current discussion (where relevant)
0	Posts **never** discuss the issues and recommend a solution or practical difficulties, in the context of the current discussion (where relevant)
	PLUS
2	Candidate makes additional posts which assist other candidates
*Maximum of 10 marks Multiply marks by zero if the candidate does not meet the minimum requirement of 3 original posts and 3 responses to other students' posts	

5.2. *Assignment Marking for C1 and C5B*

Assignments were retained for C1 and C5B, contributing 15% of the total assessment.

The general framework used to mark assignments, grade candidates and determine passes is described as follows:

- Marks were not scaled to allow for the fact that some questions were more difficult than others.
- Each candidate was awarded a grade for each question of A, B, C, D or E, where A was regarded as a strong pass and B an ordinary pass.
- Candidates' results were based on total raw marks.

6. Module 4 CAP - The Case Study Process

The CAP course was developed and originally delivered for the Institute by the ANU but is now run directly by the Institute. The CAP team included David Service, Ken McLeod, Bruce Edwards, Peter Martin, Colin Priest, Elayne Grace, Kirsten Armstrong, Adam Butt and Aaron Bruhn. The team also developed the assessment materials for the course and did the marking.

The assessment method changed in Semester 2 2010 due to the restructure of the CAP course. There are still two assessment tasks, but they are now:

1. A post-course report assignment on one of the three non-traditional topics, distributed after the residential course. This semester one third of the students were randomly allocated to each non-traditional topic. It is worth 20% of the final mark.

2. An 8-hour case study report chosen by each student from among the 5 traditional topic areas, to be prepared under exam conditions but with use of a computer. This is worth 80% of the final mark.

The pass mark is 50%. Candidates who had passed part of the previous course were allowed to submit only the other equivalent part this semester.

It is not mandatory for failing candidates to re-attend the residential course.

The development and delivery of the course was overseen by a Faculty, consisting of Bridget Browne, (Chair), David Service (Course Leader), Bruce Thomson (Chief Examiner), Matthew Ralph (Assistant Examiner) and other members of the Faculty.

The case study exam assessment questions were reviewed by Actuaries from the different areas of practice, specifically:

Life Insurance:	Ashley Wilson
General Insurance:	Samuel Chui
Global Retirement Income Systems:	Vivian Dang
Investments:	Andrew Fisher
Banking:	Francis Beens
Environment:	Travis Elsum
Health:	Candice Ming
Enterprise Risk Management:	Ben Qin

7. Examination Dates

This semester's Part III examinations were held on the following dates:

Table 3: Examination Dates

Course	Subject	Exam Date
1	Investments	23 April 2012
2A	Life Insurance	24 April 2012
2B	Life Insurance	26 April 2012
3A	General Insurance	26 April 2012
3B	General Insurance	24 April 2012
5B	Investment Management & Finance	27 April 2012
6A	Global Retirement Income Systems	27 April 2012
7A	Enterprise Risk Management	27 April 2012
ST1	Health & Care	27 April 2012
CAP	Commercial Actuarial Practice	2 May 2012

8. Assignment Dates

This semester's Part III assignments were due on the following dates:

Table 4: Assignment Dates

Courses	Due Date
C1	14 March 2012
5B	14 March 2012
CAP - Post Course Assignment	10 April 2012

9. Examination Centres

Candidates, not including those sitting Course 7A or UK ST1 Health and Care, sat the exams in 6 centres in Australia and 12 centres overseas.

Table 5: Candidates by Exam Centre

Location	Number of Candidates
Australia	405
Brisbane	10
Canberra	6
Melbourne	64
Sydney	319
Adelaide	2
Perth	4
Overseas	64
Germany	1
France	1
Ireland	2
China	2
Hong Kong	6
Indonesia	1
Malaysia	4
New Zealand	11
Singapore	14
Fiji	1
South Korea	1
United Kingdom	20
Total	469

10. Exam Candidature

10.1. *Candidate Mix*

The mix of courses sat by candidates is broadly similar to that in previous years. The new Part III structure was introduced this semester allowing candidates to choose a variety of different options to obtain Module One. This change has slightly affected the candidate mix for this semester.

As expected the proportion for Investments continued to abate this semester. Enrolment numbers for Life Insurance and General Insurance have slightly increased. The ST1 Health & Care exam was offered for the first time this semester capturing 2% of overall enrolments. The Global Retirement Income Systems course mix increased by 1% and the Investment Management and Finance course decreased by 1%. Although the overall mix in CAP has reduced by two percent the enrolment numbers are consistent with previous semesters.

Table 6: Candidate Mix by Part III Course

	Subject	2012 (1)	2011(2)	2011(1)	2010(2)
1	Investments	10%	13%	16%	17%
2	Life Insurance	21%	18%	20%	18%
3	General Insurance	31%	28%	26%	23%
5	Investment Management & Finance	4%	5%	3%	7%
6	Global Retirement Income Systems	3%	2%	4%	2%
7	Enterprise Risk Management	15[6]	16	16%	14%
8	Health and Care	2[7]	n/a	n/a	n/a
9	Commercial Actuarial Practice	15%	17%	16%	19%
	Total	**100%**	**100%**	**100%**	**100%**

[6] Results not yet known
[7] Results not yet known

Examination Papers and Assignments

1. Examination Structure

The structure of the examinations was a single three-hour exam paper for Course 1 and Modules 2 & 3.

The exams for Course 1, and Modules 2 & 3 were worth:

- 2A, 2B, 3A, 3B, 6A/6B: 90% of the final assessment.
- C1 and 5A/5B: 85% of the final assessment.

For Modules 2-3, each course was assessed individually. That is, a candidate can choose to sit (and subsequently pass or fail) only Course A (relating to Module 2) or Course B (relating to Module 3) of the subject. This differs from 2004 and earlier exams where candidates sat for the entire course (both A and B parts). For the 2004 exams, candidates were awarded a transitional pass for a paper if they passed either Paper 1 (Course A) or Paper 2 (Course B).

For Module 4, Commercial Actuarial Practice, candidates sat an eight-hour case study exam paper on five traditional areas of actuarial practice, answering 1 out of 5 questions and worth 80% of the final assessment.

2. Online Forum Participation/Assignment / Case Study Structure

The structure of on the non-exam assessment for Course 1, and Modules 2 & 3 was:

- 2A, 2B, 3A, 3B, 6A/6B: online forum participation worth 10% of the final assessment.
- C1 and 5A/5B: assignment worth 15% of the final assessment.

Module 4 (Course 10 – Commercial Actuarial Practice) included a post course report on one of the 3 non-traditional topics (Banking, Health, Environment), distributed after the residential course for completion within 2 weeks. This semester one third of the students were randomly allocated to each topic which was worth 20% of the final assessment.

3. Examination Standards

In Course 1, and Modules 2 & 3, there was a mix of questions covering three categories:

- applying bookwork to familiar and unfamiliar circumstances. This category is aimed at testing the candidates' knowledge and understanding (KU)
- problem solving requiring simple judgement (SJ)
- problem solving requiring complex judgement (CJ).

The questions aimed to cover the whole syllabus. In the case of Course 1 (Investments) the examination was based on the syllabus and a previously determined set of readings.

The standards to be achieved by candidates sitting each course, the principles on which papers are to be set and the marking procedures, are set out in the Guidelines to Examiners.

Copies of the examination papers have not been included within this report in the interests of space. They are available from the Institute if required. Detailed comments on the quality of candidates' answers to the exam questions are contained in each Chief Examiner's report.

4. Security of Examination Papers

With the use of modern technology the security of Examination papers has significantly improved. All scripts are scanned into an internal installation of the Institute's Learning Management System and made available to markers and examiners. Overseas supervisors were required to photocopy papers before sending them by courier to the Institute office and secure couriers were used to transport papers. The only challenge this presents is the time it takes to scan all the scripts following the examinations.

5. Comments on Candidates' Assignment Performance

As the Chief Examiners were unable to review candidates' online forum participation/assignments, no comments on their non-exam performance can be provided.

Results

1. Pass Standards

The standards for determining whether a candidate should be granted the status of Fellow of the Institute of Actuaries of Australia are based on whether an individual demonstrates core capabilities required for an actuary practicing professionally in their specialty area(s). Candidates are required to demonstrate:

- a strong knowledge of the nature, operations, legislation and current issues of the selected practice area(s)
- a detailed knowledge and understanding of the application of actuarial concepts and skills to the chosen practice area(s)
- an ability to apply judgement to solve problems in the chosen practice area(s) that may be characterised by complexity, varying degrees of clarity of definition and novel or unseen circumstances.

A candidate is not expected to demonstrate these capabilities at the level of an experienced and skilled practitioner. It is unreasonable to expect candidates to demonstrate the degree of understanding of an actuary of some year's experience. Rather, the benchmark is whether the candidate is proficient to commence practicing professionally in their specialty area(s). Provided the candidate shows a grasp of the main principles, a pass should be awarded. Conversely, a candidate who demonstrates dangerous misconceptions or misapplication of concepts or ideas is viewed more seriously than a candidate who shows a simple lack of knowledge.

The Chief Examiners in the Part III Courses place greater emphasis on the questions that require the candidate to demonstrate the ability to apply bookwork to specific situations and show judgement to solve problems. When grading borderline candidates, their ability to do well in such questions has a greater bearing on whether they pass or fail. The Chief Examiners however, are very conscious of the fact that it is unreasonable to expect candidates to demonstrate the degree of understanding of an actuary with years of experience. In addition, actuaries are expected to be able to demonstrate their skills to those outside the profession. Candidates are expected to be able to communicate clearly and may be penalised if their answers are not clearly expressed.

For Course 7A and ST1 Health and Care, passes are approved by the Board of Examiners for the Institute and Faculty of Actuaries in the UK.

2. Pass Rates by Centre

The pass rates by exam centre, excluding course 7A and ST1, were as follows:

Table 7: Comparison of Pass Rates by Centre

	2012 (1)	2011 (2)	2011 (1)	2010 (2)	2010 (1)
Sydney	33%	37%	37%	43%	39%
Melbourne	48%	38%	43%	43%	57%
Other Australian	27%	20%	61%	28%	40%
Overseas	30%	23%	36%	35%	37%
Other Australian & Overseas	29%	22%	42%	33%	38%
Total	**37%**	**34%**	**39%**	**41%**	**42**

I have examined the pass rates by specialist subject and examination centre. This analysis revealed a number of interesting features, including:

- The overall pass rate for the Sydney examination centre is the lowest this semester comparing with the previous four semesters.
- The pass rate in Melbourne increased this semester by 10%.
- In Singapore only 2 candidates from 14 attempts passed (14.3%).

3. Pass Marks

Table 8: Raw Pass Marks by Part III Subject

	Subject	2012 (1)	2011 (2)	2011 (1)	2010 (2)	2010 (1)
1	Investments	95.5	93.7	86.0	100.0	117.0
2A	Life Insurance	104.5	93.0	89.0	117.0	99
2B	Life Insurance	105.0	105.0	109.0	84.0	93
3A	General Insurance	109	105.0	109.8[8]	98.0	115
3B	General Insurance	115.0	100.1	101.7	113.0	107
5A	Investment Management and Finance	N/A	111.9	n/a	105.0	n/a
5B	Investment Management and Finance	112.1	n/a	99.6	n/a	106.9
6A	Global Retirement Income Systems	104.4	n/a	106.5	n/a	105.4
6B	Global Retirement Income Systems	N/A	106.6	n/a	105.2	n/a

[8] Due to special consideration, the raw marks for Sydney students was 100.6

BoE Members for Semester 2 2012

1. Board of Examiners The recommended constitution for the Board of Examiners for next semester (semester 2 2012) is as follows:

1.1. ***Chair***

Gary Musgrave

1.2. ***Chief Examiners***

Course 1: Investments	Bruce Graham (external examiner)
Course 2A: Life Insurance	David Service
Course 2B: Life Insurance	Gary Musgrave
Course 3A: General Insurance	James Pettifer
Course 3B: General Insurance	Frankie Chan
Course 5A: Investment Management & Finance	Jack Ng (external examiner)
Course 6B: GRIS	Stephen Woods
Course 10: Commercial Actuarial Practice	Bruce Thomson

1.3. ***Assistant Examiners***

Course 2A: Life Insurance	Andy Siu, Alana Paterson
Course 2B: Life Insurance	Mark Barda, TBC
Course 3A: General Insurance	Yvonne Wong, Nadeem Korim
Course 3B: General Insurance	Johnson Wong, David Xu
Course 6B: GRIS	Jim Repanis
Course 10: Commercial Actuarial Practice	Matthew Ralph

2. Examination Dates

The dates for the examinations in Semester 1 2012 are as follows:

Table 9: Examination Dates

Module	Subject	Exam Date
1	Enterprise Risk Management	27th April 2012
1	Health & Care	24th April 2012
1	Investments	23rd April 2012
2 (2A)	Life Insurance	24th April 2012
3 (3B)	General Insurance	24th April 2012
2 (3A)	General Insurance	26th April 2012
3 (2B)	Life Insurance	26th April 2012
2 (6A)	Global Retirement Income Systems	27th April 2012
3 (5B)	Investment Management & Finance	27th April 2012
4 (10)	Commercial Actuarial Practice	30th April 2012

3. Exam Solutions

The Board of Examiners has agreed to release this semester's examination papers along with the examination specimen solutions and marking guides. It is recommended that the 2012 Semester 1 examination papers and exam solutions and marking guides be released on 20th June or as close to this time as possible.

Gary Musgrave
Chair, Board of Examiners – 20 June 2012

EXAMINER REPORTS
Course C1 Investments
Course Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Overview*

The aim of the C1 Investment Management Course is to provide the knowledge, skills and judgement necessary for an actuary to tackle a range of investment management related problems. These skills are developed through a study of the investment process, asset modelling and issues related to the management of assets in practice.

1.2. *Pass Rates*

58 Candidates enrolled for the Semester 1 2012, C1 Investment Management Course exam. Of these, 2 did not present at the exam, leaving 56 sitting the exam. The assessment comprised one assignment worth 15% and an exam worth the remaining 85%.

It is proposed that 17 Candidates be awarded a pass, which implies a pass rate of 30.4%. This compares with the following historical pass rates for this subject:

Table 1 – Course Experience

Semester	Sat	Passed	Pass Rate
Semester 2 2011	67	21	31%
Semester 1 2011	80	26	33%
Semester 2 2010	88	27	31%
Semester 1 2010	93	33	35%
Semester 2 2009	145	43	30%
Semester 1 2009	177	86	49%

The 30% pass rate for this exam is similar to that in the recent five offerings of this subject.

1.3. *Candidate Numbers*

The Candidate numbers can be summarised as follows:

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	60
Withdrawn prior to exam	2
Absent from exam	2
Presented at exam	56
Passed	17
Failed	39

The analysis by examination centre is as follows:

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	40	14	35%
Melbourne	6	1	17%
Brisbane	2	1	50%
Canberra	1	0	0%
Perth	1	0	0%
Subtotal Australia	**50**	**16**	**32%**
Auckland	2	0	0%
Kuala Lumpur	1	0	0%
London	1	1	100%
Seoul	1	0	0%
Singapore	1	0	0%
Subtotal International	**6**	**1**	**17%**
Total	56	17	30%

The pass rate in the biggest exam centre, Sydney, is comparable with the aggregate of pass rates across the other exam centres.

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were:

Course Examiner: David Pitt

External Examiner: Bruce Graham

2.2. *Course Leader*

The Course Leader for this semester was Tim Kyng. The course ran smoothly under Tim's coordination with all workshops running according to the timetable and all assessments released, submitted and marked on time.

2.3. *Overall Performance*

Overall this was a very challenging exam and candidates who passed performed sufficiently well across the syllabus. Pass marks on questions recommended by the markers and examiner were quite low to reflect the difficulty level. Question 3 provided a real challenge to the candidates with only a 5% pass rate. The question was a fair test of part of the course and clear in how it was written. It exposed a weakness in part of the course material for many candidates and contributed to the overall relatively low pass rate for the course. Details of the performance of candidates on this question are given below in Section 3.8.

2.4. ***Exam Question by Question Analysis***

Question 1 Total Marks: 40 (4 KU, 24 SJ, 12 CJ)

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	22	55.0	3	5.4%
Pass (B)	18	45.0	12	21.4%
Slightly Below Standard (C)	15	37.5	21	37.5%
Weak (D)	10	25.0	19	33.9%
Showed Little Knowledge (E)	1	2.5	1	1.8%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	% SJ	% CJ
Maximum Mark	23.0	100.0	66.7	54.2
Average Mark	16.1	58.4	43.2	28.4
Standard Deviation	3.56			
Coefficient of Variation	0.22			

Candidates performed quite poorly on this question, with a pass rate of 27%.

The question required the candidates to advise an investment committee on a range of issues concerning investment management styles.

Part a):

Candidates were required to define passive management and give examples in the context of the question.

Most candidates were able to get full marks on the first part of this question.

However, few candidates scored so well on the last part. A fair number correctly pointed out the different approaches to passive management but few were able to understand issues associated with each approach, such as costs, complexity of management and tracking error risk.

Part b):

Candidates were required to give arguments for and against both active and passive management and were required to reference appropriate theories in their answer.

Most candidates were able to score reasonably on pointing out the key advantages/disadvantages of active/passive management. However, it was the better candidates that pointed out the theoretical considerations supporting each. Very few candidates were able to score well in explaining the role of alternative beta strategies.

Part c):

Candidates were asked to comment on whether active managers in aggregate would underperform the market and to give reasons for their answers.

Most candidates scored reasonably well in this question. Simple marks were available for agreeing or disagreeing with the statement. However, a few candidates failed to state whether or not they agreed/disagreed with the statement.

