Report to ECC from the Board of Examiners

SEMESTER 2 2017

PART III

BOARD OF EXAMINERS' REPORT

CONTENTS

CHAIR'S REPORT SUMMARY

1. Examinations

The Semester 2 2017 Part III examinations of the Actuaries Institute ("Institute") were held from the 9th October to the 17th October 2017.

2. Pass Rates

The number of candidates presenting for the Semester 2 2017 Part III Exams, the number of passes and the resulting pass rates are shown in the table below, together with the corresponding numbers for the previous two exam periods.

Pass Rates by Part III Course

	2017 (2)			2017 (1)			2016 (2)		
	Sat	Pass	%	Sat	Pass	%	Sat	Pass	%
2A Life Insurance	62	23	37%	65	13	20%	66	14	21%
2B Life Insurance	49	15	31%	52	18	35%	46	15	33%
3A General Insurance	91	24	26%	92	23	25%	91	21	23%
3B General Insurance	53	21	40%	73	33	45%	75	27	36%
5A Invest. Man. & Fin.	21	3	14%	n/a	n/a	n/a	43	27	63%
5B Invest. Man. & Fin.	n/a	n/a	n/a	33	7	21%	n/a	n/a	n/a
6A GRIS	n/a	n/a	n/a	20	7	35%	n/a	n/a	n/a
6B GRIS	20	7	35%	n/a	n/a	n/a	15	5	33%
ST9 ERM	97	26	27%	104	43	41%	82	36	44%
ST1 Health & Care	19	5	27%	20	7	35%	19	7	37%
C10 CAP	95	58	61%	90	37	41%	64	30	47%
Total	**507**	**182**	**36%**	**425**	**138**	**34**%	**501**	**182**	**36%**

The assessment for this semester comprised 10% online forum participation and 90% for three long answer exam questions.

The Chief Examiners aim to produce a consistent standard of passing candidates, rather than a consistent pass rate from year to year. The overall pass rate for this semester is 36%, which is higher than the 34% pass rate for the previous semester and equal to the 36% pass rate for Semester 2 2016.

The pass rate for C3A continue to remain consistently low. The view of the Board of Examiners is that this is at least partially driven by this being one of the first of the Part 3 subjects that most candidates sit. The pass rate for C2A increased significantly but this has been partially driven by the exam being shorter and less complex.

3. Fellows

The number of members that will be made Fellows (subject to attendance at a Professionalism Course and paying any relevant exemptions) will be:

Number of Fellows

2017 (2)	2017 (1)	2016 (2)	2016 (1)	2015 (2)	2015 (1)	2014 (2)	2014 (1)
39	30	37	32	29	29	39	32

4. Online Forum Participation

The online forum participation continued for all Institute delivered courses this semester except C10.

Students are required to post 2 original posts and 4 replies. 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 (who sat the exam):

Online Forum Frequency Distribution for Semester 2 2017

Participation Mark	Subject						
	2A	2B	3A	3B	5A	6B	Total
10	8	24	40	11	18	5	159
9	21	16	25	18	0	2	85
8	22	7	21	21	1	3	52
7	9	0	1	4	0	1	10
6	1	0	1	0	0	1	4
5	1	0	1	0	0	0	12
4	0	0	0	1	1	0	0
3	0	0	0	0	0	0	0
2	0	0	1	0	0	0	0
1	0	0	0	0	0	2	0
0	2	3	4	0	1	2	13
No. of Candidates	**64**	**50**	**94**	**54**	**21**	**16**	**335**
Average Mark	**8.4**	**8.7**	**8.6**	**8.8**	**9.1**	**6.7**	**8.6**

Observations:

- The engagement by students in the online forums continues to be good. This is a pleasing result.

EXAM ADMINISTRATION

1. Course Leaders

Course Leaders are appointed by the Institute to undertake a variety of tasks relating to modules 1-3 of the Part III education program. Course Leaders draft examination questions, conduct tutorials, monitor forums and assess the online participation mark. The following is a list of the Course Leaders for this semester:

Course Leaders

Course	Roles
2A	Exam: Georgina Hemmings Tutorials, Forum Participation: Bruce Thomson
2B	Exam: Ashley Wilson, Peter Corbett Tutorials: Gregory Bird Forum Participation: William Zheng
3A	Exam: James Pettifer Tutorials: Jeff Thorpe Forum Participation: Jacqui Reid
3B	Exam: Jacqui Reid Tutorials: Ben Qin Forum Participation: Mathew Ayoub
5A	Exam: Charles Qin, Claymore Marshall Tutorials, Forum Participation: Marlon Chan
6B	Exam, Tutorials and Forum Participation: Vivian Dang
CAP	Exam: David Service, Vivian Dang, Young Tan, Colin Priest, Bridget Browne, Gaurav Khemka Post-Course Assignment: Naomi Edwards, Andrew Gale, Colin Priest, David Service

1. The Board of Examiners

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.

The constitution for the Board of Examiners for this semester was as follows:

1.1. BoE Chair

Chair   James Pettifer

1.2. Chief Examiners

Course 2A: Life Insurance   Anthony Brien
Course 2B: Life Insurance   Danny Bechara
Course 3A: General Insurance   Daniel Lavender
Course 3B: General Insurance   James Fitzpatrick

Course 5A:	Investment Management & Finance	Charles Qin & Claymore Marshall
Course 6B:	Global Retirement Income Systems	Stephen Woods
Course 10:	Commercial Actuarial Practice	Bruce Thomson

1.3. Assistant Examiners

The Assistant Examiners for this semester were:

Course 2A:	Life Insurance	Catherine Watson & Julian Braganza
Course 2B:	Life Insurance	David Ticehurst & Robert Herlinger
Course 3A:	General Insurance	Ryan Anderson & Andrew Teh
Course 3B:	General Insurance	Elaine Pang & Chao Qiao
Course 5A:	Investment Management & Finance	N/A
Course 6B:	Global Retirement Income Systems	Jim Repanis
Course 10:	Commercial Actuarial Practice	Matthew Ralph

I would like to take this opportunity to thank all 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:

Meeting	Purpose
13 July 2017	• 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
21 September 2017	• 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.
24 November 2017	• Review the recommended pass lists and treatment of borderline candidates.

1.5. Scrutineers

The Scrutineers for Semester 2 2017 were:

Course	Longer Answer Questions, Case Study Assignment and Exam
Course 2A	Ryan Driutt, Pallav Bajracharya, Daniel Lee
Course 2B	David Shuvalov, Monika Weenik, Jen Dobinson
Course 3A	Alex Chen, Angel Xu, Yu Sun
Course 3B	Michael Di Pilla, Michael Storozhev, Kelly Lee
Course 5A	Zoe Yang, Keith Cheung, Aniket Das
Course 6B	Young Tan, Adam Butt
Course 10	Phin Wern Ting (Life Insurance) Alex Leung (Investments) Roman Kashkarov (Health) Kar Kan Lo (GRIS) Michael Storozhev (General Insurance) Roman Kashkarov (ERM) Gautham Suresh (ESG) Stephen Edwards (Banking) Wan Wah Wong (Data Analytics)

2. Exam Administration and Supervision

The Board of Examiners was ably assisted by Institute staff in the Education Team, Sarah Tedesco, Tony Burke, Karenna Chhoeung, Carolina Vilches, Eleanor Mazando and Ausa Chanthaphone. They 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 to produce this report. They did a great job and the Board of Examiners team is indebted to them all.

The Part III examinations were run by an external consultancy – Cliftons, a computer training venue.

Other examinations in temporary exam centres were administered by Fellows or other approved supervisors.

3. Exam Candidature

3.1. Candidate Mix

The mix of courses sat by candidates is broadly similar to that in previous years

Subject	2017 (2)	2017 (1)	2016 (2)	2016 (1)	2015 (2)	2015 (1)
Life Insurance	29%	27%	28%	31%	27%	32%
General Insurance	37%	39%	41%	38%	35%	37%
Investment Management & Finance	5%	8%	11%	8%	13%	6%
Global Retirement Income Systems	5%	5%	4%	4%	4%	5%
Commercial Actuarial Practice	24%	21%	16%	19%	21%	20%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

BoE Members for Semester 1 2018

1. Board of Examiners

The composition of the Board of Examiners for next semester, Semester 1 2018, is as follows:

1.1. Board of Examiners Chair

James Pettifer

1.2. Chief Examiners

Course 2A: Life Insurance	Anthony Brien
Course 2B: Life Insurance	Danny Bechara
Course 3A: General Insurance	Daniel Lavender
Course 3B: General Insurance	James Fitzpatrick
Course 5B: Investment Management & Finance	Charles Qin & Claymore Marshall
Course 6A: GRIS	Stephen Woods
Course 10: Commercial Actuarial Practice	Bruce Thomson

1.3. Assistant Examiners

Course 2A: Life Insurance	Julian Braganza, Catherine Watson
Course 2B: Life Insurance	David Ticehurst, William Zheng
Course 3A: General Insurance	Ryan Anderson, Andrew Teh
Course 3B: General Insurance	Chao Qiao, Yuenan Li
Course 5B: Investment Management & Finance	N/A
Course 6A: GRIS	Jim Repanis
Course 10: Commercial Actuarial Practice	Matthew Ralph

2. Examination Dates

The dates for the examinations in Semester 1 2018 are as follows:

Module	Subject	Exam Date
1	ST1 Health & Care (IFoA)	Friday, 27 April
1	ST9 Enterprise Risk Management (IFoA)	Thursday, 19 April
2	C3A General Insurance	Monday, 23 April
3	C3B General Insurance	Tuesday, 24 April
2	C2A Life Insurance	Thursday, 26 April
3	C2B Life Insurance	Monday, 30 April
3	C5B Investment Management & Finance	Wednesday, 2 May
2	C6A Global Retirement Income Systems	Thursday, 3 May
4	C10 Commercial Actuarial Practice	Friday, 4 May

3. Examination Papers

The Board of Examiners have agreed to release this semesters examinations questions only for subjects where the marking guides will be used as learning resources in Semester 1 2018.

James Pettifer
Chair of the BOE
6/2/2018

EXAMINER REPORTS SEMESTER 2 2017

COURSE 2A LIFE INSURANCE

1. Summary

1.1. Course Overview

The aim of the 2A Life Insurance Course is to provide the market, legislative and product knowledge, along with the skills and judgment, necessary for an actuary to tackle a range of management related problems in life insurance relating to underwriting and risk management, experience analysis, assumption setting and pricing.

1.2. Assessment

The assessment model is broken down into two parts:

Forum Participation   10%

Long Answer Question Exam   90%

1.3. Pass Rates

65 candidates enrolled this semester. Of these, 2 withdrew and 1 did not present, leaving 62 sitting the exam.

It is proposed that 23 candidates be awarded a pass, which implies a pass rate of 36.5%. Table 1 shows the historical pass rates for this subject:

Table 1 – Course Experience

SEMESTER	SAT	PASSED	PASS RATE
Semester 2 2017	**63**	**23**	**37%**
Semester 1 2017	65	13	20%
Semester 2 2016	66	14	21%
Semester 1 2016	82	16	20%
Semester 2 2015	57	18	32%
Semester 1 2015	65	20	31%
Semester 2 2014	56	25	45%
Semester 1 2014	62	16	26%
Semester 2 2013	59	25	42%
Semester 1 2013	50	26	52%
Semester 2 2012	43	14	33%
Semester 1 2012	67	22	33%
Semester 2 2011	54	10	20%
Semester 1 2011	60	18	30%

The 37% pass rate for this exam is the highest pass rate since Semester 2 2014 and slightly higher than the historical average. Candidate continue to struggle to demonstrate an ability to apply their knowledge and many of the more complex judgement areas of the paper were not well answered.