Very few candidates appreciated that there could be other participants in the market that are not benchmarked against an index and that this could implications in terms of the argument for/against the statement.

Part d):

Candidates were required to comment on passive management of sovereign bonds.

Most candidates make a reasonable attempt and were able to provide some linkage to current market conditions. However, few pointed out that it was the most debt-ridden countries that issued the more debt that became a larger proportion of the index and therefore are risks (from a credit risk management perspective).

Part e):

Candidates were required to comment on the relevant merits of two market indices in current market conditions.

Most candidates pointed out the key differences in the two indices. Not many candidates were able to appreciate the subtle differences in the risk profiles of both indices from a credit risk and liquidity risk perspective.

Question 2 **Total Marks: 40 (8 KU, 12 SJ, 20 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	22	55.0	1	1.8%
Pass (B)	16	40.0	21	37.5%
Slightly Below Standard (C)	13	32.5	19	33.9%
Weak (D)	8	20.0	13	23.2%
Showed Little Knowledge (E)	1	2.5	2	3.6%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	22.0	81.3	75.0	47.5
Average Mark	14.2	40.2	51.0	24.2
Standard Deviation	3.42			
Coefficient of Variation	0.24			

Candidates performed reasonably on this question, with a pass rate of 39%.

The question required students to consider and compare the use of two active managers of listed Australian equities for a portion of funds backing superannuation pensions.

Part a):

Candidates were required to consider the advantages and issues related to the inclusion of Australian listed equities within pension portfolios.

Nearly all candidates were able to provide some reasoning for including Australian equities within pension portfolios. Most candidates discussed volatility and inflation issues relating to guaranteed pensions and inflation-linked pensions. However, not many candidates addressed prudential matters (e.g. solvency and capital requirements) relating to holding equities in the portfolios backing these liabilities.

Part b):

Candidates were required to consider potential overlaps between approaches and processes of two active managers depicted in the question.

Most candidates were able to indicate that there are potential overlaps between the two active managers. However, candidates had difficulty providing reasoning for and discussing the extent of these overlaps. Some candidates did not directly answer the question and also

discussed overlaps outside approaches and processes (e.g. additional analysis conducted by both managers).

Part c):

Candidates were required to provide an explanation of optimisation in the context of the question and list holding factors expected to be used within the optimisation process.

Most candidates were able to provide explanation of the use of optimization to improve risk-return efficiency and influence final stock weights and those who gave the definition of optimisation in a mean-variance sense picked up an easy mark. However, most candidates had difficulty listing holding factors. Instead, many candidates listed other factors which should have been considered by managers in screening the universe of stocks prior to the optimisation process.

Part d):

Candidates were required to comment on the use of listed emerging market equities within any overall equity allocation in portfolios backing pensions. In answering this question, candidates were asked to reference arguments made in part (a).

Nearly all candidates were able to provide some comment (advantages and disadvantages) on the use of listed emerging market equities. Many candidates also considered broader issues outside those in the model solutions (e.g. political risk, expertise, market inefficiencies) and these points were also rewarded. However, only some candidates referred back to arguments made in part (a). In particular, few candidates discussed the potential increase in prudential capital required in holding emerging market equities. This may be because this point was not particularly well addressed in part (a) either.

Question 3 **Total Marks: 40 (16 KU, 12 SJ, 12 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	22	55.0	0	0.0%
Pass (B)	14	35.0	3	5.4%
Slightly Below Standard (C)	10	25.0	16	28.6%
Weak (D)	4	10.0	30	53.6%
Showed Little Knowledge (E)	1	2.5	6	10.7%
Did Not Attempt (X)	0	0.0	1	1.8%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	16.0	68.8	37.5	16.7
Average Mark	7.7	35.7	15.0	1.9
Standard Deviation	3.74			
Coefficient of Variation	0.48			

Candidates performed poorly on this question, with a pass rate of 5%

The question concerned issues relating to formulating a static investment strategy.

Part a):

Candidates were required to list factors relevant to developing an asset-liability model for a given fund.

A sizeable minority of students responded to this by describing investment objectives rather than factors to consider when building an ALM model which led to them not receiving any marks for this part.

Part b):

Candidates were required to describe methods for formulating investment strategies given two particular investment objectives.

Very few candidates were able to state investment objectives as a probability of achieving a target level of funding/solvency or contribution levels. Many used the generic terms - minimising or maximising.

Part c):

Candidates were required to comment on how a particular choice of valuation interest rate would affect the asset-liability model being discussed in the question.

Performance of candidates was reasonable on this part.

Parts d) to f):

These parts tested candidates' understanding of the relationship between duration, yield changes and value of liabilities.

Candidates generally struggled with these parts finding it difficult to formulate the required relationships and deduce the required outcomes. This exposed some weakness among many candidates in this part of the course material.

Question 4 **Total Marks: 34 (6 KU, 14 SJ, 14 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	16	47.1	4	7.1%
Pass (B)	12	35.3	9	16.1%
Slightly Below Standard (C)	10	29.4	19	33.9%
Weak (D)	7	20.6	17	30.4%
Showed Little Knowledge (E)	1	2.9	6	10.7%
Did Not Attempt (X)	0	0.0	1	1.8%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	16.5	91.7	57.1	42.9
Average Mark	10.0	65.2	24.5	18.7
Standard Deviation	3.57			
Coefficient of Variation	0.36			

Candidates performed poorly on this question, with a pass rate of 23%.

The question concerned an asset return model upon which asset allocation decisions are made.

Part a):

Candidates were required to discuss how variations in correlations over time can be dealt with in a given model.

While many candidates got something for the first point that was about it.

Just a couple mentioned scenario testing, while a few others included scenario testing in their models in (c). Only a couple of candidates referred to the sensitivity of currency returns, none connecting that to an estimation of optimal hedge ratios.

Part b):

Candidates were required to analyse given information to make a conclusion about hedged international equities.

Most candidates identified hedging as having given higher mean returns than unhedged returns. Some gave good elaboration of their points by reference to the figures and tables.

However only a very few referred to correlations between hedging and international equities and fixed interest, none developing that into a discussion of optimal hedging ratios.

The candidates did a little better job of identifying the assumptions (though obviously they were only considering those in the context of fully hedged returns).

Part c):

Candidates were required to comment on modelling approaches using historical data to avoid dependence on a fixed covariance structure.

Candidates did best in this part. Most candidates could think of 3 models and some got 2 or more marks for reasons. Many candidates spent too much time describing the models, rather than making relevant comments as to why the models would be better. Only a few candidates chose the "economic disaster" model, and none made the point as in the model solution.

Part d):

Candidates were required to list factors which might affect non-stationarity in the means and covariance structure.

This question tested knowledge of the economic factors behind hedge returns. While many candidates mentioned monetary and fiscal policy, few mentioned capital flows and none mentioned debt. The markers also gave ½ mark for points relating to terms of trade/relative productivity growth. Most candidates had points of this type but were mostly quite poor, a common example was "commodities boom", other common but extremely vague points were "globalization" and "bull and bear".

Nearly 20% of candidates just gave examples of non-stationarity rather than factors, e.g. serial correlation, volatility clustering while another 10% approx had a mishmash of the two.

Part e):

Candidates were required to list ways to manage currency hedging policy.

Over 20% of candidates mistakenly understood the question to be about how the hedging policy was implemented (options, forwards, etc). Although many of the other candidates had one of their options being fully hedged, the reasons were invariably weak. Somewhat better answers were given for an actively managed policy, the second option of the model solution.

Question 5 **Total Marks: 46 (6 KU, 18 SJ, 22 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	34	73.9	6	10.7%
Pass (B)	26	56.5	25	44.6%
Slightly Below Standard (C)	20	43.5	11	19.6%
Weak (D)	8	17.4	12	21.4%
Showed Little Knowledge (E)	1	2.2	2	3.6%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	40.0	100.0	97.2	77.3
Average Mark	25.1	71.7	66.0	40.4
Standard Deviation	7.69			
Coefficient of Variation	0.31			

Candidates performed well on this question, with a pass rate of 55%.

Parts a) and b):

These parts concerned portfolio performance calculation methods and geometric portfolio return calculation.

Most candidates scored well in these parts. However most missed out on what would have been easy full marks simply by not providing explanations to their answers which should be expected.

Part c):

Candidates were required to describe formulae used for active management return assessment.

This was fairly simple and all that was required was a coherent explanation of an attribution approach that encompasses both stock picking and sector rotating styles. Again, an answer from the textbook was sufficient to garner full marks. The markers were less positive on answers that contained inaccurate / incorrect claims about attribution analysis. Some candidates also simply repeated the contents of the question without actually providing an answer.

Part d):

Candidates were required to identify a risk that is not operational from a given list of risks.

Full marks were awarded as long as candidates explained why choice 4 was not an operational risk rather than merely restating that it is not.

Part e):

Candidates were required to describe the implications of stock price momentum on the efficient markets hypothesis.

Most candidates were able to identify existence of momentum as a factor in stock returns forms evidence against the weak form of EMH, however some students failed to explain why and further some students confused with the semi-strong form of EMH.

Part f):

Candidates were required to comment on the Grinold and Kahn model for the information ratio.

Generally answered quite well, though candidates mostly fell down in fully explaining why breadth was the key factor in the IR's and how the expected breadth for stock pickers would be higher than for sector rotation.

Part g):

Candidates were required to have an understanding of the 1992 classic paper by Fama and French.

While most candidates were able to identify liquidity risk as a possible reason for the higher returns from small caps, many responses did not refer to the question which called for students to consider the link between market cap and turnover.

Part h):

Candidates were required to review an active manager performance.

With few exceptions, responses did not identify historical evidence for persistence of fund manager returns. Most students were able to quote the t-statistic and IR relationship however many students failed to explain the components of the statistic and their relevance. A number of responses did not go on to explain the implications of requiring long periods of data for statistical significance.

Part i):

Candidates were required to calculate an information ratio after fees and to comment.

Almost all candidates were able to calculate the asset class IRs, but only a couple of responses correctly calculated the portfolio IR. Many candidates simply took a weighted average of the asset class IRs, instead of calculating the portfolio active risk. In terms of reallocating active risk in the portfolio, a significant number of responses did not identify that listed property, bonds and cash were not contributing any net active return to the portfolio and should be passively managed.

X grades have been confirmed as no response given and not missing books.

Course 2A Life Insurance
Chief Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Overview*

The aim of the 2A Life Insurance Course is to provide the knowledge, skills and judgement necessary for an actuary to tackle a range of management related problems in life insurance relating to pricing, the general environment and risk management practices of life offices and associated funds management companies.

1.2. *Pass Rates*

69 Candidates enrolled for the Semester 1 2012, 2A Life Insurance Course. Of these, 2 did not present at the exam, leaving 67 sitting the exam.

The assessment comprised of a participation mark in the on line forum worth 10% and an exam worth the remaining 90%.

It is proposed that 22 Candidates be awarded a pass, which implies a pass rate of 33%. This compares with the following historical pass rates for this subject:

Table 1 – Course Experience

Semester	Sat	Passed	Pass Rate
Semester 2	54	10	20%
Semester 1	60	18	30%
Semester 2	55	17	31%
Semester 1	39	11	28%
Semester 2	52	31	60%
Semester 1	58	23	40%

The 33% pass rate for this exam is higher than the 20% pass rate for the previous exam (Semester 2 2011) which was particularly low.

1.3. *Candidate Numbers*

The Candidate numbers can be summarised as follows:

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	72
Withdrawn prior to exam	4
Absent from exam	1
Presented at exam	67
Passed	22
Failed	45

The analysis by examination centre is as follows:

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	49	11	22%
Melbourne	11	7	64%
Subtotal Australia	**60**	**18**	**30%**
Singapore	2	1	50%
Auckland	2	2	100%
Wellington	1	1	100%
London	1	0	0%
Hong Kong	1	0	0%
Subtotal International	**7**	**4**	**57%**
Total	**67**	**22**	**33%**

The Australian pass rate of 30% whilst acceptable is masking a low pass rate for Sydney but is better than the previous exam (Semester 2 2011) which was particularly low.

The International candidates performed better than the Australian students and this could be due to the familiarity with participating business which was examined this semester with a pass rate of 57% (4 out of 7 passed).

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were:

Chief Examiner: Warwick Young

Assistant Examiners: Alana Patterson. and Andy Siu.

2.2. *Course Leader*

The Course Leader for this semester was: Steve Miles.

Steve's experience was invaluable in the setting of the exam. It has helped that Steve is now very heavily involved in the education process and the insights that he has gained being involved in the education process helped make the exam process a much smother process this semester.

2.3. *Forum Participation Assessment*

This was the first time the forum has been used as part of the assessment and whilst I was sceptical it appears to have been successful but should be continually monitored and refined. There was a degree of learning from their peers and did appear to encourage study earlier in the semester. The average participation mark was 7.9 out of 10.

3. Examination Papers and Assignments

3.1. *Degree of Difficulty and Course Coverage*

The following tables show the distribution of questions and marks by level of difficulty and course coverage:

Table 5 – Degree of Difficulty of Exam

Question	Syllabus Performance Outcome	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
1 (a)	9.5	3		7		7
1 (b)	5.1	2			7	7
1 (c)	4.1	2	6			6
2 (a)	14.2	4	6	2		
2 (b)	13.1	4	3	4		
2 (c)	14.3	4		4		
2 (d)	12.4	4			4	
3 (a)	2.2	1		8		
3 (b)	2.4, 7.2	1			8	
3 (c)	12.2	3	7			
4 (a)	11.3	3	3			
4 (b)	11.3	3		3		
4 (c)	7.1	2		5		
4(d)	7.4	2			3	
5(a)	6.4	2			7	
5(b)	7.2	2		4		
5(c)	15.3	5			9	
Total			**25**	**37**	**38**	**100**

Table 6 – Course Coverage by Question

Question	Units	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	2,3	6	7	7	20
2	4	9	10	4	23
3	1,3	7	8	8	23
4	2,3	3	8	3	14
5	2,5	0	4	16	20
Total		**25**	**37**	**38**	**100**

This semester the spread of marks was less dramatic than the prior semester where it was deliberately skewed to knowledge and understanding (29/44/27).

3.2. *Overall Performance*

There was no individual question that caused problems for all candidates.

The deliberate shift in the marks allocated between complex judgement and course knowledge was moderated this semester. Candidates achieved a higher proportion of their marks from knowledge and understanding 60%, straight forward judgement 37% and 33% from complex judgement. It was pleasing to see a better result from knowledge and understanding this semester compared to the very disappointing result last semester. The examiners are satisfied that the pass mark is set at the appropriate standard.

3.3. ***Exam Question by Question Analysis***

Question 1 **Total Marks: 20 (6 KU, 7 SJ, 7 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	28	70.0	2	2.9
Pass (B)	21	52.5	33	47.8
Slightly Below Standard (C)	17.5	43.8	17	24.6
Weak (D)	10	25.0	14	20.3
Showed Little Knowledge (E)	1	2.5	1	1.4
Did Not Attempt (X)	0	0	0	0
		% of KU	**% SJ**	**% CJ**
Maximum Mark	29.5	95.8	100	85.7
Average Mark	18.8	53.5	43.5	44.7
Standard Deviation	5.8			
Coefficient of Variation	0.31			

Candidates performed well on this question, with a pass rate of 50.7%.

The question concerned the issues arising from a life company pricing group risk business and the granting of cover to a mining company and enterprise risk management.

Part a): Comment on the profitability of death cover and TPD when presented with historical profit numbers.

Part b): Comment on automatic acceptance limits the TPD definition and selection effects when offering group cover to a newly established mining company

Part c): Comment on ERM framework for the risks of the group life portfolio.

Part b) was not answered particularly well with most students being confused about automatic acceptance limits. On the whole the answers were poorly planned and as a result were hard to mark.

Question 2 **Total Marks: 23 (9 KU, 10 SJ, 4 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	22.5	48.9	17	24.6
Pass (B)	18.5	40.2	13	18.8
Slightly Below Standard (C)	14.5	31.5	20	29.0
Weak (D)	9.5	20.7	9	13.0
Showed Little Knowledge (E)	1	2.2	8	11.6
Did Not Attempt (X)	0	0	0	0
		% of KU	**% SJ**	**% CJ**
Maximum Mark	36.3	175	100	18.8
Average Mark	17.7	82.3	38.1	2.9
Standard Deviation	7.1			
Coefficient of Variation	0.40			

Candidates performed reasonably well on this question, with a pass rate of 43.5%.

The question covered profit testing for a single premium term product and included numerical calculations.

Part a): Calculate transfers, profit margins, value of new business and comment on the IRR.

Part b): Concerned the impact of the valuation basis on profit testing results.

Part c): Comment on suitability of profit testing metrics for determining an appropriate premium rate for this product.

Part d): Concerned a risk neutral price.

Part a) calculations showed a wide variety of answers and the markers had difficulty in making sure appropriate marks for subsequent sections were awarded despite numerical errors. Many candidates did not read the question properly as the timing of the cashflows were given.

Part d) was very badly answered with only a few candidates knowing how to theoretically calculate a risk neutral price.

Question 3 **Total Marks: 23 (7 KU, 8 SJ, 8 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	34.0	73.9	13	18.8
Pass (B)	30.5	66.3	12	17.4
Slightly Below Standard (C)	20.0	43.5	32	46.4
Weak (D)	14.0	30.4	5	7.2
Showed Little Knowledge (E)	1.0	2.2	4	5.8
Did Not Attempt (X)	0	0	1	1.4
		% of KU	**% SJ**	**% CJ**
Maximum Mark	40.3	130	86.1	90.6
Average Mark	26.3	81.1	52.5	54.5
Standard Deviation	8.8			
Coefficient of Variation	0.38			

Candidates performed reasonably well on this question, with a pass rate of 36.2%.