Two of the three questions required spreadsheet work whilst the third examined the link between different products and the appropriate assets to back them. Unfortunately, there was some redundant data unintentionally left on the spreadsheet containing the data for question 3. This was well separate from the intended data for the question and it appears most of the candidates were not impacted by it.

2. Assessment

2.1. Overall Performance

As a result of the historically low pass rates from 2016, the exam questions were designed to be more straight forward. The marking guide was comprehensive, in many instances having many more available points than is required to score full marks for a particular part of a question. Given the relative performance of candidates in the exam it was decided to lift the pass rates marginally for the spreadsheet related questions over the levels proposed by markers.

Forum participation was strong, with a pass rate of 95.2%. Unlike previous semesters, the forum participation component proved to be a differentiator of the quality of the candidates. With several adversely impacted by a low participation mark.

The data issue in question 3 did not appear to impact many candidates, with most appearing to be unaware of the redundant data until after the exam. The most sensible course of action for those candidates who appeared to be aware of the redundant data was to make a statement in their answer book detailing how they chose to use or ignore the data and continue on with the paper.

Candidates generally did the spreadsheet related questions first and many made simple mistakes in formulae or were unfamiliar with how to do reasonably basic life contingency or cash flow calculations / projections as candidates continued to have difficulty in applying decrements correctly.

As with previous semesters, there was a lack of consistency in the performance of most candidates across all three LAQs, suggesting a lack of broad understanding of the issues. Very few candidates appeared strong across all areas of assessment, with only eight candidates scoring grades of B or better across all three LAQs. Many candidates did poorly in the parts of the LAQs requiring the application of complex judgement and often failed to provide reasonable, well-argued and detailed answers, which were a key differentiator. Similar issues were observed in prior semesters, where candidates had difficulty with the more open-ended parts of the LAQs.

2.2. Exam Question by Question Analysis

Question 1

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	50.0	50.0	83.3%	4	6%
Pass	43.0	43.0	71.7%	24	38%
Slightly Below Standard	38.7	38.7	64.5%	15	24%
Below Standard	23.5	23.5	39.2%	19	30%
Weak	13.5	13.5	22.5%	0	0%
Showed Little Knowledge	1.0	1.0	1.7%	0	0%
Did Not Attempt	0.0	0.0	0.0%	1	2%
Maximum Mark	52.0	52.0			
Average Mark	40.7	40.7			
Standard Deviation	8.3	8.3			
Co-efficient of Variation	0.20	0.20			

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

Question 1 considered the differences between YRT and immediate annuity business.

Part a):   Average Mark: 14.4 / 16

Candidates were asked to calculate present value of premium and annuity benefit cashflows but did not always apply improvement factors correctly or from the correct point in time. Those who made errors seldom did any sense checking as most errors resulted in very wrong answers.

Part b):   Average Mark: i) 13.1 / 24   ii) 2.0 / 4

Candidates were then asked to compare and contrast cashflow profiles for the two products over certain characteristics.

Many made fundamental errors such as stating that as there is no underwriting there is no acquisition costs and ignoring costs of ongoing premium collection or benefit payments (and proof of ongoing survival).

Understanding the differences between single premium and regular premium products and commission rates was also poor.

Few candidates were able to cover all areas with most having one or two strong areas and lacking in knowledge in others.

Part c):   Average Mark: 11.3 / 16

Finally, candidates were asked to prepare a memo to the CEO covering the risks and how these could be managed for the introduction of lifetime annuities. Again, few candidates were able to cover all areas with most having one or two strong areas and lacking in knowledge in others and in many instances responses were too generic rather than addressing the product specifically.

Question 2

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	40.0	40.0	66.7%	7	11%
Pass	34.5	34.5	57.5%	19	30%
Slightly Below Standard	31.1	31.1	51.8%	7	11%
Below Standard	25.0	25.0	41.7%	17	27%
Weak	16.0	16.0	26.7%	9	14%
Showed Little Knowledge	1.0	1.0	1.7%	3	5%
Did Not Attempt	0.0	0.0	0.0%	1	2%
Maximum Mark	45.5	45.5			
Average Mark	30.3	30.3			
Standard Deviation	8.3	8.3			
Co-efficient of Variation	0.27	0.27			

Candidates performed reasonably well on this question, with a pass rate of 41%. However, it is noted that this was a relatively straightforward bookwork question with no required calculations or complex judgements and provided candidates with ample opportunity to earn marks. The pass mark was set at 17.25 which is less than half of the 39 marks that were available.

Part a):   Average Mark: i) 4.3 / 6   ii) 3.4 / 8   iii) 3.5 / 10

The question starts with asking what factors should be considered in determining appropriate asset mixes for different products. IP was reasonably well understood but not many people made the obvious observations regarding the characteristics of IP claims cash flow and whilst YRT is common, few commented on TPD IBNR and the need to consider volatility in determining the level of liquid assets needed. Similarly, par WOL was not well answered mainly due to not identifying that par business profit is split 80/20, except that shareholder gets all the downside and few mentioning bonuses smoothing. Few covered liquidity or described actual proposed asset mix.

Part b):   Average Mark: i) 6.44 / 10   ii) 6.0 / 10

The impact of a major external stress was then examined and the impact on asset classes was generally answered well but few mentioned likely cash rate reduction and higher credit spreads on Corp bonds. The majority of candidates got the lapses and higher morbidity cost for both TPD and IP but impacts for the IA/WoL were not so well answered.

Part c):   Average Mark: 6.6 / 16

This section asked what actions could be taken to manage the impacts and was poorly answered. Most common points made were reinsurance, additional capital, review rates, with many candidates missing suspending dividend payments, reducing surrender values, reducing expenses, reducing crediting rates, closing unprofitable products and increasing premium rates. Generally, there was a lack of envisioning practical approaches to a problem.

Question 3

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	42.0	42.0	70.0%	3	5%
Pass	35.0	35.0	58.3%	20	32%
Slightly Below Standard	31.5	31.5	52.5%	19	30%
Below Standard	20.0	20.0	33.3%	19	30%
Weak	12.0	12.0	20.0%	1	2%
Showed Little Knowledge	1.0	1.0	1.7%	0	0%
Did Not Attempt	0.0	0.0	0.0%	1	2%
Maximum Mark	44.0	44.0			
Average Mark	33.0	33.0			
Standard Deviation	6.2	6.2			
Co-efficient of Variation	0.19	0.19			

Candidates performed reasonably well on this question, with a pass rate of 37%.

Question 3 presented data from an annual mortality investigation for YRT business.

Part a):   Average Mark: i) 15.4 / 16   ii) 3.5 / 6

Candidates were asked to calculate ratios and comment on results for 35-year-olds. Whilst most candidates correctly calculated the ratios there were too many making simple mistakes and not checking their results. Surprisingly few covered sufficient observations to earn full marks.

Part b):   Average Mark: i) 5.6 / 12   ii) 2.3 / 10

Candidates were then asked to discuss and explain the results from various perspectives and implications for adequacy of rates. Again, there were few candidates making sufficient points to gain full marks with the average only earning half the available marks.

Part c):   Average Mark: 6.2 / 16

Finally, a proposed product change was described and candidates were asked to discuss the pros and cons of the proposal. Very few candidates considered pros and cons from more than one of the following perspectives; new policyholders. existing policyholders, the public, competitive pressures, underwriting impact, claims impact, premium impact.

COURSE 2B LIFE INSURANCE

1. Summary

1.1. Course Overview

The aim of the 2B Life Insurance Course is to provide the knowledge, skills and judgment 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. Assessment

The assessment model is broken down into two parts:

Forum Participation   10%

Long Answer Question Exam   90%

1.3. Pass Rates

54 candidates enrolled this semester. Of these, 4 withdrew and 1 did not present, leaving 49 sitting the exam.

It is proposed that 15 candidates be awarded a pass, which implies a pass rate of 31%. Table 1 shows the historical pass rates for this subject:

Table 1 – Course Experience

SEMESTER	SAT	PASSED	PASS RATE
Semester 2 2017	**49**	**15**	**31%**
Semester 1 2017	52	18	35%
Semester 2 2016	46	15	33%
Semester 1 2016	50	11	22%
Semester 2 2015	50	17	34%
Semester 1 2015	53	21	40%
Semester 2 2014	51	20	39%
Semester 1 2014	60	22	37%
Semester 2 2013	44	17	39%
Semester 1 2013	43	11	26%
Semester 2 2012	43	17	40%
Semester 1 2012	52	13	25%
Semester 2 2011	41	6	15%
Semester 1 2011	41	16	39%

The 31% pass rate for this exam is slightly lower than the 35% pass rate for the previous exam (Semester 1 2017) and the historical average of 33%.

2. Assessment

2.1. Overall Performance

The quality of the submissions to the Forum continues to be very high. It is however surprising to continue to see a handful of candidates not attempting to meet the minimum requirements.

The performance in the Long Answer Questions was broadly consistent with the previous semester overall, and continues to be variable. As with past semesters, this component covered a range of topics and contained a mix of:

- Spreadsheet work and written responses.
- Sections requiring simple and complex judgment.
- Components that were prescriptive and others that were open (inviting candidates to raise and discuss points in relation to the topic at hand).

This made the questions good discriminators, in particular, when assessing the borderline candidates.

Consistent with previous semesters, some candidates performed very well on one or two of the Long Answer Questions but performed poorly (in some cases very poorly) on the other(s). Only a handful of candidates appeared strong across all areas of assessment.

Most candidates appeared to complete the exam. However, some candidates were let down by:

- Devoting too much time to certain parts of the exam, leaving them little ability to demonstrate the required knowledge, understanding and judgment in other parts.
- Not reading and/or answering the question correctly – for example misinterpreting what the Multiplier defined in part b) of question 2 was referring to.
- Not addressing the circumstances described in the question, and instead giving a generic textbook answer (which may not have relevance).
- Not assessing the reasonableness of the numbers coming out of their calculations.

Many candidates failed to demonstrate an understanding of:

- How to appropriately project the account balance and take into account loss recognition for investment contracts.
- Key information that is useful to disclose alongside an Embedded Value result.
- The regulatory requirements around transferring surplus assets out of a statutory fund with participating business, including considerations required by the Appointed Actuary.

The presentation of reasonable arguments to back up conclusions and apply complex judgment was missing in many cases, with the quality of explanations often weak for such candidates.

2.2. Exam Question by Question Analysis

Question 1

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**58.0**	**58.0**			
Strong Pass	42.0	42.0	72.4%	3	6%
Pass	35.0	35.0	60.3%	6	12%
Slightly Below Standard	31.5	31.5	54.3%	8	16%
Below Standard	24.0	24.0	41.4%	18	37%
Weak	17.0	17.0	29.3%	11	22%
Showed Little Knowledge	1.0	1.0	1.7%	3	6%
Did Not Attempt	0.0	0.0	0.0%	0	0%
Maximum Mark	46.0	46.0			
Average Mark	27.9	27.9			
Standard Deviation	7.8	7.8			
Co-efficient of Variation	0.28	0.28			

Question 1 focused on a life company with numerous books of regular premium investment-linked business (and numerous administration systems), which has recently incurred higher expenses due to remediation of previous errors. Candidates were asked to perform a cash flow projection to determine the present value of fees less expenses under the previous assumption basis.

Candidates were then asked to determine the present value after allowing for higher expenses in the future (which caused the present value to turn negative), determine the resultant policy liability (allowing for loss recognition) and produce the analysis of profit over the year. Candidates were also required to comment on a proposed fee structure for new business, as well as provide two alternative strategies to improve expected profitability.

Overall, this question was intended to be relatively straight-forward, however, the responses received were generally poor, with a pass rate of 18%. The question was a good discriminator. Most candidates showed a good understanding of the basic concepts assessed in the first half of the question, but struggled with the latter part of the question.

The majority of candidates outlined one condition under which the formula presented held true for life investment contracts in part a), but very few outlined two conditions which included the key point around the business not being loss making.

Part b) was typically done well. Most candidates made at least one error with the cash flow projection, the most common of which were where candidates:

- Had incorrect timing of cash flows – reflecting they had not read the question or wording in the spreadsheet properly. (Better candidates who made this mistake were consistent with their timing error throughout the projection.)
- Incorrectly projected the account balance, for example:
  - By deducting expenses instead of fees.
  - By deducting both expenses and fees.
  - By not allowing for the decrements (a surprisingly common mistake amongst borderline candidates) with no sense check performed as to the realism of their result.

Part c)i) was done well by most candidates (allowing for follow through errors from part b)). However, part c)ii) had mixed responses; many candidates who incorrectly projected the account balance in part b) (which resulted in a positive NPV in part c)i)) struggled to calculate the policy liability.

Part d) was poorly completed by most candidates. Better candidates successfully calculated the expected profit and made good progress in completing the analysis of profit. Common mistakes included:

- Assuming the revised expense assumptions in part c) were the actual expenses for the previous year.

- Not writing off the deferred acquisition costs and allowing for loss recognition.

- Candidates who made mistakes in the projection component of part b) (such as excluding decrements) often struggled in part d) as the issues relating to the write-off of DAC and allowing for loss recognition often did not emerge in their analysis.

- In part e)i), while most candidates identified that the proposed fee structure would not be profitable in the long term, many didn't perform the illustrative calculations correctly (for example by not allowing for the upfront fee). Very few candidates identified to the CFO that the expected loss had to be recognised immediately. Many candidates did not use appropriate language or provide a clear recommendation.

- Most candidates provided recommendations to improve profitability in part e)ii), with better candidates focusing on strategies directly relevant to the company in the question rather than generic recommendations.

Question 2

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**62.0**	**62.0**			
Strong Pass	41.0	41.0	66.1%	4	8%
Pass	34.0	34.0	54.8%	14	29%
Slightly Below Standard	30.6	30.6	49.4%	8	16%
Below Standard	23.0	23.0	37.1%	14	29%
Weak	15.0	15.0	24.2%	8	16%
Showed Little Knowledge	1.0	1.0	1.6%	1	2%
Did Not Attempt	0.0	0.0	0.0%	0	0%
Maximum Mark	45.0	45.0			
Average Mark	30.4	30.4			
Standard Deviation	8.1	8.1			
Co-efficient of Variation	0.27	0.27			

Question 2 focused on a life company which writes Group, Individual and Investment business. The life company is owned by a large Australian bank which is undertaking a strategic review of the insurance business. Given the life company does not report Embedded Value (EV) and Value of one year's New Business (VNB), candidates were asked to identify differences between EV reporting and Margin on Services (MoS) financial reporting, outline areas of judgment required when determining EV (compared to MoS reporting) and provide practical considerations in implementing EV/VNB reporting.

Candidates were then required to comment on a proposed approach to determine VNB monthly in a timely manner, and list advantages and disadvantages of the approach. Finally,

candidates were asked to comment on the performance of the Group business based on the analysis of change in EV over the year, and outline key pieces of information that should be disclosed to the market along with the EV position.

This question was generally answered reasonably well, with a pass rate of 37%. Most candidates identified at least some points which were valid; however better candidates answered the questions presented and included core points, articulating these clearly.

Almost all candidates gave valid differences between MoS and EV in part a)i). Better candidates included key differences (such as discount rates used, allowance for capital and treatment of assumption changes).

Most candidates could identify areas requiring judgment in part a)ii), but many did not provide sufficient discussion around these areas. Part a)iii) was generally answered well, with resourcing, model changes and senior management education being the most popular practical considerations raised.

In addition, some candidates did not provide their answer to part a) in the required memo format or used language that wasn't appropriate for the audience.

Part b)i) was intended to be relatively straight-forward, however many candidates tried to derive a multiplier for value of future new business (i.e. including new business from several future years), while the question stated that the multiplier was needed for the value of new business written year-to-date. As a result, this was generally answered poorly. In addition, some candidates answered the question assuming a perpetuity multiplier and never considered how to use the multiplier to convert sales into VNB.

For part b)ii), many candidates listed the advantages/disadvantages of calculating VNB on a monthly basis, rather than the advantages/disadvantages of the suggested approach to calculate VNB monthly. Resourcing, time commitment, complication of calculating VNB monthly, subjectivity and volatility of VNB results produced were commonly listed as disadvantages. These answers show that many candidates had not answered the question that was asked.

For part b)iii), several candidates included comments on VNB while the question clearly asked about EV. Better candidates commented on how EV is fairly steady month-on-month because the capital allocation and non-economic assumptions used typically do not get reviewed on a more frequent basis than half yearly.

Part c)i) was well answered, with most candidates identifying two reasons from the provided analysis of change as to why the Group portfolio had performed poorly.

Part c)ii) was poorly done. While many candidates identified one useful disclosure (such as the risk discount rate used or the value of imputation credits allowed for in the valuation), only a handful identified the key disclosure around sensitivities (including examples of the sensitivities).

Question 3

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	44.0	44.0	73.3%	3	6%
Pass	36.5	36.5	60.8%	17	35%
Slightly Below Standard	32.9	32.9	54.8%	9	18%
Below Standard	29.0	29.0	48.3%	10	20%
Weak	22.0	22.0	36.7%	6	12%
Showed Little Knowledge	1.0	1.0	1.7%	3	6%
Did Not Attempt	0.0	0.0	0.0%	1	2%
Maximum Mark	48.0	48.0			
Average Mark	33.0	33.0			
Standard Deviation	9.1	9.1			
Co-efficient of Variation	0.28	0.28			

Question 3 focused on a life company with a closed book of participating business and an open portfolio of retail and group business (in two statutory funds). Candidates were asked to describe to the newly appointed Chief Risk Officer possible reasons for a reduction in the capital base of each statutory fund. Candidates were then asked to discuss considerations the Appointed Actuary would need to take account of prior to a distribution of surplus assets from the participating statutory fund (either as a dividend or a transfer into the other statutory fund).

In addition, candidates were asked to outline options that could reduce the volatility in the life company's capital position, and the impact on the capital position from combining the statutory funds. Finally, candidates were asked to consider reasons for the mix of assets backing the different liability components of the participating business.

This question was answered fairly well, with a pass rate of 41%, though the quality of the answers was variable – indicating that this question was a good discriminator. While many candidates got parts of the question correct, they often struggled with others. Better candidates were able to apply the principles to the situation presented in the question, rather than raising generic points.

Part a) was fairly well answered, with most candidates coming up with valid examples of reasons for a reduction in the capital base of each statutory fund. However, several candidates had incomplete or confused explanations (e.g. raising falls in asset values in the participating business statutory fund without mentioning asset share or commensurate change in liability value). Very few candidates mentioned the obvious point around transfer of capital out of the statutory fund. In addition, better candidates avoided using jargon given the audience (a Chief Risk Officer new to financial services).

Part b)i) was done well, however some candidates were confused around the distribution of shareholder retained profits and what this means for policyholder retained profits.

Part b)ii) was done poorly. Many candidates incorrectly stated that a transfer of any kind across statutory funds is not allowed, with several making inaccurate references to Prudential Standards or the Life Insurance Act. Better candidates mentioned the point about needing to satisfy all regulatory requirements before and after the transfer. Few candidates mentioned APRA approval is not required for the transfer. Better candidates also differentiated their answers to parts b)i) and b)ii).

Part c)i) was done well overall, with many candidates correctly raising reinsurance cover and asset/liability management as options.

For part c)ii), while most candidates recognised an aggregation benefit would result from combining stat funds, surprisingly few went through the simple exercise of listing out each risk charge and explaining the impact. Several candidates incorrectly argued the insurance risk charge (IRC) and operational risk charge (ORC) would reduce (not recognising that the IRC is determined separately for participating and non-participating business and the ORC is determined separately for risk and other businesses (participating in this case)).

Part d) was poorly done. Several candidates recognised that the Policyholders' Retained Profits weren't guaranteed benefits and required some growth assets in order to support future bonus levels. However, many responses about the Risk Free Best Estimate Liability assumed assets must be Government bonds because discounting must be done using risk free rates, without raising the core point around the guaranteed nature of these liabilities.

COURSE 3A GENERAL INSURANCE

1. Summary

1.1. Course Overview

The aim of the 3A General Insurance Course is to provide the knowledge, skills and judgment necessary for an actuary to tackle a range of problems in general insurance relating to products, accident compensation schemes, valuation techniques, accounting and management information.

1.2. Assessment

The assessment model is broken down into two parts:

Forum Participation   10%

Long Answer Question Exam   90%

1.3. Pass Rates

101 candidates enrolled this semester. Of these, 6 withdrew and 4 did not present, leaving 91 sitting the exam.

It is proposed that 24 candidates be awarded a pass, which implies a pass rate of 26%. Table 1 shows the historical pass rates for this subject:

Table 1 – Course Experience

SEMESTER	SAT	PASSED	PASS RATE
Semester 2 2017	**91**	**24**	**26%**
Semester 1 2017	92	23	25%
Semester 2 2016	91	21	23%
Semester 1 2016	106	35	33%
Semester 2 2015	82	23	28%
Semester 1 2015	90	28	31%
Semester 2 2014	76	15	20%
Semester 1 2014	66	17	26%
Semester 2 2013	76	14	18%
Semester 1 2013	96	31	32%
Semester 2 2012	96	29	30%
Semester 1 2012	103	29	28%
Semester 2 2011	78	18	23%
Semester 1 2011	76	24	33%

The 26% pass rate for this exam is consistent with Semester 1 2017 of 25% and the historical average of 27%. Passing candidates seemed to have good course knowledge and the ability to use that knowledge in a way that is relevant to the question.

The pass rate for 3A General Insurance is generally lower than some of the other Part III subjects driven by the large number of enrolled students and that this subject tends to be one of the first Part III subjects attempted by many candidates.

2. Assessment

2.1. Overall Performance

The quality of the submissions to the Forum continues to be very high. It is, however, surprising to continue to see a handful of candidates not attempting to meet the minimum requirements. In some cases, these marks can mean the difference between passing and failing.

Consistent with previous semesters, some candidates performed very well on one or two of the Long Answer Questions but performed poorly (in some cases very poorly) on the others – lack of time was potentially part of the reason for this. Only a handful of candidates appeared strong across all areas of assessment.

Like the Semester 1 2017 exam this exam was considerably shorter than in previous semesters. Time management continues to be an issue for students taking this subject with many not allocating their time appropriately between each of the questions. Often, candidates devote too much time to certain parts of the exam, leaving them little ability to demonstrate the required knowledge and understanding of a passing candidate in other parts. Practicing to complete past papers under exam conditions in under the time required is still considered to be one of the more effective methods for improving time management.

Other areas of the exam where candidates could improve on their performance include:-

- Answering the question. Not answering the question asked can result in responses that only cover a fraction of the information required – for example, in Question 2aii) candidates were asked to explain what impact they expected from a change in claims management on the PCE model <u>and</u> the resulting impact on the OCL. Most candidates commented on the PCE model but only a handful of candidates actually commented on the OCL.

- Not forming an opinion or point of view. Many candidates continue to provide balanced answers that do not show their opinion – for example, many candidates decided to both agree and disagree with the colleague in Question 1a) or not form an opinion at all.

- Justifications for reasoning. The presentation of reasonable arguments to back up conclusions and apply complex judgement was missing in many cases, with the quality of explanations often weak for such candidates. In this paper, there were several judgement questions directed to a CFO, a legal advisor, a colleague and senior management, and many candidates presented responses that were significantly below the quality that would be communicated to those types of individuals. Common examples included formulae, overly technical answers, lack of structure and/or contradicting (or no) advice.