The question covered a bancassurance company and the provision of product support from either a dedicated product actuary or appointed actuary, the product development process and a question looking at pricing at a macro level.

Part a): Disadvantages and advantages of a dedicated product actuary.

Part b): Concerned the impact of the introduction of salaried relationship managers funded by economies of scale with additional sales volumes

Part c): Detail a product development process inside a bancassurance company.

Part a) was relatively well answered and both structures were marked as correct provided they were backed up with the appropriate arguments.

Part b) was very badly answered with only a few candidates appreciating that this was a macro pricing question with many candidates failing to read the question properly.

Part c) was answered well.

Question 4 **Total Marks: 14 (3 KU, 8 SJ, 3 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	19.5	75.0	5	7.2
Pass (B)	17.0	60.7	15	21.7
Slightly Below Standard (C)	14.0	50.0	20	29.0
Weak (D)	10.0	35.7	17	24.6
Showed Little Knowledge (E)	7.0	25.0	8	11.6
Did Not Attempt (X)	0	0	2	2.9
		% of KU	**% SJ**	**% CJ**
Maximum Mark	23.0	125	63.6	42.9
Average Mark	13.6	63.8	34.4	24.6
Standard Deviation	5.1			
Coefficient of Variation	0.38			

Candidates performed reasonably well on this question, with a pass rate of 29%.

The question covered the setting of investment returns suitable for use in pricing, Suggested asset return assumptions and the discussion of an index tracking investment product.

Part a): The setting of a gross investment return assumption.

Part b): Provide a set of individual asset return assumptions.

Part c): Discuss an index tracking investment product.

Part b) saw some candidates provide asset return assumptions with no justifications.

Most candidates were able to identify the main risk in the index tracking product.

Question 5 **Total Marks: 20 (0 KU, 4 SJ, 16 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	19.5	48.8	2	2.9
Pass (B)	13.0	32.5	14	20.3
Slightly Below Standard (C)	10.5	26.3	8	11.6
Weak (D)	7	17.5	20	29.0
Showed Little Knowledge (E)	1	2.5	18	26.1
Did Not Attempt (X)	0	0	5	7.2
		% of KU	**% SJ**	**% CJ**
Maximum Mark	22	0	45.8	81.8
Average Mark	9.4	0	12.7	31.4
Standard Deviation	5.3			
Coefficient of Variation	0.63			

Candidates performed reasonably well on this question, with a pass rate of 23.2%.

The question covered participating business, guarantees embedded in the product, equity issues given investment returns are less than the guaranteed minimum returns and the alteration to a unit linked policy.

Part a): Discuss the guarantees.

Part b): Ceasing to write new business.

Part c): Discuss the alteration basis to an investment linked product.

Part a) was not very well answered and most candidates failed to use the clues within the question. Very few candidates understood the difference between a reversionary bonus and a cash bonus.

Part b) was answered reasonably well as most candidates understood the embedded guarantee was creating an issue.

Part c) was answered reasonably but the better candidates were able to recognize this was an alteration question and applied the principles of an alteration basis to answer the question.

Course 2B Life Insurance
Chief Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Overview*

The aim of the 2B Life Insurance Course is to provide the knowledge, skills and judgement necessary for an actuary to tackle a range of management related problems in life insurance relating to valuation techniques, capital management, profit analysis, valuation of a company, reporting of results and professionalism.

1.2. *Pass Rates*

52 Candidates enrolled for the Semester 1 2012, 2B Course. There were no withdrawals from the course and no candidates were absent from the exam. Thus 52 candidates sat the exam.

The assessment comprised online forum participation mark worth 10% and an exam worth the remaining 90%.

It is proposed that 13 candidates be awarded a pass, which implies a pass rate of 25%. This compares with the historical pass rates for this subject shown in the following table:

Table 1 – Course Experience

Semester	Sat	Passed	Pass Rate
2011 Semester 2	41	6	15%
2011 Semester 1	41	16	39%
2010 Semester 2	39	16	41%
2010 Semester 1	63	28	44%
2009 Semester 2	62	24	39%
2009 Semester 1	52	17	33%
2008 Semester 2	50	21	42%
2008 Semester 1	36	14	39%

The 25% pass rate for this exam is an improvement on the 15% pass rate for the previous exam.

1.3. *Candidate Numbers*

The Candidate numbers can be summarised as follows:

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	52
Withdrawn prior to exam	0
Absent from exam	0
Presented at exam	52
Passed	13
Failed	39

The analysis by examination centre is as follows:

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	25	5	20%
Melbourne	12	4	33%
Brisbane	1	1	100%
Canberra	1	0	0%
Australia	**39**	**10**	**26%**
Auckland	1	0	0%
London	4	1	25%
Fiji	1	1	100%
Hong Kong	2	0	0%
Shanghai	1	1	100%
Singapore	4	0	0%
International	**13**	**3**	**23%**
Total	**52**	**13**	**25%**

The performances of the Australian and International candidates are similar.

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were:

Chief Examiner: Gary Musgrave

Assistant Examiners: Mark Barda and Robert Milohanic

2.2. *Course Leader*

Thanks to the following volunteers for their assistance in taking responsibility for an area of the course this semester:

Table 5 – Course Leaders

Area	Responsibility
Exam setting	Senthooran Nagarajan
Tutorials and Online forum participation.	Steve Miles

The exam paper proved to be a good differentiator with both technical and topical content. Each question covered a range of the units and syllabus aims, giving candidates ample opportunity to demonstrate their understanding.

Steve was responsible for the tutorials and discussion forums and made a conscious effort to be completely divorced from the exam setting so that he could provide candidates with unbiased advice as to the content and coverage of possible exam questions.

3. Examination Papers and Assignments

3.1. *Degree of Difficulty and Course Coverage*

The following tables show the distribution of questions and marks by level of difficulty and course coverage:

Table 5 – Degree of Difficulty of Exam

Question	Syllabus Performance Outcome	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
1 a)	4	1	2		3
1 b)	4	4	1		5
1 c)	4		3		3
1 d)	4		1	7	8
2 a)	1,8		6		6
2 b)	8			3	3
2 c)	8			5	5
2 d)	8	4			4
2 e)	4,7		3		3
3 a)	1,2	2			2
3 b)	1,2		6		6
3 c)	1,2,12		1	3	4
3 d)	1,2,12			4	4
3 e)	1,2,12		3		3
4 a)	1,2,4,5,6,7	3			3
4 b)	1,2,3	1	4		5
4 c)	1,2,3		2		2
4 d)	4,5		1	8	9
4 e)	4,5		1		1
5 a)	1,2	1			1
5 b)	1,2	2			2
5 c)	1,2	2	4	1	7
5 d)	5		6		6
5 e)	1,2,5			5	5
TOTAL		20	44	36	100

Table 6 – Course Coverage by Question

Question	Units	Knowledge & Understanding (KU)	Straight-Forward Judgement (SJ)	Complex Judgement (CJ)	Total Marks
1	4	5	7	7	19
2	1,4,7,8	4	9	8	21
3	1,2,12	2	10	7	19
4	1,2,3,4,5, 6,7	4	8	8	20
5	1,2,5	5	10	6	21
Total		**20**	**44**	**36**	**100**

Based on the units of the course each question covered, the exam covered the course material. Each question had differing degrees of difficulty, reflected in the differing spread of KU, SJ and CJ type marks.

3.2. *Overall Performance*

The aim in setting the exam was to have reasonable questions covering the basic principles of the course.

The performance of candidates was poor with a 25% pass rate, an improvement on the 15% pass rate for the previous exam. The performance on the questions was varied, with question 4 (19%) and question 5 (13%) having very low pass rates.

Main issues contributing to the low pass rate were:

- A lack of understanding of Traditional and Unit-linked business. The course material is lacking in its coverage of these lines of business. Furthermore, with only three tutorials, there is limited time to adequately cover topics for these lines of business. As the course material will be updated shortly, I suggest this includes a comprehensive discussion of Traditional and Unit-linked business topics.

- Inability to apply judgement to various practical situations.

- There are still instances of candidates demonstrating poor exam technique, particularly in not reading the question. Candidates need to follow a process to ensure the question is read thoroughly. Otherwise too many marks are lost, hindering the chance of a pass. I suggest we continue the practice that at one of the tutorials, a previous exam question is used to emphasise the importance of exam technique, adopting the process Bruce Thomson has used in his 2A tutorials (this can be accessed on the 2A forum).

More details on specific mistakes and weakness are discussed further in the question by question analysis below.

3.3. ***Exam Question by Question Analysis***

Question 1	**Total Marks:**	**38**	**(10 KU 14 SJ 14 CJ)**	
	Raw Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass	26.0	68.4%	1	2%
Pass	20.0	52.6%	12	23%
Below Standard	16.0	42.1%	23	44%
Weak	9.0	23.7%	12	23%
Showed Little Knowledge	1.0	2.6%	2	4%
Did Not Attempt	0.0	0.0%	2	4%
		% KU	% SJ	% CJ
Maximum Mark	27.5	100%	61%	68%
Average Mark	17.0	77%	36%	30%
Standard Deviation	5.1			
Co-efficient of Variation	0.30			

Candidates performed poorly on this question, reflected in the pass rate of 25%.

The question covered Solvency Requirement and Capital Adequacy Requirement issues for lifetime annuities, including inadmissible assets and the impact of a uniform decrease in interest rates.

Whilst the easy bookwork questions for parts a) and b) were answered well, the other parts of the question on the application of judgement were poorly answered. The results for this question were disappointing as this was considered a straightforward question.

Part a):

- Candidates were required to set out the formula for the Solvency Requirement, explaining why it could be expressed simply as a sum of components without the need to apply maximum tests.
- This was reasonably answered, reflected in the average mark of 3.4/6.
- Almost all candidates received the full mark for the formula.
- Almost all candidates identified the 2 maximum tests. However, very few candidates were able to state why the 2 maximum tests were not required.

Part b)

- Candidates were asked to calculate the inadmissible asset under the Solvency Requirement for each asset listed in the balance sheet and the total inadmissible asset.
- This was a relatively easy question. This was reflected in the average mark of 6.7/10.
- Most candidates made a good attempt at his question with several candidates receiving full marks.
- Some candidates missed out on getting marks by not commenting on the inadmissible asset for each asset type as requested in the question.

- The better candidates explained that the FITB was inadmissible under the Solvency Requirement as the company is in a run off scenario.

Part c):

- Candidates were asked to discuss ways, if any, in which each inadmissible asset under the Solvency Requirement could be restructured so as to reduce the Inadmissible Asset Reserve for the Solvency Requirement
- This was poorly answered with an average mark of 1.6/6.
- Most candidates were able to identify reducing exposure to BHP shares.
- However, some suggestions for property, computers, FITB and goodwill tended to be impractical. For example no marks were given for selling part/all of the property (as this is their office), selling computers (as this is required to do work), writing off goodwill (as this would be a profit write down/reduce assets).

Part d):

- Candidates were asked to describe the impact of a uniform decrease in interest rates on the Capital Adequacy Requirement. As the Capital Adequacy Requirement equals the Solvency Requirement plus the New Business Reserve, candidates were asked to include in their answer, the impact a decrease in interest rates has on each component of the Solvency Requirement and the New Business Reserve (equal to the Solvency Requirement plus the New Business Reserve).
- Candidates performed poorly in this question with an average mark of 4.6/14.
- The better candidates made appropriate comments on the impact of the decrease in interest rates on the Inadmissible Asset Reserve.
- It was disappointing that for the Resilience Reserve many candidates did not use the information provided in the question that the duration of the liability was longer than the assets. Few candidates mentioned that at lower interest rates, the assets and liabilities are more sensitive to movements in interest rates. Also few candidates mentioned the impact of the fixed component in the yield change which means the prescribed yield change is not totally in proportion to the yield.
- In general appropriate comments were made on the impact of a decrease in interest rates on the New Business Reserve.
- Most candidates stated correctly that the Capital Adequacy Requirement would increase from a decrease in interest rates. However, some candidates did not discuss the overall impact on the Capital Adequacy Requirement.

Part e):

- Candidates were asked to describe the impact of a uniform decrease in interest rates on the Solvency Liability less the Policy Liability (with the annuities in loss recognition.
- This was poorly answered with an average mark of 0.2/2.
- Few candidates stated correctly that if interest rates decrease then the Solvency Liability less Policy Liability (Best Estimate Liability as 0 profit margins) will increase as the Solvency Liability will increase by a larger amount than the Best Estimate Liability as the former has a higher duration with the adverse solvency margins.

Question 2	Total Marks:	42	(8 KU 18 SJ 16 CJ)	
	Raw Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass	29.0	69.0%	1	2%
Pass	24.3	57.9%	16	31%
Below Standard	20.0	47.6%	23	44%
Weak	12.0	28.6%	11	21%
Showed Little Knowledge	1.0	2.4%	1	2%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	29.9	98%	89%	69%
Average Mark	22.4	74%	60%	36%
Standard Deviation	4.1			
Co-efficient of Variation	0.18			

Candidates performed reasonably on this question with a pass rate of 33%.

This question concerned using Appraisal Value as a measure of financial performance. Topics included advantages of using the Appraisal Value over MOS, issues faced in using the Appraisal Value as a financial performance measures and actions that could be taken to overcome these issues. The question also included a simple calculation of the expected Appraisal Value profit and the impact of introducing a target surplus policy.

This was a relatively straightforward question with most candidates showing a good understanding of the Appraisal Value, including its relationship to MOS. Candidates found part c) the hardest question in discussing actions to overcome issues identified with using the Appraisal Value as a performance measure in part b).

Part a):

- Candidates were asked to describe the advantages of Appraisal Value reporting over Margin on Services reporting for evaluating company performance.
- The performance on this question was very good with an average mark of 8.4/12.
- Most candidates were able to describe various features in terms of how they are advantages under Appraisal Value and were disadvantages under MOS.
- Quite a few candidates did not use the format requested in the question. This was surprising but they were not penalised.

Part b):

- Candidates were required to describe the issues that may arise from using the Appraisal Value as a measure of management performance.
- The performance on this question was reasonable with an average mark of 2.9/6.
- Most candidates raised the issue of the sensitivity of assumption changes under the Appraisal Value.
- The better candidates discussed no management control of economic assumption

changes and the possibility of managing results by not making changes to assumptions.

- Few candidates covered: no interim results, timely delivery of Appraisal Value results, lack of resources, inclusion of capital and dividend in the change in the Appraisal Value and the difficulty in non-actuaries understanding an Appraisal Value.

Part c):

- Candidates were asked to describe actions you could take for each of the issues raised in part b).
- The performance on this question was poor with an average mark of 2.8/10.
- Most candidates failed to provide sufficient points in their answers.

Part d):

- Given information in the question, candidates were asked to determine the expected change in the Appraisal Value and its components (VIF, VNB and ANW) from 31/12/2011 to 31/12/2012.
- The performance on this question was good with an average mark of 5.9/8.
- Most candidates demonstrated they could calculate the change in value for each component of the Appraisal Value, allowing for transfers between the components.
- The weaker candidates did not allow for transfers between the components of the Appraisal Value.
- The most common mistake was not reading the question properly by calculating the rollforward value rather taking the difference in value.

Part e) i):

- Candidates were asked to describe the impact of including a target surplus of $10m as at 31/12/2011 on each component of the 31/12/2011 Appraisal Value (ignoring VNB) and the overall impact on the Appraisal Value.
- The performance on this question was reasonable with an average mark of 2/4.
- Most candidates grasped that the $10m additional capital would result in a reduction in the Appraisal Value due to the cost of capital.
- However not many candidates received full marks as they did not mention all three aspects of change – change in ANW, change in VIF and overall change. Again this demonstrates poor exam technique, with easy marks lost.
- Most candidates stated correctly the obvious point that the introduction of a target surplus requirement of $10m will result in an immediate $10m reduction in the adjusted net worth.
- However, less than half the candidates could provide an adequate explanation of the impact on the VIF. Often candidates did not mention that the VIF would increase by less than $10m because the discount rate was greater than the earning rate. Instead most mentioned the VIF would increase because of discounting but did not mention the earning rate.

Part e) ii):

- Candidates were asked to provide a formula which estimates the impact on the 31/12/2011 Appraisal Value of including $10m target surplus at 31/12/2011 as a function of the average duration (in years) of the YRT portfolio.
- The performance on this question was poor with an average mark of 0.5/2.
- Many candidates did not attempt this question. Perhaps some were displaying better exam technique by not wasting time on a 1 mark question if they did not know the answer straight off,

Question 3 **Total Marks: 38** **(4 KU 20 SJ 11 CJ)**

	Raw Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass	26.0	68.4%	3	6%
Pass	19.0	50.0%	14	27%
Below Standard	15.0	39.5%	17	33%
Weak	9.0	23.7%	14	27%
Showed Little Knowledge	1.0	2.6%	4	8%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	30.5	75%	73%	127%
Average Mark	16.8	38%	38%	70%
Standard Deviation	5.7			
Co-efficient of Variation	0.34			

Candidates performed reasonably on this question with a pass rate of 33%.

This question concerns various issues on the IBNR Reserve as a component of the policy liability.

The main focus of the question is on the situation where the Valuation Actuary makes a surprise announcement that the IBNR assumptions need to change and this will reduce profits, and the CFO's subsequent request to defer the impact of these assumption changes to next year.

Candidates showed a good understanding of IBNR issues. However they found part b) on differences between the ratio and chain ladder methods and part e) on how to communicate better with the CFO the most challenging parts of the question.

Part a):

- Candidates were asked to describe the reasons for holding an IBNR Reserve as a component of the Policy Liability.
- The performance on this question was poor with an average mark of 1.5/4.
- Most candidates discussed that an IBNR Reserve is required so that sufficient assets are built up over time to pay for these claims as they arise.
- The better candidates identified the projection policy liability for YRT and unearned premium reserve for Group Life covers expected claims in the future which have not been incurred yet, but not IBNR claims which have already been incurred. These candidates also identified that without an IBNR reserve, you will under-estimate profit as there will always be a claim experience loss from these IBNR claims.

Part b):

- Candidates were required to discuss the differences between the Ratio method and the Chain Ladder method for calculating the IBNR Reserve.
- This was poorly answered with an average mark of 4.1/12.
- Most candidates only mentioned the difference between the ratio method and chain ladder method but not how these will impact the IBNR.
- As an example, for reflect change in size of portfolio, most candidates mentioned ratio method uses premium as input and chain ladder uses claims experience, but not many mentioned this means ratio method will reflect the change in portfolio size immediate and chain ladder method will be slow.
- Most candidates raised the issue of missing data.
- The good candidates identified the simplicity, the degree of approximation, the ability to reflect changes in profile and the smoothness of the IBNR as distinguishing features of the ratio method compared to the chain ladder method.
- Fewer candidates discussed the ease of checking and assumption changes.

Part c):

- Candidates were asked to draft a memo responding to the CFO's proposal to defer the impact of the IBNR assumption changes.
- This was well answered with an average mark of 5.9/8.
- Most candidates mentioned professional responsibilities, LPS1.04 requirements and best estimate assumptions as well as auditors.
- The better candidates provided reasons for more regular IBNR assumption reviews, including the need to keep these reviews in sync with other assumption reviews and to provide prior profit warning impacts.
- Few candidates mentioned impacts on the timing of profit.

Part d):

- As part of the memo, candidates were required to recommend changes in processes which would prevent such a surprise happening again in the future.
- This part was answered reasonably with an average mark of 3.6/8.
- Most candidates were able to state that more regular review of the IBNR assumptions should be conducted.
- The better candidates provided reasons for more regular IBNR assumption reviews, including the need to keep these reviews in sync with other assumption reviews and to provide prior profit warning impacts.
- Few candidates commented that the claim assumptions (reviewed every year) should be included in the IBNR Reserve calculation every year.

Part e):

- As part of the memo, candidates were asked to suggested methods that could be used to communicate better with the CFO.
- This was poorly answered with an average mark of 1.6/6.
- The better candidates referred to more meetings with the CFO. This would provide the opportunity to explain the volatile impact of IBNR assumption changes on profit. These candidates also stated claims experience should be monitored and any likely changes in experience and possible changes to assumptions should be communicated to management.
- A few candidates went on to talk about communication of profit results in general, rather than specifically relating to IBNR assumptions.

Question 4 **Total Marks: 40** **(8 KU 16 SJ 16 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	26.0	65.0%	1	2%
Pass	19.3	48.1%	9	17%
Below Standard	15.0	37.5%	14	27%
Weak	9.0	22.5%	22	42%
Showed Little Knowledge	1.0	2.5%	5	10%
Did Not Attempt	0.0	0.0%	1	2%
		% KU	% SJ	% CJ
Maximum Mark	27.8	84%	83%	59%
Average Mark	14.6	37%	47%	25%
Standard Deviation	4.9			
Co-efficient of Variation	0.34			

Candidates performed poorly on this question with a pass rate of 19%.

This question mainly covered traditional business, covering the best estimate bonus rate and impacts of reducing declared reversionary bonus rates and terminal bonus rates in response to a sudden 5% fall in assets.

The poor pass mark reflects candidate's lack of understanding of traditional business. Whereas candidates were able to demonstrate a grasp of the best estimate bonus concept, they struggled on the judgement parts of the question relating to the effectiveness of reversionary bonuses and terminal bonus methods.

Part a):

- Candidates were asked to briefly describe the circumstances where projections are used for unit-linked business for the various activities the actuarial department performs.
- For a straightforward question, answers were relatively poor with an average mark of 2/6.
- Most candidates identified that projections are required to calculate the MSE run off and to test for loss recognition.
- Some candidates showed poor exam technique by not reading the question properly by stating projections are required for pricing and appraisal values when these were functions not performed by the actuarial valuation department.
- Few candidates mentioned projections are required for an Analysis of Profit and to calculate the New Business Reserve under the Capital Adequacy Standard LPS3.04.

Part b) i):

- Candidates were asked to specify a formula for calculating the best estimate bonus rates given information provided in the question.
- This part was not answered well with an average mark of 0.5/2.
- Most candidates show they do not understand how to calculate a best estimate bonus.
- Many candidates were confused by the relationship between the VSA and Policy Liability, not realising the Policy Liability is the VSA less the cost of the best estimate bonus for the current year.

Part b) ii)

- By referring to the formula in i). candidates were asked to explain the impact on the best estimate bonus rate of a negative investment return.
- This was reasonably well answered with an average mark of 2/4.
- Most candidates showed the understood the concept here.
- Better candidates provided a more thorough explanation.

Part b) iii)

- By referring to the formula in i). candidates were asked to explain the impact on the best estimate bonus rate of a decrease in the lapse assumption.
- With an average mark of 1.2/4, this question was not answered as well as part ii).
- The poorer candidates stated incorrectly that the Best Estimate Liability decreases from a decrease in the lapse assumption.
- Better candidates provided a more thorough explanation.

Part c):

- Candidates were asked to describe the relationship between the best estimate bonus rate and the declared bonus rate.
- This part was well answered reasonably well with an average mark of 2.4/4.
- Most candidates showed that they understood the relationship between the declared bonus and the best estimate bonus.

Part d) i):

- Candidates were asked to discuss the impact of reducing reversionary bonuses on the equity between different generations of policyholders as a result of a sudden 5% fall in assets.
- This part was answered poorly with an average mark of 0.4/2.
- Many candidates stated incorrectly that the reduction in reversionary bonus was inequitable between different generations of policyholders. This is disappointing as this is covered in the course material. This meant few candidates provided an appropriate reason for this being an equitable method in this situation.

Part d) ii):

- Candidates were asked to discuss other impacts of reducing reversionary bonuses.
- This part was answered poorly with an average mark of 2.7/8.
- Most candidates provided a good explanation on policyholder expectations.
- However, few candidates covered the critical issues of the impact on solvency and capital adequacy. This is of great concern as these are the fundamental reasons for reducing bonuses in this particular scenario.

Part d) iii):

- Candidates were asked to discuss the impact of reducing terminal bonuses on the equity between different generations of policyholders as a result of a sudden 5% fall in assets.
- This part was answered poorly with an average mark of 0.5/2.
- Many candidates stated incorrectly that the reduction in terminal bonuses was inequitable between different generations of policyholders. This is disappointing as this is covered in the course material. This meant few candidates provided an appropriate reason for this being an equitable method in this situation.
- One candidate completely misread the question by discussing impacts on the policy liability, when the question stated ignore the impacts on the policy liability.

Part d) iv):

- Candidates were asked to discuss other impacts of reducing terminal bonuses.
- This part was answered poorly with an average mark of 1.1/6.
- Most candidates provided a good explanation on policyholder expectations.

- However, few candidates covered the critical issues of the impact on solvency and capital adequacy. This is of great concern as these are the fundamental reasons for reducing bonuses in this particular scenario.

Part e):

- Candidates were asked to explain which method (either reducing reversionary bonuses or terminal bonus) is the most effective in this situation.
- This part was answered well with an average mark of 1.3/2. This is despite the poor performance of candidates in d).
- Most candidates were able to explain correctly with reasons that reducing terminal bonuses was the more effective method in this scenario.

Question 5 **Total Marks: 42** **(10 KU 20 SJ 12 CJ)**

	Raw Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass	27.0	64.3%	1	2%
Pass	19.5	46.4%	6	12%
Below Standard	15.0	35.7%	9	17%
Weak	9.0	21.4%	24	46%
Showed Little Knowledge	1.0	2.4%	12	23%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	27.0	100%	58%	58%
Average Mark	12.8	60%	27%	12%
Standard Deviation	5.2			
Co-efficient of Variation	0.41			

This question was poorly answered with a pass rate of 13%.

This question concerned single premium unit-linked business, covering what type of contact it was, the basis on which the policy liability was calculated, the calculation and components of the policy liability, the checks to be performed on the financial information provided in the question and possible reasons for the MSE experience loss. The last part of the question covered the impacts on the policy liability of a $3m per annum increase in fixed expenses for administration services provided by an external party and the closure of this product to new business.

The poor pass rate for this question reflects the lack of understanding of unit-linked business. Except for the complex judgement in part e), this was considered a straightforward question, covering the basic concepts of unit-linked policy liabilities.

Part a):

- In part i), candidates were asked to explain what type of contact a single premium unit-linked policy and why. In part ii), candidates were asked on what basis the policy liabilities were calculated.
- This was straightforward, reflected in the average mark of 1.4/4 with many

candidates receiving full marks.

- Some candidates fell short in ii) by mentioning the accumulation basis without fair value.
- A number quoted the actual accounting standards and received credit for this.

Part b):

- Candidates were asked to describe how the policy liability is calculated (including a description of each component of the policy liability).
- Most candidates did well on this question with an average mark of 1.4/2.
- Account balance was the key term to mention for LICL and candidates lost a half mark if they talked about deferred acquisition costs, but didn't mention deferred fee revenue.

Part c) i):

- Given information in the question, candidates were asked to perform checks on the financial statements and state whether any investigations need to be carried out.
- For a fairly straightforward question, this was not answered well with an average mark of 2.7/10.
- Generally, candidates did not carry out enough checks to get a good score.
- The question said "perform checks" so no credit was given to candidates that only outlined the checks.
- Many candidates checked the fees and commissions correctly. However, the poorer candidates only performed these basic checks and nothing else.
- The better candidates reconciled the Account Balance at the end of the year.
- Very few candidates reconciled cashflow profit with fees less expenses profit and checked the MSE at the end of the year.

Part c) ii):

- Candidates were asked to describe other checks they would perform on the financial statements.
- This was poorly answered with an average mark of 1/4.
- Many candidates listed bullet points of additional checks without explaining how the checks would be useful in the context.

Part d) i):

- Candidates were required to describe the possible reasons for the MSE experience loss.
- This was not well answered with an average mark of 2.9/8.
- Many candidates explained how higher lapses and lower new business could be responsible for the MSE experience loss.
- The better candidates explained how a lower Account Balance than expected at the end of year could lead to a lower MSE, arising from a lower investment earning rate than expected, higher ongoing commission than expected and higher ongoing fees than expected.

- Few candidates raised the issue of a change in investment earning rate assumption from the previous year, generating a MSE experience loss.

Part d ii):

- Candidates were asked to set out the additional information they would require to fully investigate the MSE experience loss.
- This was poorly answered with an average mark of 1/4.
- It was important for candidates to ask for actual and expected information in order to analyse the experience loss, but many candidates only mentioned one or the other.

Part e):

- Candidates were asked to discuss the impact on the policy liabilities of some recent developments: the renegotiation of a contract with an external provider of administration services which will lead to a $3m per annum increase in fixed expenses and the closure of this product to new business.
- This was the most poorly answered part of the question with an average mark of 1.4/10.
- Some candidates answered like the question was related to a risk product, not an investment product.
- Most candidates missed the complex judgement marks relating to writing off MSE.
- However, up to 1 mark credit was given to candidates that explained why the account balance wouldn't change immediately, but could reduce over time if fees were increased to compensate for higher expenses.

Course 3A General Insurance
Chief Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Overview*

The aim of the 3A General Insurance Course is to provide the knowledge, skills and judgement necessary for an actuary to tackle a range of management related problems in general insurance relating to the general insurance industry, estimation techniques for claim cost projection, estimation of insurance liabilities, and management information for underwriting of general insurance.

1.2. *Pass Rates*

106 Candidates enrolled for the Semester 1, 2012 3A General Insurance exam. Of these, 2 withdrew and one did not present at the exam, leaving 103 sitting the exam. The assessment comprised on-line participation worth 10% and an exam worth the remaining 90%.

It is proposed that 29 Candidates be awarded a pass, which implies a pass rate of 28%. This compares with the following historical pass rates for this subject:

Table 1 – Course Experience

Semester	Sat	Passed	Pass Rate
2011 Semester 2	78	18	23%
2011 Semester 1	76	24	33%
2010 Semester 2	66	24	36%
2010 Semester 1	76	28	37%
2009 Semester 2	57	17	30%
2009 Semester 1	65	24	37%
2008 Semester 2	51	21	41%
2008 Semester 1	69	36	52%
2007 Semester 2	82	16	20%

The 28% pass rate for this exam is higher than the 23% pass rate for the previous exam (Semester 2 2011) although slightly lower than historic pass rates, which have been between 30% and 40%.

1.3. *Candidate Numbers*

The Candidate numbers can be summarised as follows:

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	106
Withdrawn prior to exam	2
Absent from exam	1
Presented at exam	103
Passed	29
Failed	74

The analysis by examination centre is as follows:

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	82	25	30%
Melbourne	7	2	29%
Wurtulla (Sunshine Coast, Qld)	1	1	100%
Canberra	1	0	0%
Adelaide	1	0	0%
Brisbane	4	0	0%
Australia	**96**	**28**	**29%**
Auckland	1	0	0%
Ireland	1	0	0%
Wellington	2	1	50%
Singapore	2	0	0%
International	**8**	**1**	**13%**
Total	**104**	**29**	**28%**

The Australian and International pass rates are both higher than the previous semester.

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were:

Chief Examiner: David Gifford

Assistant Examiner: James Pettifer

Assistant Examiner: Yvonne Wong

2.2. *Course Leader (Exam Writer)*

The Course Leader (exam writing) for this semester was James Fitzpatrick. Thanks again to James who provided an excellent draft paper in a timely manner, and responded well to feedback, which assisted with the smoothness of the overall exam process.

2.3. *Course Leader (Online Participation)*

The Course Leader (online participation) for this semester was Felix Tang. Thanks to Felix for his support, especially given the significant number of 3A candidates this semester.

2.4. *Forum Participation Assessment*

Online participation was assessed by the Course Leader (Online Participation). The pass rate for online participation was 89%. The average participation mark was 14.8 out of 20.

3. Examination Papers and Assignments

3.1. *Degree of Difficulty and Course Coverage*

The following tables show the distribution of questions and marks by level of difficulty and course coverage:

Table 5 – Degree of Difficulty of Exam

Question	Syllabus Performance Outcome	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
1 (a)	2	2	3			3
1 (b)	2	2		5		5
1 (c)	3	3		2		2
1 (d)	3	3	2			2
1 (e)	3	3			2	2
2 (a)	1	1	5			5
2 (b)	1	1		2		2
2 (c)	4	4	2			2
2 (d)	2,3	2,3			4	4
2 (e)	4	4			6	6
3 (a)	3	3	3			3
3 (b)	2	2		3		3
3 (c)	2	2			2	2
3 (d)	2	2		2		2
3 (e)	3	3		5		5
3 (f)	3	3			6	6
4 (a)	1	1	2			2
4 (b)	1	1		2		2
4 (c)	4	4		4		4
4 (d)	4	4			4	4
4 (e)	3	3		6		6
4 (f)	3	3			2	2
5 (a)	1	1	2			2

5 (b)	2	2	2			2
5 (c)	2,3	2,3		5		5
5 (d)	3	3			3	3
5 (e)	2,3	2,3		2		2
5 (f)	2,3	2,3			5	5
5 (g)	1,3,4	1,3,4		3		3
5 (h)	1,3	1,3			4	4
TOTAL			**21**	**41**	**38**	**100**

Table 6 – Course Coverage by Question

Question	Units	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	2,3	5	7	2	14
2	1,2,3,4	7	2	10	19
3	2,3	3	10	8	21
4	1,3,4	2	12	6	20
5	1,2,3,4	4	10	12	26
Total		**21**	**41**	**38**	**100**

The spread of marks was regarded as similar to previous semesters, with the exam overall being regarded as being of moderate difficulty.

3.2. *Overall Performance*

In setting the paper, the intention was to have a consistent level of difficulty with previous papers. The final standard was slightly lower than the average of previous semesters. Pass rates over the previous eight semesters varied between 20% and 52% with an average of 34%. The pass rate for this semester is therefore in the lower half of the range of historic pass rates.

The examiners' overall impression, after reviewing borderline candidates was that most candidates performed relatively poorly on the harder questions (relative to previous semesters) and in several cases wrote a lot of points which were only of limited relevance to the question.

It is also noted that the pass rate for the participation component was very high (89%), even compared to the relatively high pass rates awarded for the assignment in previous semesters. As the participation component is unadjusted, this would have had the effect of a few more candidates becoming borderline (ten of eleven borderline candidates received at least eight out of ten for the participation component with five of these receiving ten out of ten). As it appears that the participation component was marked relatively generously, it is not unexpected that the performance of the borderline candidates (only 2 out of 11 passing) was relatively poor.

It is noted that for at least two candidates the relatively poor performance on the online participation component was the difference between their passing and failing.

3.3. *Exam Question by Question Analysis*

Question 1 **Total Marks: 28** **(10 KU 14 SJ 4 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	20.0	71.4%	3	3%
Pass	14.5	51.8%	21	20%
Below Standard	10.5	37.5%	48	46%
Weak	6.0	21.4%	21	20%
Showed Little Knowledge	1.0	3.6%	9	9%
Did Not Attempt	0.0	0.0%	2	2%
		% KU	% SJ	% CJ
Maximum Mark	26.0	100%	96%	100%
Average Mark	11.8	43%	49%	16%
Standard Deviation	4.2			
Co-efficient of Variation	0.35			

Candidates performed relatively poorly on this fairly straightforward question, with a pass rate of 23%.