2.2. Exam Question by Question Analysis

Question 1

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	38.0	38.0	63.3%	2	2%
Pass	30.0	30.0	50.0%	27	28%
Slightly Below Standard	27.0	27.0	45.0%	9	9%
Below Standard	23.0	23.0	38.3%	17	18%
Weak	20.0	20.0	33.3%	14	15%
Showed Little Knowledge	1.0	1.0	1.7%	22	23%
Did Not Attempt	0.0	0.0	0.0%	4	4%
Maximum Mark	41.5	41.5			
Average Mark	23.7	23.7			
Standard Deviation	9.7	9.7			
Co-efficient of Variation	0.41	0.41			

Question 1 examined the candidates' knowledge, understanding and ability to apply simple and complex judgement in the area of Risk Margins. The question consisted of three parts. In part a) and b), candidates were required to provide explanations based on various statements made by a colleague and the CFO. In part c), candidates were examined on their ability to apply risk margins on the outstanding claims liability taking into consideration the impact of reinsurance.

Part a) was divided into seven sub-parts which were broadly grouped in to:-

- The first four sub-parts which required candidates to agree or disagree with justifications on statements made by a colleague. Many candidates did not achieve full marks for either failing to agree or disagree or for not justifying their responses.

- The final three sub-parts which required candidates to explain certain aspects of risks margins.

The average mark for Part a) was 5.4/12. The following summarises each sub-part:-

i. Many candidates could explain that the OCL for workers compensation is long tail and covered many accident years, but few mentioned the impact of latent claims (i.e. hearing loss or asbestos-related diseases claims).

ii. Few candidates explained that the weighted average risk margin is driven by large insurers. Rather many provided reasons for the increase in uncertainty such as litigiousness. Most candidates also explained how the addition of small insurers may increase risk margins but failed to identify that they are still a small component of the total market.

iii. This question was answered poorly with many candidates failing to form an opinion. Many candidates simply stated that CTP must be more volatile because it is long tail.

iv. This question was answered well with many candidates recognizing that the funding position of a company doesn't affect the risk margin. Despite this, few candidates recognized that the state-based workers compensation schemes were not APRA-regulated and hence were not included as part of the APRA risk margin statistics.

v. Better candidates mentioned higher sums insured as an explanation for the higher risk margin for Domestic Motor over Commercial Motor with poorer candidates focusing on the higher usage and higher concentration.

vi. Few candidates thought about the large insurers having lower risk margins hence

bringing the weighted average down. Several candidates tried to explain using claim size distribution or "right skewness" where they scored zero marks.

vii. This question was poorly attempted with many candidates failing to recognize the different risk profiles of outstanding claims liabilities versus premium liabilities.

Part b) required candidates to explain the impact of several strategies on the assessed risk margin (%), requiring more moderate to complex judgement than Part a). Overall the question was well attempted with an average mark of 4.3/12. The following summarises each sub-part:-

i. This required candidates to think about the impact of increasing the policy excess on the risk margins. Many candidates understood that claims costs would decrease but weren't able to explain how this would impact the outstanding claims and premium liabilities.

ii. Many candidates mentioned that by ceasing to write Professional Indemnity the diversification benefit would be affected but most failed to mention the impact of the portfolio going into run-off and the overall impact to the company.

iii. Around half of the candidates acknowledged that LMI generally has a high risk margin and others discussed the characteristics of LMI such as being highly correlated to the economic cycle. Again, many candidates failed to form an opinion, despite being asked in the question.

iv. This part was poorly attempted with less than half of candidates attempting the question. This was disappointing as it was the only complex judgement question in Question 1. Those that attempted did reasonably well recognizing that adopting the weighted average APRA risk margins was not a good idea and generally provided reasonable supporting arguments.

Part c) examined the candidates on their ability to apply risk margins on the outstanding claims liability taking into consideration the impact of reinsurance. This question was disappointing with no candidates calculating the correct solution. Overall the question had an average mark of 2.1/8. The following summarises some of the common errors that candidates made in this question:-

- The majority of candidates incorrectly applied the claims handling loading to the net OCL, despite it being clearly indicated that it was applied to the gross OCL;

- Many candidates ignored that $250,000 had been paid on the catastrophe;

- Many candidates did not understand the impact of past quota share reinsurance on the results or how this had no impact on the catastrophe;

- Most candidates did not consider the risk margin separately for the catastrophe, while those that did simply increased their risk margin to cover future uncertainty in respect of the catastrophe but did not take reinsurance into account. This defeated the purpose of the question as the net cost of the catastrophe (at the 75th percentile) is a known cost and hence there is no need for a risk margin, apart for on claims handling expenses.

Question 2

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	39.5	39.5	65.8%	3	3%
Pass	35.0	35.0	58.3%	11	12%
Slightly Below Standard	31.5	31.5	52.5%	20	21%
Below Standard	26.0	26.0	43.3%	26	27%
Weak	22.0	22.0	36.7%	18	19%
Showed Little Knowledge	1.0	1.0	1.7%	13	14%
Did Not Attempt	0.0	0.0	0.0%	4	4%
Maximum Mark	40.3	40.3			
Average Mark	27.3	27.3			
Standard Deviation	8.6	8.6			
Co-efficient of Variation	0.31	0.31			

Question 2 comprised of four parts. It mostly focused on the technical and practical elements of an outstanding claims valuation for a workers compensation portfolio. Part a) examined whether candidates had a strong understanding of the Projected Case Estimate (PCE) model, and how this model and its model selections would respond to a change within the claims team. Part b) examined the circumstances when the PCE model would under-estimate claim liabilities and how it could be addressed, and the reason why claims handing expenses is required in the provision. Part c) considered claims inflation, discount rate and claims handling expenses and part d) examined the candidates' ability to give advice to assist in negotiating a claim settlement.

Part a):

- In ai) most candidates were successful in setting out the underlying elements and projection of the PCE model. However, a number of candidates did not properly consider the large claim distortion while selecting their CED factors. A large proportion of candidates failed to consider the need for any tail beyond where the data ended, and some failed to set the last CED and PO ratios equal to each other, thus affecting their outstanding claims liability. Despite this, it was very well attempted with many candidates scoring full marks.

- In aii) most candidates were able to identify that future selections of CED ratios would track much closer to 1.0 for most development periods. Few candidates were able to identify Alison's impact on IBNR claims in the early development. A large number of candidates either failed to comment on the PO ratios or did not believe PO ratios would be impacted. A very significant number of candidates failed to answer the question of impact on Outstanding Claims Liability. In short, candidates tended to only focus on the impact on the CED factors.

- In aiii) the quality of answers was poor demonstrating that candidates still don't have a sufficient level of understanding of the PCE methodology. With the exception of highlighting there should generally be a higher PO ratio, poor answers were given on the impact on CED ratios or their difference by the different stages of development. Many answers were not succinct and appeared confused.

- The average mark for this part was 8/16 with 5.5/7 coming from ai).

Part b)

- Candidates made a reasonable attempt at this question, with most candidates correctly identifying the IBNR/reopening claims and changes in superimposed inflation being possible deficiencies of the model. Some candidates identified inadequate case estimates or parameter estimation errors as the cause of PCE model under-estimation. In regards to addressing under-estimation, many candidates were able to identify the need for an alternative reserving model. However, many candidates disappointingly gave answers that would only address under-estimation part way, e.g. benchmarking or monitoring.

- The average mark for this part was 2/4.

Part c)

- Part c(i) and c(ii) were very well attempted. The majority of candidates were able to correctly identify the points raised in the marking guide. There were, disappointingly, a surprisingly high number of candidates that were not aware of the prescribed risk free requirement for the discount rate with many indicating that an Australian general insurer could use the earning rate of their investments.

- Part c(iii) was very poorly answered. These answers seemed to fall into two categories, being a poor understanding of Alison's involvement; or did not adequately consider or draw out the impact on the various components of expenses within the OCL and PL.

- In terms of Alison's involvement, many did not identify that she would only be involved with emerging IBNR claims from the OCL period, thus the cost impact of her involvement would be minimal. Better candidates were able to imagine there would be efficiency improvements to be gained further down the track, thus the expense increase would be short term.

- The average mark for this part was 2.8/5.

Part d)

- This part was poorly answered. Answers lacked judgement and direction with the majority of responses unsuitable for the intended audience. It was very clear candidates lacked an understanding of what type of information may be useful in a commutation or settlement activity. Despite being asked for in the question many candidates did not provide the allowance that they had in the 30 June 2016 liability estimate for the large claim. For those that did, many did not recognise that the PCE model includes IBNER and simply stated the case estimate of $750,000. On a practical front, most highlighted that an up-to-date estimate from Alison would be more useful. Most of the awarded marks were obtained for this latter point.

- The average mark for this part was 1/4.

Question 3

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	49.5	49.5	82.5%	2	2%
Pass	40.5	40.5	67.5%	25	26%
Slightly Below Standard	36.5	36.5	60.8%	14	15%
Below Standard	30.0	30.0	50.0%	29	31%
Weak	24.0	24.0	40.0%	11	12%
Showed Little Knowledge	1.0	1.0	1.7%	10	11%
Did Not Attempt	0.0	0.0	0.0%	4	4%
Maximum Mark	53.0	53.0			
Average Mark	33.6	33.6			
Standard Deviation	10.7	10.7			
Co-efficient of Variation	0.32	0.32			

Question 3 comprised of four parts. The question related to remotely piloted aircrafts (drones) covering the types of covers they may require and differences in their use. Candidates that scored slightly below the pass mark in general demonstrated a good understanding of the easier part of the question but not in the more challenging parts. Passing candidates performed reasonably well in all parts of the question.

Part a)

- Part ai) was answered well by candidates. Most candidates correctly identified own damage, third party property damage and third party bodily injury as possible covers for drone insurance. About half of the candidates identified theft and about a quarter of candidates identified Extended Warranty.

- Part aii) required candidates to identify the key risks for 3 of the covers mentioned in ai) and how to mitigate them. The question was answered poorly on the whole. Candidates clearly found it difficult to articulate the key risks in an unfamiliar context, and how to mitigate them. Many candidates confused perils with covers and erroneously interpreted the key risks of a product as being the types of claims that may arise.

- The average mark for this question was 3.8/8.

Part b)

- Part bi) was answered reasonably well. Most candidates identified the higher risk of collision for racing, more frequent use for delivery and a greater likelihood of flying in more hazardous location for photography for commercial vs personal use.

- Part bii) was also answered reasonably well. Common responses were that commercial operators would have better training and commercial drones would be serviced more regularly.

- As mentioned earlier in the report, there was an inconsistency between the spreadsheet and the word document for Part biii). As such, candidates were asked to provide an answer to the question assuming that all sales volumes were for terms of 1 year in length though were not penalised for adopting any other split between the one and two year terms. The quality of responses for this question was mixed. Most candidates calculated claims, expenses and underwriting profit correctly. However, most candidates did not earn the premium correctly. Many candidates applied a half year method which was not appropriate given the written premium was growing by quarter. The NPV calculation was done correctly by around half the candidates, with most others receiving half marks because they did not apply the timing of the discounting correctly. As advised, all candidates were awarded full marks for this part of the question however the average mark for this question before the adjustment was 3/6.

- The average mark for this question was 9.3/12 (after adopting 6 marks for all candidates in part biii).

Part c)

- Part ci) required candidates to draft a memo to a colleague on whether they agree or disagree that profit is directly proportional to volumes written. Most candidates correctly disagreed, with about half of the candidates identifying fixed expenses as the key reason and explaining why. Not many candidates answered in memo format.

- Part cii) required candidates to adjust premium volumes to target an NPV of $500,000. Few candidates attempted this question, but those who did used solver, goal seek or trial and error and in general scored well.