This question concerned a reserving analysis for a motor portfolio where there has been a recent change in the claims system. When the exam was written, this question was felt to be quite easy but we found that students answered the question poorly.

Part a) was a simple book work question asking for the data files that would be needed for a standard reserving analysis. Many students wrote significantly more than was required to get the marks. A large number of students missed mentioning either recoveries or a history of case estimates. The average mark was 1.9 out of 3 but given the very standard nature of this question, we would have expected the average mark to be higher.

Part b) required calculating the projected ultimate total average claim size for the latest quarter in current values. To get full marks students needed to provide a suitable assumption for the tail, use the actual value for development quarter 0 for the 2011Q4 and provide a suitable adjustment for the good experience which was likely due to claims processing changes. The average mark was 2.6 out of 5 which was lower than expected given that only the adjustment for the good experience in the latest quarter was in any way different to the standard reserving questions.

Part c) required asking the claims division some key questions following the review of the existing data. The two questions were thought to be quite standard - around the good experience in the current quarter and the expectation around the likely tail experience - very few students asked about the likely tail experience. Overall the average mark was 0.8 out of 2.

Part d) required the student to understand the impact of a higher case estimate on the ultimate coming out of a PCE model. This was extremely poorly answered with an average mark of 0.25 out of 2. The two key points required were relatively simple and it was surprising that more students did not get more marks. The two key points were that a higher case estimate will result in a higher estimate of future payments and that given the incurred per claim was relatively constant - with just a movement from paid to case - that the lower payments to date were unlikely to offset the increase from the PCE method.

Part e) required the student to judge whether the additional case estimate data would result in changes to the assumptions from part b). This required noting that the value of case estimates is limited following a significant change in the claims processes. This was considered to be a more difficult part of the question but the average mark of 0.25 out of 2 was still much lower than expected.

Question 2 **Total Marks: 38 (14 KU 4 SJ 20 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	31.0	81.6%	4	4%
Pass	25.5	67.1%	38	37%
Below Standard	18.5	48.7%	49	47%
Weak	11.0	28.9%	9	9%
Showed Little Knowledge	1.0	2.6%	2	2%
Did Not Attempt	0.0	0.0%	2	2%
		% KU	% SJ	% CJ
Maximum Mark	35.5	100%	100%	93%
Average Mark	23.2	80%	88%	42%
Standard Deviation	5.9			
Co-efficient of Variation	0.25			

Candidates performed reasonably on this question, with a pass rate of 41%.

This question had two major themes - the first was around insurability and the second was around understanding the performance of a new liability product. The students performed well on the first parts of the question as was expected when the question was written but struggled especially on the last 2 parts. The relatively easy marks on offer in the first 3 parts meant that over 80% of students ended up with over 50% of the marks on offer however, the later parts of the question provided a level of discrimination for better performing students.

Part a) required assessing the insurability of a product and highlighting key areas where either underwriting or restrictions in cover were required. This was felt to be a very simple mainly book work part and the results were as expected with the average mark being 4 out of 5 with over 90% of students achieving 3 or more marks. Some students forgot to comment on any of the key areas around underwriting or restrictions in cover.

Part b) required assessing the insurability of an extension to the product in part a). This part of the question was very well answered with 75% of students achieving full marks. Overall the average mark was 1.8 out of 2.

Part c) required calculating a loss ratio. This was quite simple and done well with students only required to do a simple earnings calculation. Over 50% of students achieved full marks on this question. Overall the average mark was 1.6 out of 2.

Part d) was significantly harder than the earlier parts of the question and this resulted in less than 20% of students receiving more than 2 marks on the question. Most students did not mention explicitly that the traditional methods would not apply in these circumstances and most also did not mention any specifics around the fact that the question was talking about a long tailed class and thus the absence of claims was not indicative of the final cost. The average mark was 1.4 out of 4.

Part e) required drafting of a response to the CEO around the existing management reporting. There were three easy marks on this question around the style of the response, a comment that using written premium was incorrect and that using earned premium would provide a better measure of the performance of the portfolio. Students on average received 2 out of the available 3 marks on these points but only 1.1 out of the remaining 3 points available.

Question 3 **Total Marks: 42** **(6 KU 20 SJ 16 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	30.0	71.4%	3	3%
Pass	22.5	53.6%	20	19%
Below Standard	17.0	40.5%	27	26%
Weak	10.0	23.8%	42	40%
Showed Little Knowledge	1.0	2.4%	9	9%
Did Not Attempt	0.0	0.0%	3	3%
		% KU	% SJ	% CJ
Maximum Mark	35.0	100%	96%	78%
Average Mark	17.4	65%	45%	29%
Standard Deviation	7.0			
Co-efficient of Variation	0.40			

Candidates performed poorly on this question, with a pass rate of 22%.

This question superimposed inflation, as well as aspects of a valuation for a workers' compensation portfolio experiencing varying economic conditions. .Students struggled on most parts of the question, despite the question being relatively straightforward.

Part a) asked for a description of superimposed inflation as well as example causes. This was well answered with an average mark of 2.0 out of 3 – most students were able to provide the description as well as the examples.

Part b) required calculation of superimposed inflation rates based on a table of PPCIs. This part was disappointing given the relatively straightforward calculation – more than half the students received no marks. Overall the average mark was 1.0 out of 3.

Part c) required consideration of recent claims experience and commentary on drivers of recent improvements. This part was answered moderately well – better students were able to identify that economic conditions were likely to have caused the improvements in recent experience. Overall the average mark was 0.8 out of 2.

Part d) required selection of an assumption along with appropriate justification. Few students paid sufficient regard to the trend present in the Development Year 0 data and instead

many recommended a simple average, which showed a disappointing lack of judgement. Overall the average mark was 0.5 out of 2.

Part e) required calculation of an inflated and discounted liability. This was quite straightforward and better candidates achieved at least 3 or 4 out of 5 marks. Overall the average mark was 2.9 out of 5.

Part f) required discussion of assumptions which would be revised following an economic downturn. This was a challenging question and few students identified superimposed inflation or investment yields. Overall the average mark was 1.5 out of 6.

Question 4 **Total Marks: 40** **(4 KU 24 SJ 12 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	24.5	61.3%	14	13%
Pass	19.5	48.8%	26	25%
Below Standard	16.0	40.0%	19	18%
Weak	10.0	25.0%	31	30%
Showed Little Knowledge	1.0	2.5%	13	13%
Did Not Attempt	0.0	0.0%	1	1%
		% KU	% SJ	% CJ
Maximum Mark	31.0	100%	85%	79%
Average Mark	16.8	79%	46%	22%
Standard Deviation	6.5			
Co-efficient of Variation	0.39			

This question required candidates to examine various accounting (balance sheet and profit and loss) information for a general insurer which underwrites Home and Contents and CTP product lines. Students were required to provide various calculations and commentary. Overall the question was answered reasonably well.

Part (a) was a simple book work question, asking candidates to describe systemic and accumulation risk and identify the product classes which were likely impacted by each. This part was generally well answered.

Part (b) required candidates comment on the viability of expanding the current product offering to an alternate market that is distant geographically but part of the same legislative environment. Overall this part was generally well answered.

Part (c) required candidates to calculate an investment yield based on the financial statements, calculate the prior period release or strengthening in outstanding claims reserve excluding risk margins and as a result provide an indicative current period result for the CTP portfolio. This question was generally well answered, although the final impact on current period result was only occasionally completed. A couple of approaches to the yield curve were acceptable, with one of the alternative approaches being inclusion of the unearned premium provision in the underlying assets. One of the most common mistakes is omitting risk margin adjustments.

Part (d) required candidates to discuss and undertake an adjustment to the Home & Contents results to reflect a long term view of profitability. About half the students identified that the long term profitability outlook for the portfolio required an expected event claims loading but only few handled an adjustment to the Profit and Loss sensibly.

Part (e) required candidates to calculate various claims-related balance sheet items, including unearned premium provision, deferred acquisition cost and unexpired risk reserve

(if applicable). There was a range of answers provided by candidates, with clear differentiation on premium liabilities and claims cost calculation showing level of candidates understanding. Very few students adjusted CTP claim costs for prior years impact and event claims loading for Home and Contents in this part.

Part (f) required candidates to discuss the merits of adjusting the LAT calculation to reflect the exposure pattern and weather cycle. Candidates did not discuss the merits which may have shown a lack of understanding or for some not grasping the question. Majority of answers discussed the process to adjust.

Question 5 **Total Marks: 52 (8 KU 20 SJ 24 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	33.5	64.4%	5	5%
Pass	23.5	45.2%	38	37%
Below Standard	15.0	28.8%	41	39%
Weak	10.0	19.2%	11	11%
Showed Little Knowledge	1.0	1.9%	8	8%
Did Not Attempt	0.0	0.0%	1	1%
		% KU	% SJ	% CJ
Maximum Mark	43.5	100%	93%	73%
Average Mark	21.4	67%	37%	36%
Standard Deviation	7.8			
Co-efficient of Variation	0.36			

This question presented candidates with an annual valuation of outstanding claims liabilities for a general insurer, which provides professional indemnity excess of loss cover for professional bodies on a claims made basis. Candidates were required to provide various calculations and commentary around the appropriateness of valuation approaches adopted, as well as the impacts of a proposed change in legislation change.

Part (a) required candidates to describe professional indemnity policy and a claims made policy. Overall the question was well answered.

Part (b) required candidates to review the selected chain ladder factors and make any adjustments necessary. Overall question was well answered, although only few students adjusted the 5:4 'tail' factor to allow for further notifications.

Part (c) asked candidates to apply the selected chain ladder development factors to estimate ultimate claims incurred for 2011 and 2012 year, and discuss whether a chain ladder model was appropriate, as well as any adjustment necessary to final results. Overall candidates showed reasonable understanding of and were able to apply the chain ladder methodology when forecasting results.

Part (d) required candidates to discuss the weights given to each of PPCI and PCE models by underwriting year in setting outstanding claims provisions. This question was answered well, with most students showing an understanding of the advantages and disadvantages of each method.

Part (e) presented candidates with a proposed legislative change of the underlying professional indemnity scheme. Candidates were required to discuss the implications for outstanding claims numbers. Most candidates appeared to struggle with understanding what the impacts of the legislation change would be for SPR. A common mistake was

answering this question on behalf of the underlying scheme instead of SRP and not understanding that the impact on the two would be different.

Part (f) required candidates to outline an approach to valuing the change in outstanding claims liabilities for the legislative change. Similar to Part (d), most candidates appeared to struggle with understanding how to estimate the impact this would have on the outstanding claims liability.

Part (g) required candidates to calculation the gross, net and reinsurance recoveries incurred for the insurer in respect of three large claims for the financial year. This part was very poorly answered with only a few candidates knowing and correctly applying the formula to determine the incurred cost in a particular year, whilst some candidates only calculated the ultimate incurred at each given point in time. There were a surprising number of candidates that struggled with this part of the calculation.

Part (h) asked candidates to discuss professional obligations under circumstances where a conflict was present, and recommend appropriate course of action. Few candidates appeared to understand the need for confidentiality with respect to DB's information, although many still managed to suggest that a reasonable first course of action would be to urge DB to inform SPR of the claim. The most common mistake in this question related to not recognising the conflict of interest and giving weight solely to the appointed actuary responsibilities for SPR.

Course 3B General Insurance
Chief Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Overview*

The aim of the 3B General Insurance Course is to provide the knowledge, skills and judgment necessary for an actuary to tackle a range of management related problems in general insurance relating to the pricing of all general insurance products, capital management and financial condition reporting.

1.2. *Pass Rates*

72 Candidates enrolled for the Semester 1 2012, 3B General Insurance Course. Of these, 1 withdrew before the exam, leaving 71 sitting the exam. The assessment comprised of an online participation worth 10% and an exam worth the remaining 90%.

It is proposed that 27 Candidates be awarded a pass, which implies a pass rate of 38%. This compares with the following historical pass rates for this subject:

Table 1 – Course Experience

Semester	Sat	Passed	Pass Rate
2011 Semester 2	65	20	31%
2011 Semester 1	58	20	35%
2010 Semester 2	53	21	40%
2010 Semester 1	53	21	40%
2009 Semester 2	63	33	35%
2009 Semester 1	50	16	32%
2008 Semester 2	62	23	37%
2008 Semester 1	40	16	40%

The 38% pass rate for this exam is an improvement on the 31% pass rate for the previous semester.

1.3. *Candidate Numbers*

The Candidate numbers can be summarised as follows:

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	72
Withdrawn prior to exam	1
Absent from exam	0
Presented at exam	71
Passed	27
Failed	44

The analysis by examination centre is as follows:

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	55	22	40%
Canberra	1	1	100%
Melbourne	4	1	25%
Perth	1	1	100%
Adelaide	1	0	0%
Brisbane	2	0	0%
Australia	**64**	**25**	**39%**
Ireland	1	0	0%
London	4	2	50%
Hong Kong	1	0	0%
Singapore	1	0	0%
International	**7**	**2**	**29%**
Total	**71**	**27**	**38%**

The Australian pass rate of 39% is higher compared to the pass rate for the previous exam (32% for Semester 2 2011).

International candidates performed relatively poorly with a pass rate of 29% (2 out of 7 passed).

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were:

Chief Examiner: Frankie Chan

Assistant Examiner: Johnson Wong

Mr. Jim Qin stepped down in the middle of the semester as Chief Examiner after review of the final exam paper. I would like to thank Jim for his support and mentoring during my time as Assistant Examiner.

Jim also assisted in the review of borderline candidates this semester.

2.2. *Course Leader*

The Course Leader for this semester was: Rick Shaw

2.3. *Forum Participation Assessment*

This is the first semester where online participation assessment was introduced; this replaced the assignment and is worth 10%. The course leader provided assessment for online participation. No pass mark was set.

Below is a distribution of the marks for the online participation assessment:

Participation mark	Number of candidates
10	57

9	6
8	6
7	1
0	1
Total	**71**
Average Mark	**9.6**

Over 80% of candidates received full marks for the online participation assessment, this represented great effort & engagement by candidates throughout the semester.

From an assessment point of view this result is hardly differentiating. Additional effort went towards the assessment of question by question cut-offs and borderline reviews this semester.

3. Examination Papers and Assignments

3.1. *Degree of Difficulty and Course Coverage*

The following tables show the distribution of questions and marks by level of difficulty and course coverage:

Table 5 – Degree of Difficulty of Exam

Question	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
1(a)	1		2		2
1(b)	1,2	2			2
1(c)	1,2		3		3
1(d)	1,2	1			1
1(e)	2	1			1
1(f)	2		2		2
1(g)	1,2			4	4
1(h)	2			7	7
1(i)	1,2		1		1
2(a)	3	2			2
2(b)	3		3		3
2(c)	3		4		4
2(d)	3,4	1			1
2(e)	3,4			4	4
2(f)	3			2	2
2(g)	3,4			3	3
2(h)	3			3	3
2(i)	3			5	5
3(a)(i)	2	1			1
3(a)(ii)	2			4	4
3(b)	1,2		1		1
3(c)	1,2		1		1
3(d)	1,2			4	4
3(e)	1,2			4	4
4(a)	4	3			3
4(b)	4		3		3
4(c)	1,4		4		4
4(d)	1,2		7		7
5(a)	1	2			2
5(b)(i)	2	2			2
5(b)(ii)	1,2	2			2
5(b)(iii)	2	2			2
5(b)(iv)	1,4		2		2
5(c)	1,2		4		4
5(d)	4		4		4
TOTAL		**19**	**41**	**40**	**100**

Table 6 – Course Coverage by Question

Question	Units	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	1,2	4	8	11	23
2	2,3,4	3	7	17	27
3	1,2	1	2	12	15
4	1,2,4	3	14	0	17
5	1,2,4	8	10	0	18
Total		**19**	**41**	**40**	**100**

The distribution of marks varies significantly among questions. Question 1 and 2 made up 50% of total marks and contain most the complex judgement. Question 4 and 5 has no complex judgement. This may cause issues if secondary criteria were to apply.

Overall the exam is regarded as being of moderate difficulty. It is also more main stream compared to previous semester, with big questions focusing on pricing and capital modelling.

3.2. *Overall Performance*

Overall performance of the exam is only fair with the paper considered being more main stream than previous semesters. The overall pass rate is higher compared to historic pass rates.

Whilst online participation by candidate was great, the marks itself is hardly differentiating with an average of 9.6/10 and overall 80% candidates scored a 10/10 in the online forum assessment.

The pass mark for three questions required upward adjustments, upon close review taking into account standard & difficulty of the question as well as quality of candidates' response. Overall the examiners felt that markers for these 3 questions have been relatively generous with their marking in some parts of the questions.

Common issues observed this semester are:

- Candidates missed out on easy marks in some questions by not having sufficient and/or relevant points. Some candidates were penalised for utilising the "brain dump" approach without specifically relating to the context of the question
- Inability to demonstrate judgement in practical and/or novel situations, as reflected in the poor passing rate for Question 4 and 5. These two questions contain no complex judgements
- Poor hand writing remained a major problem, and appears worse this semester. Some candidates had to rush through later part of the exam. Markers cannot give marks for answers that cannot be read. This will improve in the future when computers are used in exams.
- In additional non-standard acronyms and indecipherable squiggles do not help markers to award marks.

Specific common mistakes and weakness are discussed in the question analysis below.

3.3. ***Exam Question by Question Analysis***

Question 1 **Total Marks: 46** **(8 KU 16 SJ 22 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	30.0	65.2%	3	4%
Pass	24.0	52.2%	28	39%
Below Standard	17.5	38.0%	34	48%
Weak	11.0	23.9%	6	8%
Showed Little Knowledge	1.0	2.2%	0	0%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	33.0	100%	72%	70%
Average Mark	22.6	74%	38%	49%
Standard Deviation	4.3			
Co-efficient of Variation	0.19			

This question requires candidates to discuss issues relating to the rating and design of a new group travel insurance rating tool for the Chief Underwriter of an insurance company which has been selling personal travel insurance for a number of years. The question also examines candidate's ability to review the pricing of the Chief Underwriter for a potential client.

Part a.) requires candidates to consider professional issues before taking on the project. This part of the question is generally well answered. To gain full marks the candidates needed to include issues that are not included in the Code of Professional Conduct, and consider practical matters in taking on a new project.

Part b.) requires candidates to outline rating factors to apply in the new rating tool. Again this part of the question is generally well answered.

A number of candidates included sum insured as a rating factor, which was accepted as a possible factor by the markers.

Part c.) asks candidates to discuss adjustments and allowance required when adopting personal travel data to pricing group travel. This part of the question is less well answered.

A number of candidates seemed to assume that, despite being a group product, individual traveller details would be available. Also some candidates focused on pricing issues in general, as opposed to specific issues relating to using personal travel data.

Part d.) is a relatively book work type question which requires candidates to outline additional information that can be used to develop the rating structure for the new product. This question is generally well answered.

Part e.) requires candidate to calculate the risk premium using sim insured band as the only factor. Some candidates misinterpreted the table, and calculated a risk premium as the sum by sum insured band. Overall reasonably answered.

Part f.) follows on and asks candidates to name an issue with the above approach. This question is not well answered by candidates. Most candidates missed the point that a

discussion on using sum insured bands was required, and jumped to recommending GLMs. Some marks were given for saying this.

Part g.) requires candidates to discuss expected differences in claim costs, expenses and profit margins between personal and group travel. Overall the question is generally well answered.

Some candidates mentioned concentration risk existed in group travel is likely to drive up claims cost and profit margin, which is not true when taking into accounts other contributing factors.

Part h.) provided candidates with some information and requires them to assess the reasonableness of the Chief Underwriter's quote to a potential client. A variety of answers was given for this part.

Very few candidates calculated a benchmark premium. Some candidates included additional items as profit margins, expenses etc, when this was already covered by the loss ratio assumption given in the question.

Part i) asks candidates to outline examples of free benefits the insurer can provide to help securing the policy. A wide range of responses was received, many of which would cost money to provide. Marks were given for any response that was practical, and would be minimal cost to the insurer.

Question 2 **Total Marks: 54** **(6 KU 14 SJ 34 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	33.5	62.0%	3	4%
Pass	28.6	53.0%	29	41%
Below Standard	20.5	38.0%	30	42%
Weak	16.0	29.6%	8	11%
Showed Little Knowledge	5.5	10.2%	1	1%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	36.3	100%	75%	64%
Average Mark	26.3	82%	48%	43%
Standard Deviation	4.7			
Co-efficient of Variation	0.18			

This question requires candidates to consider issues & considerations relating to using internal capital models in determining an insurer's capital requirement, from both a company's point of view as well as from APRA.

Part a.) requires candidate to list reasons an insurance company would consider when using an internal capital model to set regulatory capital. This question is generally well answered with majority of candidates picking up the potential of lower capital requirement and better understanding of company's risk profile.

Part b.) asks candidates to consider issues a company would consider before developing an internal model for regulatory capital.

Most candidates mentioned resource constraints and the majority mentioned added cost and at least one more point. However, not many have picked up on competitive considerations or senior management buy-in that is required in developing the ICM. Many addressed the question from a technical perspective but not the practicality perspective the question was asking for.

Part c.) requires candidates to discuss benefit & risks to APRA letting insurers determine regulatory capital using internal model.

A number of varied responses were provided. Most common benefit was improved modelling of risk profile, while the most common risk was APRA's resource issues and ability to compare various models. In a lot of cases candidates did not list enough benefits and risks to get close to full marks or did not list enough different benefits and risks.

Some candidates listed benefits & risks from an insurer's perspective as opposed to APRA's.

Part d.) asks candidate to define the use test, that an insurer is required to satisfy/demonstrate when using an internal model to determine regulatory capital.

This is a book work question with a surprisingly significant number of candidates not receiving full marks for essentially restating the prudential standard. A significant number of candidates were awarded no marks for simply rewording the question.

Part e.) follows on and requires candidate to set out some examples on how an insurer can satisfy the use test. This is a relatively straightforward question with some candidates lost marks by not having sufficient points.

Part f.) requires candidates to discuss issues relating to an insurer adopting a partial model approach for determining regulatory capital. Surprisingly not many candidates picked up the issue with selective judgement ("gaming") in modelling catastrophe risk. Also, not many candidates raised the issue of integrating the modelled catastrophe risk with the rest of the components in prescribed approach.

Part g.) asks candidates to briefly role of some key job functions of an insurer in the context of internal model governance.

A fairly straightforward question, although many candidates described roles without any reference to the governance of ICM.

Part h.) requires candidate to describe the contents of an insurer's submission to APRA seeking partial model approval.

Candidates generally mentioned technical structure of the model and the data/output. However, validation and governance of the model was rarely mentioned. Some candidates provided "buzz words" without elaborating, whilst others did not provide sufficient points.

Part i.) of the question ask candidate to outline a high level approach to assess reasonableness of current factors in the prescribed method, in light of the recent experience in the economic climate and trends in natural disasters.

Very varied response from candidates with a few good/detailed answers, where the approach was clear and the requested data was appropriate. In many cases, however, the response was too generic and did not address the issues raised in the question.

Question 3 **Total Marks: 30** **(2 KU 4 SJ 24 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	26.0	86.7%	3	4%
Pass	21.0	70.0%	19	27%
Below Standard	15.0	50.0%	36	51%
Weak	10.0	33.3%	12	17%
Showed Little Knowledge	1.0	3.3%	1	1%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	27.0	100%	100%	94%
Average Mark	18.7	47%	64%	63%
Standard Deviation	4.3			
Co-efficient of Variation	0.23			

This question concerned the pricing of hire car option within motor insurance.

Part a.i.) is a book work question asking candidate to calculate the expected claim frequency of the portfolio based on some simple GLMs output. Surprisingly very few candidates got it correct.

Most candidates were able to calculate the claim frequency for policies with and without care hire. However, only a few candidates went on to calculate the portfolio claim frequency using a weighted average of the two frequencies. Both markers allocated partial marks for the individual frequencies, with full marks being awarded for the correct portfolio claim frequency.

Part a ii.) requires candidates to derive a suitable range for the hire car loading based on the GLM outputs.

This question received many different approaches from candidates. Most candidates were able to calculate the average claim size and therefore risk premium for the car hire and without car hire options from the GLM output. Most candidates were able to come up with a loading, shown as either a percentage or dollar amount. Only a few candidates took note of the large standard error for the claim size parameter. Few candidates scored well in this question.

Part b.) requires candidate to discuss reasons for higher claim frequency and/or severity across the portfolio. This was generally well answered, and an easy mark for most candidates. There were however quite a few candidates who seemed to think the higher cost was due to the increased exposure during the hire period, zero marks were given for this response.

Part c.) asks candidate to assess the impact reducing hire car benefits has on hire car pricing. This is an easy mark with most candidate receiving full mark. Half mark was awarded for brief answer. Bonus half mark was awarded for candidate mentioned potential impact reduced hire car benefit has on claim frequency.

In part d.) of the question candidates were given a summary of quotes from competitors, and were asked to discuss issues/difficulties in interpreting this information.

This question relied on the judgement of the candidates, and there was a wide variety of answers. Most candidates mentioned the mixes of business in the analysis could be different, as well as different policy terms and conditions. Many candidates made the mistake of repeatedly saying the same thing with several points. Points were allocated for each separate issue identified by the candidate. This question had the most discrepancies between the two markers.

Part e.) went on and asks candidates to discuss further analysis one would conduct before making a final recommendation.

This question had the greatest variance in answers. The marking guide allocated several points to the discussion of elasticity; however there were few candidates who went on to elaborate about this particular issue. Points were awarded for descriptions of valid types of analysis, in particular any discussions on new vs. renewal business, and renewal rates. Some candidates ran out of time, and only wrote down a few minor points. There were also a few candidates who seemed to write a brain dump of 'items to consider' without really any reference as to how the analysis would be beneficial to this particular pricing issue. These "lists" were not looked upon favourably with minimal marks given.

Question 4 **Total Marks: 34** **(6 KU 28 SJ 0 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	25.0	73.5%	2	3%
Pass	19.0	55.9%	25	35%
Below Standard	15.0	44.1%	24	34%
Weak	10.0	29.4%	14	20%
Showed Little Knowledge	1.0	2.9%	6	8%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	25.5	100%	84%	0%
Average Mark	16.7	47%	50%	0%
Standard Deviation	4.4			
Co-efficient of Variation	0.27			

This question concerned the issues and considerations relating to the takeover of a niche motor insurance by another personal lines insurer. The question also requires candidates to discuss issues and analysis required to harmonise the premium rate between the two motor books.

Part a.) requires candidates to consider issues before acquiring the niche motor insurer. This part of the question is generally well answered with very few candidates suggested reviewing the sufficiency of insurance liabilities. Half a mark was awarded for synergy benefits.

Part b.) asks candidate to identify emerging risk arising from the purchase as well as a solution.

This is the best answered part of the question. Marks were given for the points listed below and a solution:

- Concentration Risk
- Investment risk
- Increased Motor Exposure Risk
- Solvency Risk
- Operational Risk (IT)
- Loss of goodwill / brand damage risk for the niche insurer

Marks were not awarded for the following points:

- Key Person/Staff risk
- Insurance risk, relating to reserving or pricing.
- Strategy risk

since they are not emerging risk

Vague solutions that did not relate to the question did not gain the second half a mark. For example, investment risk would gain ½ a mark, and another ½ mark for the solution of reducing equity/property exposure and increasing cash/bond exposure. No marks were given for a solution of "review the portfolio mix".

Part c.) requires candidate to identify and describe factors to consider in deriving a harmonised premium rate for the two motor books.

This question is generally well answered, and marked as per the guide. A few candidates misinterpreted the question by thinking it was asking for four key rating factors.

In part d.) candidates was provided summaries of renewal and loss ratio information by region and vehicle size. Candidates were asked to make comment on the analyst flat % increase of the target's portfolio, as well as describing further analysis required.

This part of the question was done quite poorly, and really showed up a lot of candidates' exam technique. A lot of candidates did not allocate enough time, and some did not even attempt it. Some even wrote "I don't have time..."! Others did not answer the question asked, either by not commenting on the analyst recommendations or by not setting out further analysis work to be undertaken. The best answers were well thought-out and focussed on answering the question.

Some candidates did not identify that a flat 8% increase may not be the best approach.

There was some discrepancy in marking approach here, and the marking guide could have been more specific. Each paper was a somewhat subjective call on the two 2-mark parts.

For the second 2-mark part in the guide: Marker 1 gave marks for providing better recommendations, whereas Marker 2 gave marks for analysing the expected impacts of the 8% increase.

Marks were awarded to the following further work points:

- Competitor analysis
- Monitoring the profile/experience of the new business
- Using the experience of MoiMoi
- Allowing for synergy benefits

- Looking at a longer history
- Using additional rating factors, or a GLM analysis

One additional point on exam technique is that candidates should consider that markers need to be able to read and understand what they are writing. Non-standard acronyms and indecipherable squiggles do not help us to award marks.

Question 5 **Total Marks: 36** **(16 KU 20 SJ 0 CJ)**

	Raw Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass	24.0	66.7%	1	1%
Pass	20.0	55.6%	18	25%
Below Standard	16.0	44.4%	28	39%
Weak	10.0	27.8%	22	31%
Showed Little Knowledge	1.0	2.8%	2	3%
Did Not Attempt	0.0	0.0%	0	0%
		% KU	% SJ	% CJ
Maximum Mark	24.5	72%	73%	0%
Average Mark	17.2	47%	48%	0%
Standard Deviation	3.7			
Co-efficient of Variation	0.22			

This question concerned the issues to be considered in the review of the regulations applying to builder's warranty insurance for a small Pacific island.

Part a.) of the question asks the candidates to considers professional issues before taking on the review.

The question was fairly easy while most candidates mentioned "conflict of interest" and "necessary skills" it was surprising to see that a number of candidates who don't understand the full nature of 'professional issues'.

Part b.)

i.) - Only a few candidates recognised that Builder Warranty insurance is for third parties and last resort therefore its unlikely many builders would buy unless there was some pressure by customers; however as markers we rewarded candidates for simply stating reduction in premium volumes and increase in expenses.

ii.) was fairly well answered the better candidates articulated adverse selection issues more clearly.

iii.) Few candidates mentioned anything more than a new trigger introduces new claims.

iv.) for a relatively easy question a lot of candidates' wrote poor responses. Most candidates didn't comment on the difference in government versus private underwriting and claims management was ignored by almost all candidates.

Part c.) requires candidate to discuss key issues to consider in pricing the builder warranty product under current policy conditions.

Some candidates generally dumped generic considerations, and no/little marks were awarded. Very few suggested non-completion and defect claims should be split.

Part d.) is an easy question asking candidates to describe two actuarial role appropriate for the regulator to consider. Most candidates scored well in this.

Markers also accepted: - EPR, Capital Actuary, Chief Risk Officer as suitable actuarial roles.

Overall performance was poor given it consists only of simple judgment and textbook knowledge. This question also has the lowest pass rate.

Course 5B Investment Management and Finance Course Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Overview*

The aim of the 5B Investment Management and Finance Course is to provide the knowledge, skills and judgement necessary for an actuary to tackle a range of problems relating to the use of derivative securities and the pricing and modelling frameworks for derivative securities including exotic options. The course also equips candidates with an understanding of interest rate derivatives, capital and risk management. The importance of professionalism is also emphasised in the course.

1.2. *Pass Rates*

23 Candidates enrolled for the Semester 1 2012, Investment Management and Finance Course 5B. Of these, 1 did not present at the exam, leaving 22 sitting the exam. The assessment comprised one assignment worth 15% and an exam worth the remaining 85%.

It is proposed that 13 Candidates be awarded a pass, which implies a pass rate of 59.1%. This compares with the following historical pass rates for this subject:

Table 1 – Course Experience (both A & B subjects : previous semester first, then older).

Semester	Course	Sat	Passed	Pass Rate
Semester 2 2011	A	26	16	62%
Semester 1 2011	B	16	6	38%
Semester 2 2010	A	38	20	53%
Semester 1 2010	B	34	19	56%
Semester 2 2009	A	46	17	37%
Semester 1 2009	B	44	15	34%

The 59% pass rate for this exam is higher than in previous offerings. With the small enrolments one would expect some variation in the pass rates from year to year. Note also that Course 5B is only offered during Semester 1 of each calendar year.

1.3. *Candidate Numbers*

The Candidate numbers can be summarised as follows:

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	23
Withdrawn prior to exam	1
Absent from exam	0
Presented at exam	22
Passed	13
Failed	9

The analysis by examination centre is as follows:

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	14	10	71%
Melbourne	2	1	50%
Canberra	1	1	100%
Subtotal Australia	**17**	**12**	**71%**
Auckland	1	1	100%
London	2	0	0%
Singapore	2	0	0%
Subtotal International	**5**	**1**	**20%**
Total	**22**	**13**	**59%**

The Sydney pass rate is the highest of all centres. This may reflect the fact that tuition is provided face to face in Sydney and only online for candidates in other centres. The numbers from other centres are very small however and so little should be inferred from this information.

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were:

Course Examiner: David Pitt

External Examiner: Jack Ng

2.2. *Course Leader*

The Course Leader for this semester was Tim Kyng. Tim delivered the five five-hour workshops in this subject and also prepared the first draft of the exam and solutions as discussed in Section 1.4.

2.3. *Degree of Difficulty and Course Coverage*

The following tables show the distribution of questions and marks by level of difficulty and course coverage:

Table 5 – Degree of Difficulty of Exam

Question	Units	Learning Objectives	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
Q1(a)	1	1.4	2			2
Q1(b)	1	1.3	1	2		3
Q1(c)	1	1.2,1.4		4		4
Q1(d)	1	1.4		2		2
Q1(e)	1	1.4			3	3
Q2(a)	2,4	2.2,4.4		7		7
Q2(b)	2,4	2.2,4.4			8	8
Q2(c)	2,4	2.2,4.4			7	7
Q3(a)	2,3	2.3,3.3		3		3
Q3(b)	2,3	2.3,3.3		5		5
Q3(c)	2,3	2.3,3.3			2	2
Q3(d)	2,3	2.3,3.3			2	2
Q3(e)	2,3	2.3,3.3			4	4
Q4(a)	2,3	2.1,3.1		4		4
Q4(b)	2,3	2.1,3.1	4			4
Q4(c)	2,3	2.1	4			4
Q4(d)	2,3	2.1,3.1			2	2
Q5(a)	5	5.1,5.2	2			2
Q5(b)	5	5.1,5.2		3		3
Q5(c)	5	5.1,5.2			4	4
Q5(d)	5	5.1,5.2			3	3
Q5(e)	5	5.1,5.2	2			2
Q5(f)	5	5.1,5.2		2		2
Q6(a)	6	6.2	2			2
Q6(b)	6	6.2		2		2
Q6(c)	6	6.2		2		2
Q6(d)	6	6.1		3		3
Q6(e)	6	6.1			4	4
Q6(f)	6	6.2	3			3
Q6(h)	6	6.2			2	2
Total			**20**	**39**	**41**	**100**

Table 6 – Course Coverage by Question

Question	Units	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	1	3	8	3	14
2	2,4	0	7	15	22
3	2,3	0	8	8	16
4	2,3	8	4	2	14
5	5	4	5	7	16
6	6	5	7	6	18
Total		**20**	**39**	**41**	**100**

The spread of marks across the KU, SJ and CJ are in very close agreement with the recommended 20:40:40 split. The course coverage of the exam is very complete with questions testing all areas of the course with appropriate emphasis on the most fundamental aspects of the syllabus.