- Part ciii) was not answered particularly well. Only about a third of the candidates correctly identified the flat loss ratio as the key flaw in the scenario as the insurer would change pricing following a deterioration. Most candidates did not address the second part of the question which was to comment on what the overall result would be.

- The average mark for this question was 3.1/8.

Part d)

- This question required candidates to explain how the Liability Adequacy Test can fail even if a portfolio is profitable. The question was answered poorly with many candidates simply explaining how the LAT works rather than directly addressing the question. Around half the candidates correctly pointed out that the LAT includes a risk margin, but only 5 stated that the LAT could fail if the risk margin was higher than the profit margin. The average mark for this question was 0.6/4.

COURSE 3B GENERAL INSURANCE

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, as well as capital management and financial condition reporting.

1.2. Assessment

The assessment model is broken down into two parts:

Forum Participation   10%

Long Answer Question Exam   90%

1.3. Pass Rates

61 candidates enrolled this semester. Of these, 6 withdrew and 2 did not present for the exam, leaving 53 sitting the exam.

It is proposed that 22 candidates be awarded a pass, which implies a pass rate of 42%. Table 1 shows the historical pass rates for this subject:

Table 1 – Course Experience

SEMESTER	SAT	PASSED	PASS RATE
Semester 2 2017	**53**	**22**	**42%**
Semester 1 2017	73	33	45%
Semester 2 2016	75	27	36%
Semester 1 2016	55	17	31%
Semester 2 2015	54	20	37%
Semester 1 2015	54	20	37%
Semester 2 2014	63	23	37%
Semester 1 2014	61	16	26%
Semester 2 2013	64	17	27%
Semester 1 2013	62	22	35%
Semester 2 2012	69	26	38%
Semester 1 2012	71	27	38%

The 42% pass rate for this exam is in line with the pass rates for previous exams. Candidates seemed to have good course knowledge and strong candidates were able to demonstrate this in the exam.

2. Assessment

2.1. Overall Performance

Candidates performed in line with the previous exams with well prepared students able to address the exam effectively and be credited with a pass.

2.2. Exam Question by Question Analysis

Question 1

		Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available		**78.0**	**70.2**			
Strong Pass		54.0	48.6	69.2%	6	11%
Pass		46.0	41.4	59.0%	12	22%
Slightly Below Standard		41.4	37.3	53.1%	11	20%
Below Standard		28.0	25.2	35.9%	17	31%
Weak		10.0	9.0	12.8%	7	13%
Showed Little Knowledge		1.0	0.9	1.3%	0	0%
Did Not Attempt		0.0	0.0	0.0%	2	4%
Maximum Mark		60.0	54.0			
Average Mark		36.4	32.8			
Standard Deviation		16.4	14.7			
Co-efficient of Variation		0.35	0.35			

Average Marks						
Question 1	a)	bi)	bii)	c)	d)	ei)
Average	1.8	2.1	2.1	1.1	1.6	0.9
Available	3	4	4	2	4	2
Question 1	eii)	fi)	fii)	fiii)	fiv)	g)	Total
Average	0.6	3.7	1.4	0.4	0.8	1.5	18.2
Available	2	6	5	2	2	3	39

Candidates performed reasonably well on this question, with a pass rate of 34%. This question discussed a simplified workers compensation scheme and asked candidates to discuss benefit changes and overall how to measure changes in the scheme.

a)i) Asked for ways to reduce overall benefits and not many candidates could identify that introducing an excess is a method of reducing costs

b) i) and ii) Asked about scheme design changes

Generally answered well - those that got full marks presented both sides of the argument and discussed the social implications of the benefit changes.

c) asked about why nil claims were recorded. Many candidates failed to comment on why nil claims are important for analysis as it distorts average claim size and frequency (simple fact) but many went direct to the less straightforward applications of fraud detection, reopened claims, reporting inconsistency etc etc.

d) was calculation based and many students went straight into the calculations and didn't mention that these were total claim amounts without any unit of exposure such as wages.

e &f) Were again calculation and commentary on benefit changes and eii) many candidates focused on mentioning IBNR (generically) but failed to mention the extra 3 months of exposure that needs to be accounted for.

f)i) Most students produced some form of 45 day capping, and inflation of past payments.

f)iv) many didn't discuss injured workers moving to NDIPS which could increase costs

g) This question explicitly asked how fraud could be measured over time. Some students ignored this request all together

Question 2

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**64.0**	**57.6**			
Strong Pass	50.0	45.0	78.1%	6	11%
Pass	43.0	38.7	67.2%	23	42%
Slightly Below Standard	38.7	34.8	60.5%	11	20%
Below Standard	23.0	20.7	35.9%	12	22%
Weak	15.5	14.0	24.2%	0	0%
Showed Little Knowledge	1.0	0.9	1.6%	1	2%
Did Not Attempt	0.0	0.0	0.0%	2	4%
Maximum Mark	55.0	49.5			
Average Mark	37.6	33.9			
Standard Deviation	14.4	13.0			
Co-efficient of Variation	0.26	0.26			

Average Marks								
Question 2	a)	bi)	c)	di)	dii)	diii)	div)	Total
Average	4.7	2.9	3.0	1.4	0.8	1.6	4.3	18.8
Available	7.0	5.0	4.0	2.0	1.5	3.5	9.0	32.0

Candidates performed well on this question, with a pass rate of 55%. Overall candidates were able to pick up marks quickly in the relatively more straight forward parts of the questions. As a result, most scored well in parts a,b,c with an average score of 68%, compared to 50% for the part d. Part d) formed the main differentiator for candidates, with strong candidates able to understand the interaction between capital, OCL and PL risk charges and provide advice according.

This question surrounded a new island country that had rapidly developed and did not have an insurance industry. Candidates were asked to discuss a range of issues covering;

a) approach to risks and opportunities in establishing an insurance entity

Generally candidates understood the question and were able to capture a number of points. Stronger candidates were able to address more of the issues and link to principles of insurance. Many candidates also put down repetitive points or clearly guessing at ideas they did not fully understand and probably spent time without gaining additional marks. Some candidates interpreted principles of sound insurance as the principles of sound pricing, this resulted in a number of opportunities and risk being repeated throughout the question to conform to an incorrect structure.

b) How these risks could be managed

Candidates who address part a) well generally were better able to build on these concepts and discuss a range of ways these could be mitigated. Some of the suggestions made are clearly impractical at times (i.e. rebuilding all buildings to a certain standard) and don't show a broader understanding of the implications. Candidates that scored low marks typically provided generic responses or high-level phrases with no descriptions.

c) Implications of a state run insurance scheme

A reasonably straight forward question which linked closely to core course content and was well answered. Weaker candidates again failed to show an understanding of the broader implications of the different policy positions. Candidates were required to look at advantages and disadvantages Candidates that addressed both typically scored strong marks, with weaker candidates missing out on marks by only answering one or the other.

d) Regulatory monitoring and capital standards of a new insurance industry

This was the <u>main</u> differentiator in the <u>question</u>, requiring candidates to utilise both bookwork and judgement. i) was strongly answered with most candidates listing the book definition <u>of a</u> prudential minimum solvency calculation. ii) was misinterpreted by some candidates with answers focusing on the capital charges as opposed the categorisation. Candidates that identified the personal vs commercial nature of risk charge split were able to score full marks in this part. iii) saw candidates struggle, with an average mark of 1.6 out of 3.5. Candidates <u>generally</u> were not able to articulate the significance of the OCL factor in a new and growing portfolio, with most responses more appropriate for stable <u>portfolios</u>. The making scheme also expected commentary on <u>alternate</u> capital thresholds and the cost to insurers of a high capital <u>requirement, however</u> most candidates did not address these points. <u>with 9</u> marks allocated to iv), it became <u>a natural</u> differentiator to the entire question. Given the number of <u>marks allocated</u>, candidates should have recognised the level of detail required from the <u>question</u> – <u>however</u> some candidates were far too broad and general in their response. Strong candidates were able to break their <u>response</u> into the <u>components required in</u> the <u>question</u>, and importantly provide a recommendation as to if the level should be lower or higher. It was also disappointing to see many candidates looking <u>out on</u> easy marks by not using a memo format in their response. Another common issue was to either describe why the level should be higher and not focus on the lower reasons, in which case the candidate could not score full marks.

Question 3

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**58.0**	**52.2**			
Strong Pass	42.0	37.8	72.4%	7	13%
Pass	36.0	32.4	62.1%	13	24%
Slightly Below Standard	32.4	29.2	55.9%	9	16%
Below Standard	27.0	24.3	46.6%	16	29%
Weak	20.0	18.0	34.5%	8	15%
Showed Little Knowledge	1.0	0.9	1.7%	0	0%
Did Not Attempt	0.0	0.0	0.0%	2	4%
Maximum Mark	46.8	42.1			
Average Mark	32.6	29.4			
Standard Deviation	9.1	8.2			
Co-efficient of Variation	0.28	0.28			

Average Marks									
Question 3	a)	bi)	c)	d)	e)	f) risk 1	f risk 2	f style	Total
Average	2.7	3.2	2.3	1.8	0.9	2.7	2.3	0.6	16.3
Available	5.0	4.0	4.0	4.0	3.0	4.0	4.0	1.0	29.0

Candidates performed reasonably well on this question, with a pass rate of 38%. This question surrounded an insurance company "Chick's wheels" that focused on insuring women and candidates were asked to consider the pricing implications for this company with legislative change that removed the ability to use gender as a rating factor. This question also required candidates to draft a section of an FCR.

Most candidates were able to demonstrate good understanding of the drivers of technical premium and the different types of reinsurance in parts a) and b). They were also able to

largely articulate potential risks from the strategy change for the FCR and how this could be mitigated.

However, responses to the changes in legislation were not as strong. Many candidates struggled to think through the flow on impact and differentiate Chicks Wheels from other insurers, many candidates also focused too much on a single point ie uncertainty and over-elaborated without expanding on potential other factors also at play. Parts (c) – (e) largely provided the differential for candidates who strongly passed vs pass.

Also of note in part a) The question stated that "Your answer should refer to the various components of technical premiums, as well as different market segments". Some candidates interpreted this as comparing the risk premium by market segments (e.g. age, gender etc.) and stated that there should be no difference between Chicks Wheels and traditional insurer by segments. However, most candidates did not have difficulty interpreting this question.

Some common difficulties were

- Part a) Weak responses did not pick up the fact that Chicks Wheels has a different business mix compared to traditional insurers.
  Many responses did not come to the conclusion that Chicks Wheels' average premium is lower than those charged by traditional insurer. This is because they did not assume that female drivers have lower claims costs on average. Marks were still awarded under this circumstance, as female drivers are only better risks for the younger ages.
- Part c) Many responses did not pick up anti-selection as one of the key reasons, and stated reasons that were unrelated to the legislation change. The most common answers were natural catastrophes, an increase in uncertainty as well as the hardening of insurance cycle.
- Part e) Many candidates struggled to write enough points to score well in this sub-part
- Part f) Generally answered quite well. Weaker responses did not identify a material risk. Some responses which touched upon legislation risk struggled to mention how to monitor this going forward

COURSE 5A INVESTMENT MANAGEMENT & FINANCE

1. Summary

1.1. Course Overview

The aim of the 5A Investment Management and Finance Course is to provide the knowledge, skills and judgment necessary for an actuary to tackle a range of management related problems in investment and finance relating to analysis of accounting information, valuation of debt securities, equity markets and portfolio management, company valuation and asset allocation.

1.2. Assessment

The assessment model is broken down into two parts:

Forum Participation   10%

Long Answer Question Exam   90%

1.3. Pass Rates

22 candidates enrolled this semester. Of these, 1 withdrew, leaving 21 sitting the exam.

It is proposed that 3 candidates be awarded a pass, which implies a pass rate of 14.3%. Table 1 shows the historical pass rates for this subject:

Table 1 – Course Experience

SEMESTER	SAT	PASSED	PASS RATE
C5A Semester 2 2017	**21**	**3**	**14%**
C5B Semester 1 2017	33	7	21%
C5A Semester 2 2016	43	23	63%
C5B Semester 1 2016	34	4	12%
C5A Semester 2 2015	49	10	20%
C5B Semester 1 2015	24	15	63%
C5A Semester 2 2014	32	17	53%
C5B Semester 1 2014	24	7	29%
C5A Semester 2 2013	41	21	51%
C5B Semester 1 2013	37	21	57%
C5A Semester 2 2012	30	17	57%
C5B Semester 1 2012	22	13	59%

The 14% pass rate for this exam is significantly lower than the 63% pass rate for the previous exam (Semester 2 2016), and much lower than the historical average. Based on feedback from both chief examiners, all six exam markers, examination reviewers, and courser tutors (after the exam was sat), the consensus is that most candidates performed significantly below the requirements necessary to demonstrate sufficient understanding of the course materials. The Chief Examiners would like to note, in addition, that only 1 candidate achieved more than 50% of the raw marks on one question. No other candidate exceeded 50% of any individual question on raw mark basis (there were 3 questions).

The Chief Examiners have been very conscious of writing a fair examination for the students that was very closely aligned to the syllabus. Feedback from the external examiner and the exam scrutineers was carefully taken into consideration. In the opinion of the Chief Examiners, the feedback on the drafted exam was generally positive. Feedback from Course Leaders (post the examination) and various exam reviewers suggested that the questions in this examination have been closely aligned to the 5A syllabus.

2. Assessment

2.1. Overall Performance

The overall performance in this exam was very disappointing. The Examiners were surprised at how poorly the students performed, given all the preparation and co-ordination with the course leaders carried out during this semester. The Chief Examiners are of the view that this was a fair exam, with close alignment to the syllabus. This view was also shared by the 5A Course Leaders and the 5A external examiner.

2.2. Exam Question by Question Analysis

Question 1

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	27.0	27.0	45.0%	0	0%
Pass	23.0	23.0	38.3%	1	5%
Slightly Below Standard	20.7	20.7	34.5%	0	0%
Below Standard	15.0	15.0	25.0%	5	24%
Weak	10.0	10.0	16.7%	6	29%
Showed Little Knowledge	1.0	1.0	1.7%	9	43%
Did Not Attempt	0.0	0.0	0.0%	0	0%
Maximum Mark	26.8	26.8			
Average Mark	11.6	11.6			
Standard Deviation	6.1	6.1			
Co-efficient of Variation	0.53	0.53			

Candidates performed extremely poorly on this question, with a pass rate of 5%. The suggested Pass grade was initially set by both markers at 12.

While candidates performed slightly better in the qualitative style questions, the answers were kept very general and failed to apply knowledge to bring out more specific points related to the context of the question. The majority of the candidates failed to demonstrate a satisfactory level of competency in the quantitative style questions.

Part a):

- This part tests candidates' understanding of book work illustrated in tutorial materials, namely the bootstrapping process of converting swap rates to zero rates.

- This part was largely not attempted, or poorly attempted, by most candidates owing to a lack of fundamental rate conversion skills. Candidates were not able to able to answer this question well with regards to the day-count conventions, or to realising that the spot rate required was semi-annual and almost all did not attempt bootstrapping. The subpart of the question that was best performed was linear interpolation.

Part b) i):

- This part tests candidates' understanding of book work illustrated in tutorial materials,

namely the calculation of OAS of a callable bond.

- Similarly to part a) the majority of the candidates did not attempt this question. A few candidates were able to correctly provide the price of an equivalent option-free bond. Most of the attempts differed from the marking guide method by estimating the implied option-adjusted spread as the difference between the yield-to-maturities of a so-called risky and risk-free bond or swap rate. Hence a few candidates attempted to set up the bond cash flows with coupon and final payments to calculate these. If no errors were committed along the way the answers for these were generally in the ballpark.

Part b) ii):

- This part tests candidates' ability to appreciate the practical differences between an OAS of a particular bond and that of the generic index.

Most candidates were able to identify the liquidity risk associated with a private placement. However very few were able to identify any valid points beyond this - in particular the point about idiosyncratic credit risk.

Part c):

- This part involves some fair complex judgement and tests candidates' ability to appreciate pros and cons under investment accounting debt classifications, allowed under the current accounting regimes. However, no specific accounting knowledge is required, since all the necessary information has been provided.

- Most candidates attempted to provide some points, but there were only a few valid points. Most of the valid points related to the ability to recognise credit concerns and liquidate the bond under the FV method. Many candidates made points relating to the volatility of P/L, which is invalid, as opposed to the volatility of financial ratios and metrics. A few candidates recognised the advantage of FV method within the asset-liability context. However further points were missed because answers were limited to the generic features of the two accounting methods. Candidates would have benefited from assessing the pros and cons within the context of the question.

Part d):

- This part involves some fairly practical applications of duration calculations, where one is to apply the fact that the duration of a portfolio is the weighted average of the duration of the portfolio constituents. Applications of this principle include determining the duration of a callable bond and duration matching of assets and liabilities.

- Most candidates who attempted the question had difficulty calculating the duration of the callable bond. Some ignored the option, others made an assumption and others incorrectly used the 10% given for the option delta. All the attempts used the excel NPV calculation or discounted cash flow for determining the bond duration. Most candidates were able to recognise the portfolio duration as a weighted average, but only a few were able to calculate it.

Part e):

- This part involves candidates assessing the practical limitations associated with a duration matching strategy. A combination of simple and complex judgement is required.

- This question received the highest marks on average. The majority of the candidates were able to identify the shortcoming of duration matching during large, non-parallel moves in the yield curve and the associated convexity issues, but few provided other valid points. A number of candidates also identified liquidity issues. Most candidates missed the points on other non-interest rate asset risks (e.g. default and HTM designation)

Part f):

- This part involves candidates providing commentary on the steps involved in a stochastic ALM model in the context of this question, as well as understanding the benefits associated with a stochastic approach.

- This question was attempted by most candidates but with poor results due to the very general nature of the answers. The responses across the board attempted to describe and outline the benefits of stochastic modelling in a very broad and general sense. Candidates missed marks by ignoring the context of the question, and in particular the enhancements achievable in comparison to using a duration matching framework.

Part g):

- This part tests candidates' understanding of consolidation accounting, which is part of Unit 1 of the course on financial accounting analysis, in a practical context of a special purpose vehicle.

- The attempts on this question were mixed with many showing a poor understanding of the implications of the SPV structure. Candidates were able to identify that the SPV was not a good idea, but very few were actually able to reason from the accounting perspective (i.e. consolidation). Most candidates missed the point on additional costs associated.

Question 2

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	40.0	40.0	66.7%	0	0%
Pass	28.0	28.0	46.7%	1	5%
Slightly Below Standard	25.2	25.2	42.0%	2	10%
Below Standard	20.0	20.0	33.3%	4	19%
Weak	15.0	15.0	25.0%	7	33%
Showed Little Knowledge	1.0	1.0	1.7%	7	33%
Did Not Attempt	0.0	0.0	0.0%	0	0%
Maximum Mark	38.0	38.0			
Average Mark	18.4	18.4			
Standard Deviation	6.9	6.9			
Co-efficient of Variation	0.38	0.38			

Candidates performed extremely poorly on this question, with a pass rate of 5%. The suggested pass grade was initially set by both markers at 14.

Overall, the Examiners and the markers were extremely disappointed by the quality of answers received for this question, which in our opinion, gave ample opportunity for candidates to score easy marks. We provide some overall comments and then question-specific comments:

- In the written part of the question, many candidates decided to provide extended written answers with some providing a re-wording the question itself. No marks were given for doing this. In a time-constrained environment candidates should focus on answering the question clearly and succinctly.

- Many candidates did not read/understand and ultimately answer the question being posed:

  o Many misjudged who the ultimate 'client' was (particularly in part e). The client

was not ABC's management but the CIO of a pension fund who invests in ABC.

- o Many provided long superfluous points to some of the worded questions. 'Brain dumps' do not score well – candidates should answer the question.
- Candidates should use the number of marks as a guide for how many points they need to make to score full marks. Many provided too brief an answer for part e) with some providing a brief buy/hold/sell recommendation (which did not score well).

Part a) and b):

- This part tests mostly candidates' understanding of book work illustrated in tutorial materials. In part a), candidates were asked to compute the interest rate coverage ratio and then relate the ratio to credit default. In part b), candidates were asked to approximate the break-even oil price for the default of drilling company.

- These parts were generally not well answered by candidates despite being fairly straight-forward. Most of the candidates did not annualize the relevant financial figures in their calculations. Some candidates did not recognize the hint in the question that capital expenditure was roughly similar to depreciation.

- Particularly poor answers to part b) scaled gross profit with changes to the oil price (therefore assuming operating expenses scaled with the oil price).

Part c):

- This part tests candidates' understanding of an earnings statement and balance sheet, by asking the candidates to list the different management options available to reduce default and stabilize bottom line earnings.

- This part was generally well answered. Marks were awarded for reasonable suggestions that were not found within the marking guide. Some candidates did not provide enough points for full marks. A 4 mark question which asks for a "management options" and the "financial impact" requires 4 points to be made for full marks to be awarded (with 0.5 marks for listing each option and 0.5 marks for a sensible financial impact). Many students focused solely on corporate financial actions instead of operational business options.

Part d):

- This question has two parts. Part i) requires candidates to simply back out the cost of equity from the WACC, while part ii) requires a discounted cash flow valuation of the share price, using a series of assumptions given in the question.

- This part tests candidates' ability to appreciate the practical differences between an OAS of a particular bond and that of the generic index.

- Most candidates got the calculation part correct for d) i). Weak candidates failed to identify the cost of equity as the appropriate discounting rate for an equity shareholder's cash flow (i.e. earnings after tax).

- In part ii), candidates were required to estimate the fair value of the company. Most candidates attempted this part poorly. While the question clearly stated how inflation should be considered (and that the oil price projections were in 2017 dollars), most candidates did not include inflation in their calculations.

- Most candidates projected the interest expense sensibly.

- Some candidates failed to identify the number of shares as post-tax net earnings divided by EPS.

Part e):

- This question tests the practical readiness of candidates for the buy-side security industry. It tests the process the candidate would go through given the security valuation in d).

- Most candidates performed poorly on this question. They did not recognize that the answer in part d) is very sensitive to the input assumptions. Very few candidate candidates were able to point to the efficacy of scenario analysis or on their being various plausible assumptions so as to determine a range of fair values (these candidates lacked knowledge of how real life decisions are made). Overall, this question was a good differentiator between good and poor candidates. Those who recognized the need to question the uncertainty in their earlier calculations generally performed well. The weak candidates recommended actions be taken solely based on the valuation results from d)

Part f):

- This sub-questions tests candidate understanding of the CAPM, beta and systematic risks.

- This question should have been straightforward. However, many candidates did not link "systematic" risk with beta which is quite fundamental in a finance/investment syllabus. Many candidates talked extensively about volatility. No marks were awarded for such answers, as volatility is a measure of total and not systematic risk.

Question 3

	Marks Required	Weighted Marks Required	% of Total Marks	Number of Candidates	Proportion of Candidates
Total Marks Available	**60.0**	**60.0**			
Strong Pass	25.5	25.5	42.5%	3	14%
Pass	18.5	18.5	30.8%	3	14%
Slightly Below Standard	16.7	16.7	27.8%	0	0%
Below Standard	10.0	10.0	16.7%	4	19%
Weak	7.0	7.0	11.7%	2	10%
Showed Little Knowledge	1.0	1.0	1.7%	8	38%
Did Not Attempt	0.0	0.0	0.0%	1	5%
Maximum Mark	26.5	26.5			
Average Mark	11.4	11.4			
Standard Deviation	8.8	8.8			
Co-efficient of Variation	0.77	0.77			

Candidates struggled with this question, with a pass rate of 28.6%, with the cutoff set at (a low raw mark of) 18.5 out of 60 marks.