2.4. *Overall Performance*

Overall this was a challenging exam and candidates who passed performed sufficiently well across the syllabus. Performance on KU style questions was generally good although some bookwork style questions on interest rate derivatives were not as well answered as we would have hoped. For more detail, see Section 3.8.

2.5. *Exam Question by Question Analysis*

Question 1 **Total Marks: 28 (6 KU, 16 SJ, 6 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	20	71.4	4	18.2%
Pass (B)	17	60.7	6	27.3%
Slightly Below Standard (C)	14	50.0	7	31.8%
Weak (D)	8	28.6	4	18.2%
Showed Little Knowledge (E)	1	3.6	1	4.5%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	22.0	45.5	56.3	36.9
Average Mark	15.6	62.5	78.1	75.0
Standard Deviation	4.65			
Coefficient of Variation	0.30			

Candidates performed well on this question, with a pass rate of 61%.

The question concerned issues connected with warrants and exchange-traded options.

Part a):

Candidates were asked about the law of one price and its application to a given situation.

Most students had a clear idea of what the law of one price was. A few did not relate the concept to the context of the question.

Part b):

Candidates were asked about data required to check if options traded on the warrants market are overpriced relative to those traded on the exchange-traded options market.

Few students wrote an answer that matched the model answer. Most mentioned the need to collect data on matching contracts traded on the 2 exchanges but the issue of contemporaneous pricing wasn't generally mentioned. Most students wrote an acceptable answer to the part of the question about what data to collect. The part of the question about what analyses to do with the data was less well answered. Most mentioned the collection of price data and implied volatility data. Almost nobody mentioned collecting bid ask prices and checking if an exploitable arbitrage opportunity existed.

Part c):

Candidates were asked to discuss the advantages and disadvantages of two given methods of delta hedging and to relate their answer to the scenario given in the question.

This part of the question was reasonably well answered by the candidates.

Part d):

Candidates were required to compare the levels of historical and implied volatility in the long run under certain theoretical models.

Most candidates correctly responded that the implied volatility is expected to be higher than historical volatility. However some students weren't able to provide sensible reasons for why this is so. The average mark for this part of the question was lower than expected with 6 candidates out of 22 not responding to this part.

Part e):

Candidates were asked to give an opinion on the link between short selling and market efficiency or market instability.

Most candidates did express a view but some only expressed a view about either the issue of instability or the issue of efficiency but not both. Most students did try to relate their answer to the warrants market. None of them related it to the ETO and warrants market.

Question 2 **Total Marks: 44 (0 KU, 14 SJ, 30 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	24	54.5	1	4.5%
Pass (B)	16	36.4	9	40.9%
Slightly Below Standard (C)	14	31.8	2	9.1%
Weak (D)	10	22.7	6	27.3%
Showed Little Knowledge (E)	1	2.3	3	13.6%
Did Not Attempt (X)	0	0.0	1	4.5%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	28.0	-	41.0	28.3
Average Mark	14.2	-	100.0	48.3
Standard Deviation	7.03			
Coefficient of Variation	0.50			

Candidates performed reasonably on this question, with a pass rate of 45%.

The question covered the valuation of Asian options using both analytical approaches and simulation methodology.

Part a):

Candidates were required to derive a valuation formula for a continuously sampled geometric average Asian option.

Performance on this part was generally weak with candidates struggling to correctly apply the given results to produce a valuation formula.

Part b):

Candidates were required to give a valuation formula for the option from part (a) at a time point intermediate to the life of the option. A modification of the result from part (a) was required.

Again students found this part difficult with only a few able to make good progress.

Part c):

Candidates were required to develop a simulation algorithm that could be applied to the valuation of the Asian option from part (a) when sampling is discrete rather than continuous.

This was reasonably well handled by the candidates with many aware of the steps required for the simulation and able to adapt them to this complicated context.

Question 3 **Total Marks: 32 (0 KU, 16 SJ, 16 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	22	68.8	2	9.1%
Pass (B)	16	50.0	3	13.6%
Slightly Below Standard (C)	14	43.8	0	0.0%
Weak (D)	8	25.0	10	45.5%
Showed Little Knowledge (E)	1	3.1	7	31.8%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	25.5	-	31.5	39.1
Average Mark	11.3	-	100.0	78.1
Standard Deviation	6.01			
Coefficient of Variation	0.53			

Candidates performed poorly on this question, with a pass rate of 23%.

The question covered pricing options over electricity prices. The question required students to analyse graphical data, develop some mathematical results and to comment on the appropriateness of standard and alternative option pricing methodologies.

Part a):

Candidates were required to develop a result about the correlation of variables from a stochastic process relevant to the pricing problem given in the question.

The key to answering this question is using the independent increments property of Brownian motion, when calculating the covariance. Quite a few students seemed unable to even write down the definition of the correlation function.

Part b):

Candidates were required to derive a result about correlations for a geometric Brownian motion process.

Most students seemed to have difficulty with computing the covariance between two points of geometric Brownian motion. Furthermore, many students were unable to successfully write down the definition of the random variable Xt, conditional on knowing information at time 0 (or for that matter, at any time point less than *t*).

Part c):

Candidates were required to assess graphical information about electricity prices to determine if the data were likely to be generated from Brownian or geometric Brownian motion.

Students should have realised that the mean-reverting behaviour shown in Figure 1, and the seasonality displayed in Figure 2, are features not displayed by Brownian motion or geometric Brownian motion. Perhaps a useful learning exercise for future candidates is to simulate many paths of Brownian motion and geometric Brownian motion processes (this can easily be implemented in Excel). Moreover, for a deeper understanding, students should also simulate paths of a mean reverting process (e.g. the Vasicek one factor interest rate model). It is important to intuitively understand how the paths of these processes behave. This would help avoid bad answers to this type of question.

Part d):

Candidates were required to contrast the price movement for electricity with that for other commodities such as gold, oil or gas.

This was a knowledge question on the electricity market. In general, this question was answered fairly well. Most students mentioned the important point that electricity cannot be stored easily.

Part e):

This question tested the student's ability to understand a more complicated stochastic process for the underlying variable of interest. The student should have been able to understand the implications of using the more sophisticated model (higher volatility, which implies higher option price).

Answers to this question were poor. Most students did not relate their answers to the pricing of electricity, but rather made general vague comments. Many students mentioned that an advantage of the Merton jump process is that it is mean reverting process. Students may have been tempted to say this because of the resemblance of the drift term ("dt" term) to that of a mean reversion process. This is not the case. The drift term is a constant.

Question 4 **Total Marks: 28 (16 KU, 8 SJ, 4 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	24	85.7	4	18.2%
Pass (B)	18	64.3	9	40.9%
Slightly Below Standard (C)	15	53.6	5	22.7%
Weak (D)	10	35.7	3	13.6%
Showed Little Knowledge (E)	1	3.6	1	4.5%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	25.5	76.6	72.4	22.2
Average Mark	18.9	100.0	100.0	87.5
Standard Deviation	5.26			
Coefficient of Variation	0.28			

Candidates performed well on this question, with a pass rate of 59%.

This question tested the student's ability to generate binomial option pricing trees. In the opinions of the markers, this question was straightforward (except perhaps for part d)). If a student had done several past exam paper questions on binomial trees, they should have had no problem in getting most marks for this question.

Part a):

This question tested the student's understanding of put-call parity.

Most students successfully answered this question. However, some students incorrectly "reversed" the logic for the put call parity relationship (saying at time 0, short the call, buy the stock and the put).

Part b):

This part involved some basic number crunching of option pricing formulas.

An easy question, yet quite a few students made calculation mistakes.

Part c):

This question tested whether the student understood the rules for pricing an American option using a binomial tree approach.

This question was answered fairly well. Some students did not mention where early exercise was optimal, and their messy working (with errors) made it unclear as to whether they understood what they were doing.

Part d):

This part tested whether students understood how to allow for discrete dividends (as opposed to the common assumption of a continuous dividend yield) in the binomial tree approach.

This part was badly answered. Most students gave very vague answers without being specific enough. Several students made strange comments along the lines "adding the dividend back into the stock price". Students could not make the simple key points: In the stock price tree, the stock price *is adjusted down* at the time points where a dividend occurs.... the valuation (rolling back through the tree) continues as normal to the adjusted stock price tree, etc.

Question 5 **Total Marks: 32 (8 KU, 10 SJ, 14 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	24	75.0	0	0.0%
Pass (B)	16	50.0	12	54.5%
Slightly Below Standard (C)	12	37.5	7	31.8%
Weak (D)	8	25.0	0	0.0%
Showed Little Knowledge (E)	1	3.1	3	13.6%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	22.5	71.0	45.7	40.4
Average Mark	15.9	100.0	90.0	67.9
Standard Deviation	5.27			
Coefficient of Variation	0.33			

Candidates performed reasonably well on this question, with a pass rate of 55%.

The question covered a range of issues around interest rate derivatives.

Part a):

This was about the interest rate floor contract and asks students to explain why a "floorlet" is equivalent to a call option on a zero coupon bond.

This is bookwork. This part was not as well answered as we would have expected with some candidates merely asserting it to be true with no supporting logic to explain why.

Part b):

This was about puttable bonds and asks students to explain what a puttable bond is and what is the option embedded in such a bond. This was a reasonably straightforward question.

Some candidates couldn't properly explain the circumstances under which the puttable bond would be put.

Part c):

This was a more difficult part of the question and it was about how to use the Vasicek interest rate model to price the puttable bond

None of the candidates wrote an answer that perfectly matched everything in the model solution. The Jamshidian procedure itself involves pricing an option on a coupon bearing bond as a portfolio of options on zero coupon bonds. Only a few students mentioned these details and they were awarded marks for doing so. There were 4 out of 22 students who didn't answer this part. There were 2 students who got 4 out of 4. This part proved to be an excellent discriminator.

Part d):

This part of the question was about the valuation of a "callable bond" and whether it could be valued by using a "swaption" valuation model, and whether the Hull White Model would be better than the Black model which underlies the swaption valuation.

Not all candidates realised that if the embedded call option has a strike price different from par then it is difficult to use the swaption approach. This was a more challenging part of the question. This part of the question also had a high relative variability in the marks awarded.

Part e):

This was about the application of the theory of zero coupon bond pricing to determining the term structure of interest rates from the prices of coupon bearing bonds using the "bootstrapping" approach.

Most students were able to do this.

Part f):

This was about determining the forward price of a coupon bearing bond for a hypothetical forward contract using the information from the part e of the question.

Many candidates scored poorly on this part of the question unable to properly relate the results from part e to the problem here.

Question 6 Total Marks: 36 (10 KU, 14 SJ, 12 CJ)

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	24	66.7	8	36.4%
Pass (B)	18	50.0	8	36.4%
Slightly Below Standard (C)	15	41.7	2	9.1%
Weak (D)	10	27.8	4	18.2%
Showed Little Knowledge (E)	1	2.8	0	0.0%
Did Not Attempt (X)	0	0.0	0	0.0%
		% of KU	**% SJ**	**% CJ**
Maximum Mark	35.0	70.2	56.0	81.5
Average Mark	21.1	95.0	96.4	100.0
Standard Deviation	6.39			
Coefficient of Variation	0.30			

Candidates performed well on this question, with a pass rate of 73%.

Candidates were required to consider the reasonableness of properties of coherent risk measures and to describe and discuss issues relating to computation and use of VaR and TCE.

Part a):

Candidates were required to given an economic interpretation of the significance of sub-additivity and discuss any issues with VaR being not sub-additive.

Most candidates recognised the sub-additivity property relates to diversification benefits. However, some candidates were unable to explain why it matters if VaR is not sub-additive.

Part b):

Candidates were asked to consider the reasonableness of the positive homogeneity property.

Many candidates recognised situations where the position homogeneity property breaks down. Of these, most were able to identify the potential non-linear relationship between risk and holding amount of securities. While this was not a particularly difficult question, a few candidates chose not to answer or just provided a brief response saying that the positive homogeneity property seemed reasonable.

Part c):

Candidates were asked to consider whether the translation invariance property is sensible.

Most students recognised the translation invariance property seems sensible. However, only some were able to recognise the economic interpretation that the constant refers to a risk-free asset. Again, a few candidates chose not to answer or stated that the translation invariance property was not sensible.

Part d):

Candidates were asked to explain how Monte-Carlo simulation could be used to compute both VaR and TCE estimators for a random variable.

This question was fairly well answered with all candidates scoring above zero. Candidates were awarded 1 mark each for describing the sampling process, computation of VaR and computation of TCE. While the question did not specify, most students chose to describe rather than show equations for estimators (e.g. describing VaR as a loss at a certain percentile and TCE as average loss beyond VaR). In some instances, candidates explained VaR and TCE in terms of simulated returns rather than losses. This was also accepted.

Part e):

Candidates were required to consider implementation issues with changing from using VaR based systems for measuring risk/capital adequacy/dealer position limits to a TCE based system.

Again, this question was well answered. All candidates who provided a response were awarded with at least 1 mark. There were many points which candidates could have provided in answering this part of the question. Some chose to address the qualitative aspects (e.g. implementation issues) rather than considering the quantitative approaches to computation. As the question asked for both, candidates were unable to score full marks if both qualitative and quantitative aspects were not addressed.

Part f):

Candidates were asked to give formulae for both VaR and TCE for X ~Normal.

Most candidates were awarded partial marks by making some progress in considering the formulae for VaR, TCE and defining notation used. However, only a few candidates scored full marks on this part of the question; with many candidates unable to give the correct formulae for TCE. This may be because most candidates did not show much working in deriving the TCE formulae.

Part (g):

Candidates were asked to explain how to compute the TCE of X + Y; where X and Y are correlated lognormals.

This was the least well answered part of the question; perhaps reflective of the fact that it is the last question in the paper. More than half the candidates chose to not answer or did not mention the computation of TCE (only describing the sampling process). Of interest,

candidates could have easily described the computation of TCE by referring to part (d) but only one candidate did this.

Course 6A Global Retirement Income Systems Chief Examiner's Report Semester 1 2012

1. Summary

1.1. *Pass Rates*

16 candidates enrolled for the semester and all presented at the exam. Assessment comprised a participation mark (10%) and an exam (90%).

It is proposed that 5 candidates be awarded a pass, which implies a pass rate of 31%. This compares with the following historical pass rates for this subject:

Table 1 – Course Experience

Semester	Course	Sat	Passed	Pass Rate
2011 Semester 2	B	8	5	63%
2011 Semester 1	A	18	9	50%
2010 Semester 2	B	13	7	54%
2010 Semester 1	A	16	4	25%
2009 Semester 2	B	19	10	53%
2009 Semester 1	A	14	5	36%

This result is slightly worse than last year and in line with prior years. It continues the trend that 6A results appear to be worse than 6B results for reasons unknown.

1.2. *Candidate Numbers*

Table 2 – Candidate Numbers

	Number of candidates
Originally enrolled	16
Withdrawn prior to exam	0
Absent from exam	0
Presented at exam	16
Passed	5
Failed	11

Table 3 – Analysis by Examination Centre

Centre	Presented	Passed	Pass Rate
Sydney	10	4	40%
Melbourne	2	0	0%
Canberra	1	0	0%
Perth	1	1	100%
Subtotal Australia	**14**	**5**	**36%**
London	2	0	0%
Subtotal International	**2**	**0**	**0%**
Total	16	5	31%

It is disappointing that no international candidates passed, albeit that the sample was small. Neither candidate was close to the pass standard.

2. Examination Administration

2.1. *Examiners*

The examiners for this semester were: Stephen Woods – Chief Examiner

Jim Repanis – Assistant Examiner

2.2. *Course Leader*

The Course Leader for this semester was: David McNeice

2.3. *Forum Participation Assessment*

The distribution of the participation marks reported to me by the course leader is shown.