The outcome was disappointing, as this question was very closely aligned to Unit 4 of the 5B syllabus. The question was crafted in such a way to test theory, computational aspects of factor models, the application of factor models, and understanding of the issues associated with building factor models. Specifically, the question tested:
1. Theory associated with factor models, directly out of the 5A course notes and from the required text, Grinold and Kahn (G&K), (Chapter 3 Appendix), which is referenced specifically in the 5A unit 4 notes. Specifically, parts a), b) and e), which totaled 7 marks. Arguably, this component was bookwork for a well prepared student, and easy marks to earn.
2. Performing standard computations with factor models (i.e. what are the portfolio exposures, and factor biases?). This was done using an excel workbook, which was laid out in a very similar way to an Excel workbook presented in tutorial 3 this semester by the course leader. This formed parts c) and d).
3. Understanding of practical issues with applying and building factor models. This formed parts f), g) and h), which totaled 9 marks. These question parts were designed to be more challenging and complex, but still well within the scope of Unit 4. These question parts were not computational, so students with weaker quantitative skills still had the

opportunity to demonstrate their understanding of factor models.

Part a):

Students were asked to compute the marginal contribution to total risk (MCTR), which is basically book work. This question was almost identical to a past exam question (C5A 2011, Q3 a) ii)), which asked students to compute the marginal contribution to active risk (effectively the same matrix calculus mathematics).

Even though this was almost identical to a past exam 5A question on factor models, the majority of students scored 0 marks for this part! Only 3 out of 21 students scored full marks.

Part b):

This question was identical to a question posed in the main 5A Unit 4 course readings, in the section titled "What happened to beta?". It is not an easy question to answer quickly if not seen before, but should be bookwork for a well-prepared student who closely studies the 5A course notes. 4 marks were provided, giving students 8 minutes (2 minutes per mark for 90 marks in an 180 minute exam), to think about the problem and provide some sort of working/solution. Two students scored 4 out of 4, 1 student scored 1 out of 4, and the remaining 18 scored 0 marks. This was a disappointing result.

Part c):

This part involved computing the MCTR for a real set of numbers in a spreadsheet. The formula for MCTR was provided in part a). Most students did not know how to compute the MCTR. But this concept is discussed in the main 5A unit 4 course notes, and is discussed in the G&K Chapter 3 Appendix. This question is really bookwork. No candidate scored full marks for this part.

Part d) i):

Students were asked to compute the factor and stock specific risk for a portfolio in the Q3 Excel work book. This was straightforward and bookwork; the computation was almost identical to the one presented in the tutorial 3 (panel data factor model) Excel workbook. This question part was answered generally well.

Part d) ii):

Students were asked to compute the portfolio factor exposures, and comment on them. The calculations to compute the factors were again the same as those presented in the tutorial 3 Excel workbook. The calculations were very straightforward to do. However, most students struggled to realise they needed to compute the portfolio factors in answering the question. No candidate scored the full 5 marks, and only a few achieved at least 2.5 marks. This question part is arguably testing one of the most important parts of using factor models to measure risk in a portfolio. Clearly most students did not appreciate how to measure factor risk in a portfolio.

Part d) iii):

This part asked students to demonstrate knowledge of the portfolio by analyzing the exposures of each security and making some sensible statements. Reasonable responses could vary, and markers accommodated for any reasonable responses not listed in the marking guide. Unfortunately, this part was poorly answered, with students giving very generic responses that were not directly relevant to the scenario in the question.

Part d) iv):

Here students were given the opportunity to comment on the construction of the portfolio. They had the opportunity to mention that it was a market neutral portfolio, with specific risk that dominated factor risk in the portfolio. Again, it was a poorly answered part.

Part e):

Students were asked to estimate the systematic and residual risk of the portfolio. This question part was straightforward, and could be easily answered by realizing part b) of Q3 gave the solution: portfolio risk (variance) can be expressed in terms of residual risk plus the systematic risk of the portfolio. It was supposed to be an easy question part (hence 1 mark) but most students scored 0 marks.

Part f):

This question was testing the student's understanding of the practical issues associated with estimating the specific risk of individual stocks when there is a short price (return) history for the stock. No student was able to score the full 4 marks.

Part g):

Students were asked to identify issues associated with adding or removing factors from an existing factor model. Multicollinearity should have been one obvious point to make. It was reasonably well answered.

Part h):

Here students were asked to demonstrate knowledge of how they would fit a factor model. What issues and tools would they use to determine whether one factor model is better than another? This is a very important practical issue, but it is acknowledged this part could be challenging for students with limited practical experience with factor models. However, general knowledge in relation to prediction modeling with multiple linear models (covered in part 1 of the actuarial exams) should be enough to score full marks here. A wide range of answers could score marks here. Student performance in this question was mixed.

COURSE 6B GLOBAL RETIREMENT INCOME SYSTEMS

1. Summary

1.1. Course Overview

The aim of the GRIS 6B course is to provide the knowledge, skills and judgement necessary for an actuary to effectively tackle a range of issues as retirement income systems evolve away from group-based defined benefit schemes to individual defined contribution plans. The changing context has significant implications for product design, risk management and how scheme members are communicated with [sic]. Actuaries need the skills and knowledge to help design and manage schemes to best meet members' individual retirement income needs.

1.2. Assessment

The assessment model comprises:

Forum Participation   10%

Long Answer Question Exam   90%

1.3. Pass Rates

16 candidates enrolled this semester. Of these, 0 withdrew and 2 did not attend, leaving 14 sitting the exam.

It is proposed that 4 candidates be awarded a pass, which implies a pass rate of 29%. The historical pass rates for this subject are as follows.

Table 1 – Course Experience

GRIS	Course A Semester 1			Course B Semester 2		
Year	Sat	Passed	Pass Rate	Sat	Passed	Pass Rate
2017	20	7	35%	**14**	**4**	**29%**
2016	17	7	41%	15	5	33%
2015	21	10	48%	17	7	41%
2014	15	9	60%	11	7	64%
2013	19	8	42%	17	7	41%
2012	16	5	31%	14	3	21%
2011	18	9	50%	8	5	63%
2010	16	4	25%	13	7	54%
2009	14	5	36%	19	10	53%

The recommended 29% pass rate for this exam continues a disappointing and somewhat concerning trend of reducing pass rates over the past 4 years. This trend has pervaded both 6A and 6B courses, so it may indicate weaker cohorts of candidates continuing.
Less likely but also possible is that the connection between course notes and candidates/exam questions is growing less relevant with time; regardless this latter potential issue will be addressed with a revamp of the course notes.

2. Assessment

2.1. Overall Performance

Overall candidate performance in this exam was disappointing. The exam paper was relatively straightforward and also offered opportunity for candidates to extend their answers to demonstrate advanced knowledge and thereby differentiate themselves.
Very few responses excelled and indeed the majority of responses were rather plain and unimaginative (ie not fully considering the potential scope of the question) and furthermore slightly below standard. This candidate cohort did not appear as strong as previous cohorts. Candidates missed a lot of easy marks that could have set the foundation for their responses and quite possibly could have have elevated them to an automatic pass.

LAQ1 was a straightforward question on a traditional topic and should have been easy pickings for candidates. The pass rate of 50% was reasonable but not exceptional and, due to the distribution of marks allocated, masked the fact that judgement applied by candidates on the whole was weak.

LAQ2 was an unusual perspective on a common conversion issue. It appeared that many candidates were unable to recognise the bigger picture with a proper understanding of the various roles and obligations. Without this context, many candidates struggled with the various parts of the question. It was thought that this question would challenge candidates the most, however...

Candidates on the whole performed worst on LAQ3. As the final question of the exam, time management may have been an issue. Given the amount of information provided to candidates in the question, it was disappointing that many candidates again missed very easy marks.

None of the LAQs proved to be an excellent differentiator, however it is unclear whether this reflects the nature of the questions, the structure of the questions or the quality of the candidate cohort.

Candidate performance was assessed both including and excluding the participation forum, so this aspect was not a determining factor of course outcome.

2.2. Exam Question by Question Analysis

Question 1

	Raw Marks	Weighted Marks	% of Marks	Number of Candidates	Proportion
Total Marks Available	40	60			
Strong Pass (A)	30.5	45.75	76%	1	7%
Pass (B)	26	39	65%	6	43%
Slightly Below Standard (C)	23	34.5	58%	2	14%
Weak (D)	18	27	45%	4	29%
Showed Little Knowledge (E)	12	18	30%	1	7%
Did Not Attempt (X)					
Maximum Mark	34				
Average Mark	25.1				
Standard Deviation	4.7				
Coefficient of Variation	0.12				

50% of candidates passed this question.
It was a fair differentiator with moderate correlation to course outcome.

The question involved a defined benefit plan with an accrued benefit index (ABI) <100%.
Part (a) identification of the key areas of strain.
Part (b) description of 4 possible options to resolve the ABI and nomination of the classes of members most impacted by each.
Part (c) impact on past service liability, total service liability and contribution rate.
Part (d) projections in graphical form.
Part (e) recommendation.

Parts (a)–(d) of this question collectively represented a relatively straight-forward application of actuarial knowledge; therefore it was pleasing that candidates performed well overall. Indeed the markers suggested that if a candidate could not pass this question it was unlikely he or she could pass overall (and indeed this proved to be the case!).
[Part (a) average mark = 5.9 / 8]
[Part (b) average mark = 5.6 / 8]
[Part (c) average mark = 5.0 / 8]
[Part (d) average mark = 4.4 / 8]

Part (e) required candidates to exercise actuarial judgement and make a recommendation on the course of action. The results were average at best, with only 2 candidates making truly sound recommendations. [Average mark = 4.2 / 8]

Nevertheless, due to the distribution of marks allocated (the recommendation being worth 8 of the 40 marks available), many students passed this question overall (7 of 14).

Question 2

	Raw Marks	Weighted Marks	% of Marks	Number of Candidates	Proportion
Total Marks Available	44	66			
Strong Pass (A)	32	48	73%	3	21%
Pass (B)	28.5	42.75	65%	3	21%
Slightly Below Standard (C)	25	37.5	57%	5	36%
Weak (D)	19	28.5	43%	2	14%
Showed Little Knowledge (E)	11	16.5	25%	1	7%
Did Not Attempt (X)					
Maximum Mark	33.5				
Average Mark	27.5				
Standard Deviation	4.2				
Coefficient of Variation	0.15				

43% of candidates passed this question.
It was a fair differentiator with high correlation to course outcome.

The question involved a fund member with a (company-guaranteed) legacy defined benefit.
Part (a) identification of any background issues requiring disclosure to the trustee client.
Part (b) calculation of the top up benefit payable under several bases.
Part (c) consideration of whether the top up benefit paid was fair.
Part (d) explanation of why the independent actuary's calculations differed.

Part (e) recommendation of what is a fair offer, including consideration of costs, practicalities and the trustee's role and obligations.