Mark /10	10	9	8	7	…	0	Average
No. candidates	6	2	3	1		4	6.8

3. Exam Papers

3.1. *Degree of Difficulty and Course Coverage*

Table 5 – Degree of Difficulty of Exam

Question	Syllabus Performance Outcome	Units	Knowledge & Understanding	Straightforward Judgement	Complex Judgement	Total Marks
1 (a)	1	1	6			6
1 (b)	1	1	2	1		3
1 (c)	1	1	2	2		4
1 (d)	10	6	1			1
1 (e)	10	6	2	2		4
1 (f)	10	6			4	4
2 (a)	3, 5	2	4			4
2 (b)	3, 5	2	6			6
2 (c)	3, 5	2		8		8
3 (a)	4	2		4		4
3 (b)	6	3		3		3
3 (c)	5	2			5	5
3 (d)	2	1			6	6
4 (a)	7	3		3		3
4 (b)	3, 5	2		5		5
4 (c)	6, 7	3	2		10	12
5 (a)	11	7	3			3
5 (b)	12, 14	7,8			8	8
5 (c)	13	7			3	3
5 (d)	15	8			4	4
5 (e)	11, 12	7			4	4
TOTAL			**28**	**28**	**44**	**100**

Table 6 – Course Coverage by Question

Question	Units	Knowledge & Understanding	Straightforward Judgement	Complex Judgement	Total Marks
1	1, 6	13	5	4	22
2	2	10	8		18
3	1, 2, 3		7	11	18
4	2, 3	2	8	10	20
5	7, 8	3		19	22
Total		**28**	**28**	**44**	**100**

3.2. ***Overall Performance***

The number of passes is disappointing and the performance of failing candidates was very disappointing. While 6B results in recent years have been relatively good, 6A results – specifically candidates passing – have lagged behind for reasons unknown. A review of the 6A course material and its universal applicability may be warranted (I understand this may be done for 2013). The performance of students throughout the exam generally diminished from Q1 to Q5. This probably reflects that the proportion of complex judgement increased with each question and also stress/time management issues. The one exception to this trend was Q2. The wording of this question referred to a specific course reading. Although a reasonable answer was considered attainable without the reading by any candidate with a thorough understanding of the underlying fundamental issues, in practice the question polarised candidates who either performed very well or very poorly, possibly a reflection of whether candidates possessed the reading in the exam or not. It is also noted that the 5 passing candidates all had a strong participation mark.

3.3. ***Exam Question by Question Analysis***

Question 1 **Total Marks: 44 (26 KU, 10 SJ, 8 CJ)**

	Marks Required	**% of Total Marks**	**Number of Candidates**	**Proportion of Candidates**
Strong Pass (A)	28	64%	2	13%
Pass (B)	22.5	51%	7	44%
Slightly Below Standard (C)	17.75	40%	2	13%
Weak (D)	13	30%	4	25%
Showed Little Knowledge (E)	1		1	6%
Did Not Attempt (X)				
		% of KU	**% SJ**	**% CJ**
Maximum Mark	30.25			
Average Mark	21.1			
Standard Deviation	5.7			
Coefficient of Variation	0.27			

Pass rate: 56%

Question 1 was a fair differentiator.

The objective of the question was to test knowledge of retirement patterns. The question referred to a course reading based on US experience but explicitly stated that the same trends applied to all advanced economies.

Part (a) asked candidates to explain the reduction in participation rate.

Most candidates provided reasonable responses. Some candidates failed to recognise that the question referred to workers aged 65 and over.

Part (b) asked candidates to define 'adequate retirement income' and to explain how an individual would consider personal circumstances.

This part was generally well-answered, although most candidates failed to mention the distinction between subsistence versus income replacement.

Part (c) asked candidates to describe living expenses in retirement and describe how expenditure patterns compare before and after retirement.

Most candidates were able to describe the types of living expenses, however, the comparison of pre- and post-retirement expenditure was less well-answered.

Part (d) asked candidates to determine life expectancy at age 65. This part referred to Australian life tables but in practice the UK answer was also accepted for full marks (2 candidates sat in London).

This was a bookwork question. Unfortunately, many candidates missed this mark as apparently they did not have the life tables and/or did not provide an answer.

Part (e) asked candidates to discuss trends in life expectancy over time.

The responses to this question were mixed. Most candidates commented on changes in expectations at different ages but did not take the next step to compare the changes between expectations at different ages nor comment well on the reasons for changes.

Part (f) asked candidates to explain why the concept of diminishing reductions in life expectancy with age is important to retirement planning.

This was a good differentiator of candidates. The better candidates were able to demonstrate good understanding here, while other candidates seemed to miss the point of the question (ie that retirees may outlive their life expectancy at their retirement date).

Question 2 **Total Marks: 36 (20 KU, 16 SJ, 0 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	24	67%	6	38%
Pass (B)	18	50%		
Slightly Below Standard (C)	15	42%	1	6%
Weak (D)	10	28%	1	6%
Showed Little Knowledge (E)	1		8	50%
Did Not Attempt (X)				
		% of KU	**% SJ**	**% CJ**
Maximum Mark	31.5			
Average Mark	15.6			
Standard Deviation	11.3			
Coefficient of Variation	0.72			

Pass rate: 38%

Question 2 was a polarising question. This was a straightforward bookwork question but candidates either performed very well or very poorly, which led to the unusual outcome of 6 candidates scoring perfect scaled marks and 9 candidates scoring 0 or close to it. This is likely due to the wording of the question referring to a specific course reading. Although a reasonable answer was considered attainable without the reading by any candidate with a thorough understanding of the underlying fundamental issues, in practice the question polarised candidates who either performed very well or very poorly, possibly a reflection of whether candidates possessed the reading in the exam or not. To ensure that no candidate was unduly disadvantaged by not having the reading, I reviewed candidates' performance excluding this question and concluded that this question in isolation did not cause any candidate to fail. Regardless, it is acknowledged that the exam must be considered in totality and there were no justifiable grounds to exclude this question even if it had been the cause of a candidate's fail result.

The objective of Q2 was to test understanding of the requirements for an efficient retirement system, including the need for government oversight and intervention. Although the question referred to a particular reading, knowledge and application of the issues should have been sufficient for a reasonable answer even without the reading. In practice this expectation does not appear to have been borne out.

Part (a) asked candidates to outline the reasons for government intervention in an old age retirement system.

Candidates tended to either get full marks or no marks. Candidates seemed unable to deduce a solution.

Part (b) asked candidates to outline the features that an old age security system should provide.

Again candidates who were familiar with the topic in the coursework tended to get full marks or close to it, with other candidates not receiving any marks.

Part (c) asked candidates to explain the concept of a multi-pillar approach.

Given that Australia has a three-pillar retirement system, candidates were better equipped to respond to this part of the question. The marking was thus a little stricter, requiring candidates to not only name the pillars but to explain, based on part (b), which pillar performed the savings, insurance and redistribution functions. Candidates generally fared well with the explanation of the pillars but they were unable to adequately explain the difficulties of over-reliance on a single pillar. This part of the question generally was poorly answered.

Question 3 **Total Marks: 36 (0 KU, 14 SJ, 22 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	24	67%	1	6%
Pass (B)	20	56%	7	44%
Slightly Below Standard (C)	15	42%	4	25%
Weak (D)	10	28%	4	25%
Showed Little Knowledge (E)	1			
Did Not Attempt (X)				
		% of KU	**% SJ**	**% CJ**
Maximum Mark	26			
Average Mark	18.6			
Standard Deviation	4.2			
Coefficient of Variation	0.22			

Pass rate: 50%

Question 3 was a good differentiator.

The objective of the question was to test knowledge of solvency capital issues for defined benefit pension schemes.

Part (a) asked candidates to suggest reasons why such schemes are not required to hold capital adequacy reserves.

Most candidates identified 2 of the points (the deferred pay concept and the risk of discouraging employers from providing pensions), no candidate identified the low likelihood of a run on a fund and only a couple of candidates identified the existence of regular actuarial monitoring. Most candidates mentioned the fact there was a sponsoring employer in the picture but couldn't make the link that this added a type of guarantee to the arrangement.

Part (b) asked candidates to identify the key risks to such a scheme.

While most candidates were able to identify market risk and sponsor failure, often the candidates did not adequately show they understood why these are risks and what the implications are. Benefit inadequacy and inflation risk were only mentioned by a small number of candidates.

Part (c) asked candidates to describe some regulation methods and provide specific examples.

There was a wide variation in answers. Some candidates were able to identify 3-4 measures to mitigate the risks of a defined benefit plan but none received full marks.
A number of answers were weak and only identified one valid measure. Most identified investment restrictions and insurance, with the other points mentioned and described to varying degrees.

Part (d) asked candidates to describe the role of the actuary in managing solvency and how the actuarial control cycle might be used as a framework.

Most candidates were able to describe the actuary's role in managing solvency adequately and to link this to the actuarial control cycle. Only some candidates mentioned the professional cycle and those who did neglected to describe it in any detail. Only a few candidates mentioned the importance of the various stakeholders.

Question 4 **Total Marks: 40 (4 KU, 16 SJ, 20 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	24	60%	1	6%
Pass (B)	17	43%	6	38%
Slightly Below Standard (C)	13	33%	2	13%
Weak (D)	7	18%	6	38%
Showed Little Knowledge (E)	1		1	6%
Did Not Attempt (X)				
		% of KU	**% SJ**	**% CJ**
Maximum Mark	24			
Average Mark	14.8			
Standard Deviation	4.9			
Coefficient of Variation	0.33			

Pass rate: 44%

Question 4 was a good differentiator.

The objective of the question was to test application of a governance and prudential supervision regime on a new mandatory occupational based pension scheme.

Part (a) asked candidates to identify and describe the roles of the key stakeholders.

This part was straightforward.

Part (b) asked candidates to identify and explain the key risks faced by stakeholders.

This part was also relatively straightforward. Credit was given to candidates who identified risk to the sponsoring employer, including reputation risk, and the risk of increased costs passed to the employer due to compliance with regulation.

Part (c) asked candidates to write a summary report.

Although the background in question 4 states that the actuary is providing advice to the regulator in relation to a governance and prudential supervision regime, this part hints at providing governance and regulation principles in relation to the mitigation of risks identified in part (b), rather than overall regulation structure. This is may explain why candidates focussed on risk mitigation rather than on governance principles. The majority of students focussed on individual plans rather than higher level principles that a regulator should focus on.

I noted that the D grade cut off for this question was slightly lower relative to other questions, so I investigated whether this had any impact on results due to the scaling process. There was no material impact, so I left the cut off unchanged.

Question 5 **Total Marks: 44 (6 KU, 0 SJ, 38 CJ)**

	Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Strong Pass (A)	29	66%		
Pass (B)	22	50%	2	13%
Slightly Below Standard (C)	16.5	38%	5	31%
Weak (D)	10	23%	6	38%
Showed Little Knowledge (E)	1		3	19%
Did Not Attempt (X)				
		% of KU	**% SJ**	**% CJ**
Maximum Mark	24			
Average Mark	14.3			
Standard Deviation	6.0			
Coefficient of Variation	0.42			

Pass rate: 13%

Question 5 was a fair differentiator.

This question had the lowest pass rate of the exam. The grade cut offs are consistent with the other question, so the apparent conclusion is that the quality of answers was not as high as other questions. This may possibly be explained by the increased proportion of complex judgement in this question as well as stress/time management issues since it was the last question of the exam.

The objective of the question was to test interpretation of a valuation balance sheet.

Part (a) asked candidates to identify the components of the actuarial basis necessary to conduct the valuation.

This part was pure Knowledge & Understanding and was generally well-answered. However, only a handful of candidates identified the need for pensioner mortality assumptions, which is key for a plan with significant pensioner liabilities.

Part (b) asked candidates to comment on the financial status of the scheme.

This part generally was not well-answered. While a majority of the candidates was able to comment to various degrees of success on the weak past service liability position, only a few were also able to identify that the position will improve since the future service cost is less than the current rate of contribution. Comments on the slow period of recovery and the potential for short term contributions were also very limited.

Part (c) asked candidates to comment on the suitability of the investment policy.

The quality of discussion of the asset and liability characteristics was lower than expected. Only a few candidates were able to draw a valid conclusion.

Part (d) asked candidates to identify what further information could better help to understand the financial position.

The majority of the candidates identified analysis of surplus and mentioned other valid points but only two mentioned sensitivity analysis. No candidate mentioned the investment policy for pensions in payment or the wind-up basis.

Part (e) asked candidates to identify what changes are recommended for the scheme.

Only a few candidates provided reasonable discussion on the company contribution rate, which was well below expectation. The overall discussion on the investment policy and benefit design was also weak, possibly due to candidates running out of time.

Course 10 Commercial Actuarial Practice Chief Examiner's Report Semester 1 2012

1. Summary

1.1. *Course Outline*

The Commercial Actuarial Practice (CAP) Course is designed to teach students to apply actuarial skills across a range of traditional and non-traditional areas by "contextualizing" actuarial solutions or approaches in the wider commercial environment.

The two assessment tasks are:

1. A take-home Post-Course Assignment ("Assignment") on one of the 3 non-traditional topics (Banking, Health, Environment). One-third of the students were randomly allocated to each topic. It is worth 20% of the final mark.
2. An 8-hour Case Study Exam ("Exam") worth 80% of the final mark, under exam conditions with the use of a computer (open book, but no internet access). The candidates had to choose 1 from the 5 mainstream topics (Life, General, Investment, GRIS, ERM), perform all the necessary analysis and prepare a substantial written report.

1.2. *Pass Rates*

Of the 82 candidates who presented for the course, it is proposed that 47 be awarded a pass, representing a **pass rate of 57%.** This is slightly lower than the long-term average pass rate of 61% but in line with the past 4 semesters.

Table 1 – Recent Course Experience

Semester	Sat	Passed	Pass Rate
Semester 1 of 2012	82	47	57
Semester 2 of 2011	87	48	55
Semester 1 of 2011	79	47	59
Semester 2 of 2010	102	56	55
Semester 1 of 2010	97	57	59
Semester 2 of 2009	92	55	60

1.3. *Candidate Numbers*

A total of 84 candidates were enrolled for the CAP course in Semester 1 of 2012. For the first time, several repeat candidates took the option to attend the residential course, undoubtedly due to the flexibility to attend selected sessions for a reduced price.

The candidate numbers and results can be summarized as follows:

	Post-Course Assignment only	Case Study Exam only	Both	Total
Originally enrolled	84	84	84	**84**
Withdrawals	1	1	1	**1**
Absent	1	1	1	**1**
Presented	82	82	82	**82**
Passed	47	47	47	**47**
Failed	35	35	35	**35**

The analysis by number of attempts is as follows:

Table 2A – Number of CAP Attempts

Attempt	Candidates	Passed	Pass Rate
1	43	26	60%
2	25	15	60%
3	6	3	50%
4	4	1	25%
5	4	2	50%
All	**82**	**47**	**57%**
2-5	39	21	54%

Although the pass rate drops off with increasing number of attempts, the statistical credibility of the numbers is not convincing. What is possibly more noteworthy is that the pass rate does not increase, and that in addition two 5th-time failures from last semester have not re-presented. It seems that some candidates will always struggle with a CAP-type Exam, no matter how many times they sit.

The analysis by Exam Topic is as follows:

Table 2B – Analysis by Topic

Exam Case	Candidates	Passed	Pass rate
ERM	8	5	63%
General Insurance	28	19	68%
GRIS	10	5	50%
Investment	10	7	70%
Life Insurance	26	11	42%
Total	**82**	**47**	**57%**

A particular feature is the increased number of candidates attempting GRIS.

The pass rates for GRIS and Life are disappointing, and section 5 outlines how Life candidates have performed worse in the Life exam than would have been predicted from their Assignment marks. However, the borderline failures in Life and GRIS failed because of recommendations or conclusions that we thought were inappropriate coming from someone purporting to have specialist knowledge in that field.

"Overseas" candidates had a lower pass rate than Australian-based candidates, with only 7 passes, but the small sample size suggests there is not a major problem. The full list is:

Results by Exam Centre			
Centre	**Presented**	**Passed**	**Pass rate**
Melbourne	20	15	75%
Perth	1	1	100%
Sydney	45	24	53%
Auckland	1	1	100%
Beijing	1	1	100%
Hong Kong	2	0	0%
Jakarta	1	0	0%
Kuala Lumpur	3	2	67%
London	4	1	25%
Munich	1	1	100%
Paris	1	0	0%
Singapore	2	1	50%
Australia	66	40	61%
Overseas	16	7	44%
Total	**82**	**47**	**57%**

2. Course Administration

2.1. *Course Outline*

The overall objectives of the CAP course are to enable students to:

- Apply actuarial skills across a range of traditional and non-traditional areas by "contextualizing" actuarial solutions or approaches in the wider commercial environment;
- Apply ethical concepts, corporate governance requirements and actuarial professional standards when writing a report; and
- Successfully communicate the actuarial solutions or approaches to a range of audiences.

Given these objectives, the assessment for the course is focused on the practical application of judgment and on the written communication skills of the students, rather than on bookwork.

Starting in semester 2 of 2011, ERM has been moved into the mainstream topics. The two assessment tasks are now as follows:

1. A take-home Post-Course Assignment ("Assignment") on one of the 3 non-traditional topics (Banking, Health, Environment), distributed after the residential course for completion within 2 weeks. One-third of the students were randomly allocated to each topic. It is worth 20% of the final mark. The result and feedback were supplied to candidates a week prior to the Exam.

2. An 8-hour Case Study Exam ("Exam") worth 80% of the final mark, under exam conditions with the use of a computer (open book, but no internet access). The candidates had to absorb the question material, choose 1 from the 5 mainstream topics (Life, General, Investment, GRIS, ERM), perform all the necessary analysis and prepare a substantial written report.

The pass mark is 50%, which is regarded as equivalent to the 60% scaled pass mark adopted for the part III courses. Marks are no longer awarded for quality of participation in the residential course.

2.2. *Examiners*

The examiners for this semester were again:

Chief Examiner: Bruce Thomson

Assistant Examiner: Matthew Ralph

2.3. *Course Leader*

The assessment materials for the course were developed by a team, consisting of David Service (Course Leader), Elayne Grace, Richard Madden, Peter Martin, Colin Priest and Bruce Edwards.

As part of his role, David Service presents 3 of the topics at the residential course, prepares 3 of the Exam case studies, and marks at least the borderline candidates for all 8 of the case studies in order to ensure consistency of standards across the topics.

Bruce Thomson
Chief Examiner,
Commercial Actuarial Practice
4 June 2012

Matthew Ralph
Assistant Examiner,
Commercial Actuarial Practice