In part (a) many candidates failed to identify the conflict of interest in providing advice to both the trustee and the company. [Part (a) average mark = 2.0 / 4]

In part (b) better students got close to full marks, with the most common error being that SG contributions were not allowed for in excessive contribution tax calculations. Poorer students missed excessive tax altogether or calculated the annuity factor incorrectly.
[Part (b) average mark = 10.5 / 16]

Candidates generally did well in part (c). [Part (c) average mark = 3.0 / 4]

In part (d) most candidates were able to identify reasons for the differences in calculations. The best candidates commented on the appropriateness of the differences, in particular the widely different discount rates. [Part (d) average mark = 4.6 / 6]

Candidates on the whole performed worst in part (e). Some candidates seemed confused as to what is the role and obligation of the trustee in this matter; it is a slightly unusual scenario in that the trustee has no legal responsibility but is seeking advice and this may have caused candidates to overlook the conflict in part (a). Most candidates were able to identify the significant differences between paying the pension from the fund versus buying a life annuity. Many candidates answered the trustee obligation component only in very general terms (eg "act in the best interest of members").
[Part (e) average mark = 7.4 / 14]

Question 3

	Raw Marks	Weighted Marks	% of Marks	Number of Candidates	Proportion
Total Marks Available	36	54			
Strong Pass (A)	24.5	36.75	68%		
Pass (B)	20	30	56%	4	29%
Slightly Below Standard (C)	18	27	50%	4	29%
Weak (D)	14	21	39%	2	14%
Showed Little Knowledge (E)	9	13.5	25%	4	29%
Did Not Attempt (X)					
Maximum Mark	22				
Average Mark	17.1				
Standard Deviation	4.2				
Coefficient of Variation	0.12				

29% of candidates passed this question.
It was a fair differentiator with moderate correlation to course outcome.

The question required candidates to prepare a report as fund actuary in respect of a given comprehensive income product for retirement (CIPR), including how it would meet the actuarial certification tests.

The report was required to cover:
* background of CIPRs
* description, advantages and disadvantages of the given CIPR
* technical tests for actuarial certification
* other considerations

The overall standard of responses was somewhat disappointing on what was a topical but relatively straightforward question.

Candidates on the whole performed worst on this question, which may indicate either that they were pressed for time and/or did not manage their time efficiently or that they were not up to date on important industry developments.

There were a lot of easy marks for students in the early parts of the question, especially given the CIPR info sheet provided to them, but a surprising number of students still missed these points.

The expected present value (EPV) was poorly answered.

Candidates passing this question tended to provide better responses in respect of the actuarial certification tests.

No candidate was able to raise any additional (extension) point of note.

[Report presentation average mark = 1.6 / 3]
[Background average mark = 1.8 / 3]
[Proposed CIPR average mark = 5.6 / 8]
[Test 1 average mark = 3.1 / 6]
[Test 2 average mark = 2.6 / 8]
[Discussion average mark = 2.4 / 8]

COURSE 10 COMMERCIAL ACTUARIAL PRACTICE

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 4 non-traditional topics: Banking, Health, Data Analytics or Environment-Social-Governance (ESG). It is worth 20% of the final mark. One-quarter of the students were randomly allocated to each topic, except that students were not allocated a topic they had not attended at their Residential course.

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 question from the 5 mainstream topics - Life Insurance, General Insurance, Investment, Global Retirement Income Systems (GRIS) or Enterprise Risk Management (ERM), perform all the necessary analysis and prepare a substantial written report.

An overall pass requires a total of 50%, <u>without necessarily passing the Exam</u>.

1.2. Pass Rates

95 candidates completed the course. Of these, it is proposed that 58 be awarded a pass, representing a pass rate of 61%.

Table 1 – Recent Course Experience

Semester	Sat	Passed	Pass Rate %
Semester 2 of 2017	**95**	**58**	**61**
Semester 1 of 2017	90	37	41
Semester 2 of 2016	64	30	47
Semester 1 of 2016	80	45	56
Semester 2 of 2015	81	51	63
Semester 1 of 2015	78	47	60
Semester 2 of 2014	85	49	58
Semester 1 of 2014	86	52	60
Semester 2 of 2013	84	49	58
Semester 1 of 2013	74	39	53
Semester 2 of 2012	71	40	56
Semester 1 of 2012	82	47	57

1.3. Candidate Numbers

A total of 98 candidates were originally enrolled for the CAP course in Semester 2 of 2017. 45 candidates attended the 4-day CAP residential course at MGSM, being all those sitting CAP for the first time. In addition, 5 repeat Sydney candidates attended for half a day as a refresher, of whom 3 were strong passes and 2 were clear fails.

The candidate numbers and results can be summarised as follows:

	Post-Course Assignment only	Case Study Exam only	Both	Total
Originally enrolled	0	0	98	**98**
Withdrawals	0	0	1	**1**
Absent	0	0	2	**2**
Presented	0	0	95	**95**
Passed	0	0	58	**58**
Failed	0	0	37	**37**

Table 2: Number of CAP Attempts

The results by number of attempts are as follows:

Attempt	Presented	Passed	Pass rate
1	43	32	74%
2	31	15	48%
3	13	10	77%
4	4	0	0%
5	4	1	25%
6+	0		
Total	**95**	**58**	**61%**

As in most semesters, the first-attempt pass rate is high. Sadly, of the 7 failures sitting for the 5th or 4th time, none was close to passing. This echoed the 6 of 6 last semester sitting for the 3rd or 4th time, of whom none were close to passing. 5 of these 6 and 7 are from Melbourne. 4 of the 7 had close to the 4 lowest assignment marks, suggesting their time or effort is waning. I recommend that these 7 be reviewed to determine whether they would benefit from specific assistance.

Table 3: Analysis by Topic

The analysis by chosen Exam Topic is as follows:

Exam Topic	Candidates	No. of passes	Pass rate
ERM	12	7	58%
GI	31	18	58%
GRIS	4	2	50%
Invest	19	12	63%
Life	29	19	66%
Total	95	58	61%

We are pleased with these pass rates, particularly Life which has often had poor pass rates in the past.

Table 4: Analysis by Examination Centre

The results by examination centre were as follows:

Centre	Presented	Passed	Pass rate
Brisbane	2	2	100%
Canberra	1	1	100%
Melbourne	20	9	45%
Sydney	63	40	63%
Subtotal Australia	**86**	**52**	**60%**
Beijing	2	1	50%
Hong Kong	1	1	100%
London	2	1	50%
Malaysia	1	0	0%
Singapore	1	1	100%
Wellington	2	2	100%
Subtotal Overseas	**9**	**6**	**67%**
Total	**95**	**58**	**61%**

All these results are reasonable, accepting the volatility introduced by low numbers.

However, for at least 5 semesters now, the Melbourne pass rate has been relatively low. That experience is spread across exam topics, but is concentrated among those who have had multiple attempts.

2. Course Administration 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 "contextualising" 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. The two assessment tasks are:

1. A take-home Post-Course Assignment ("Assignment") on one of the 4 non-traditional topics (Banking, Health, ESG, Data Analytics), distributed after the 4-day residential course, for completion within 2 weeks. The Assignment is worth 20% of the final mark. The result and feedback were supplied to candidates 1 week prior to the Exam. The students were randomly allocated to each topic, aiming for approximately one-quarter to each topic, but subject to:

    a) a check that repeat candidates are not allocated to the same topic 3 times in a row; and

    b) ensuring that no candidate was allocated a topic they had not attended at their Residential course. This is necessary because Data Analytics has only been offered at the latest 2 Residentials, and because candidates at those 2 Residentials have had some choice of topics.

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 written report (typically 10 to 15 pages plus any appendices).

The pass mark is 50%, which is regarded as equivalent to the 60% pass mark adopted for the other part III courses.

2.2. Examiners

The examiners for this semester were:

Chief Examiner: Bruce Thomson

Assistant Examiner: Matthew Ralph

2.3. Course Leader

The Course Leader for this semester was: David Service

The CAP Faculty Chair for this semester was: Bridget Browne

2.4. Preparation of Case Studies

Case studies were prepared by the Course Presenters in the 9 topic areas listed below. Each was designed to be completed within 8 hours under exam conditions, even though the 4 non-traditional topics were completed as a take-home assignment. Each was fine-tuned in consultation with the Chief Examiner, formally scrutineered, and signed off by the Examiners.

The 5 traditional-topic questions aim to be practical within the subject area, without necessarily being entirely and strictly within the Part III syllabus.

Topic	Course Presenter / Author
Health	Andrew Gale
Banking	David Service
Environment	Naomi Edwards
Data Analytics	Colin Priest
ERM	Bridget Browne
Life Insurance	David Service
Investments	Gaurav Khemka
GRIS	Vivian Dang & Young Tan
General Insurance	Colin Priest

Marker 1 for each topic was the author as above. David Service was Marker 2 for the 7 topics for which he was not Marker 1, in order to provide a standardizing view across all topics. Garry Khemka was Marker 2 for Banking, while Aaron Bruhn was Marker 2 for Life. Both Garry and Aaron have good familiarity with CAP. In addition, Tim Gorst was "Marker 3" for ERM as part of his orientation for taking over as author and Marker next semester.

3. Post Course Assignment Results

Although marks and grades were given for the Post-Course Assignment, a pass/fail decision was not required for each candidate; this simply formed 20% of their overall mark.

Final scaled marks ranged from 20% to 85% with an average of 59%. Candidates were only given a grade (Fail, Pass, Credit, Distinction, High Distinction) but were also given a copy of their Assignment with marked-up comments from the Marker. We believe these comments were particularly useful to candidates.

It was suggested to candidates that a Credit or better (as achieved by 48% of candidates) was a better indication of likely overall success. However, the correlation between Assignment and Exam marks remains low.

3.1. Banking

The Banking case study required candidates to advise the Australian government on how best to grant a banking license to Australia Post in order to provide competition in the sector.

Many students struggled to give sensible answers on distribution and capital, with 40% failing on raw scores.

3.2. Data Analytics

The Data Analytics case study required candidates to advise management of a telecommunications company on how best to reduce the number of customers going to competitors.

Candidates generally did well with two-thirds scoring a credit or better.

3.3. ESG

The ESG case study required candidates to design a Social Impact Bond for a superannuation fund, where the return is related to the prevention of repeat offending by ex-prisoners. Advice was also required on choosing a partner to provide a program designed to reduce that recidivism.

The question was a good discriminator, with a wide and even spread of raw marks.

3.4. Health

The Health case study required candidates to advise the Australian Health Department on changes to funding and communication designed to reduce the number of patients electing to use private insurance cover in public hospitals.

The question was well answered, the question was also a good discriminator, with a wide range of marks.

4. Exam ResultsERM

The ERM Exam required candidates to assist a Ministry of Agriculture with its inspection program to monitor organisations' compliance with paying the correct formula-based R&D levy. Candidates had to assess the Ministry's current risk-based metric for determining who to inspect, and recommend a better method of targeting those at high risk of non-compliance.

All candidates understood what was required, and made a reasonable attempt to analyse the data supplied. The better reports introduced practical recommendations and explained clearly why they were needed and why they would improve experience within the inspection budget.

4.2. GRIS

The Exam for Global Retirement Income Systems required candidates to advise a superannuation fund on tenders for the design and investment of member accumulation funds, particularly re "lifecycle" asset allocations changing with attained age.

With only 4 candidates it is difficult to make broad judgements on the quality of answers, but there were no particularly strong answers.

4.3. General Insurance

The GI exam required candidates to review a set of motor insurance risk acceptance criteria and provide a recommendation on whether to retain them or not.

Candidates who failed typically failed to understand the marginal impact of individual policies on the portfolio financials.

4.4. Investment

This case required candidates to make investment recommendations in relation to a new arrangement being established to fund retirement benefits for a small group of current employees.

Last semester the number of entrants was historically high at 17, this semester was higher again at 19.

Candidates who failed typically understated the risks, including a long (62 year) investment horizon, or did a poor job of the analysis.

4.5. Life Insurance

The Life case required candidates to argue that a subsidiary Life company should be allowed to continue selling Income Protection insurance, despite the parent company having bad experience and wanting to withdraw. Past experience had to be analysed and interpreted, especially a change to occupation definitions. A seasonal effect could also be found. Criticism of Head Office had to be polite, despite Head Office belittling the backing of a PhD thesis, which happened to be your own.

In contrast to many recent semesters, this Life case was quite well done.

END