

*Report to Council from the Board of Examiners*

*2006 PART III  
SEMESTER ONE  
EXAMINATIONS  
REPORT  
(STUDENT VERSION)*



Institute of Actuaries of Australia

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# SUMMARY

## Examination Administration

The Semester One 2006 Part III examinations of the Institute of Actuaries of Australia (“Institute”) were held between 8 and 12 May 2006. Candidates attended the examinations in Australia (Sydney, Melbourne, Adelaide, Canberra, Perth and Brisbane) and overseas (New Zealand, Hong Kong, China, Canada, Japan, Singapore, Taiwan, Malaysia, United Kingdom and USA).

This is the second year in which twice yearly examinations have been held. The tables below show the number of candidates sitting each exam over recent years. The number of candidates sitting in the latest period is very similar to that in the previous period.

**Table A: Candidate Numbers Sitting by Part III Subject (old courses)**

	Subject	2000	2001	2002	2003	2004
1	Investment Management	102	92	80	110	136
2	Life Insurance	82	79	86	111	118
3	General Insurance	55	59	73	89	91
4	Superannuation & P.S.	25	23	26	26	25
5	Finance	45	47	68	74	62
	<b>Total</b>	<b>309</b>	<b>300</b>	<b>333</b>	<b>410</b>	<b>432</b>

**Table B: Candidate Numbers Sitting by Part III Course (new courses)**

	Subject	2004	2005 (1)	2005 (2)	2006 (1)
1	Investments	136 <sup>1</sup>	187	129	162
2A	Life Insurance	118	61	62	53
2B	Life Insurance	114	22	28	25
3A	General Insurance	91	68	79	69
3B	General Insurance	91	18	34	48
4A	Superannuation & Planned Savings	25	19	11	12
4B	Superannuation & Planned Savings	25	5	10	n/a <sup>5</sup>
5A	Investment Management & Finance	136 <sup>2</sup>	20	19	14
5B	Investment Management & Finance	118 <sup>3</sup>	10	16	14
10	Commercial Actuarial Practice	n/a	n/a	28	23 <sup>6</sup>
	<b>Total</b>	<b>432 / 854<sup>4</sup></b>	<b>410</b>	<b>416</b>	<b>420</b>

1. The 2004 Investment Paper 1 is broadly equivalent to the 2005 Investment Course.
2. The 2004 Investment Paper 2 is broadly equivalent to the 2005 Finance Course 5A.
3. The 2004 Finance Courses 5A and 5B are broadly equivalent to the 2005 Finance Course 5B. In 2004, 62 candidates sat Finance Paper 1 and 56 candidates sat Finance Paper 2.
4. In 2004 there were 432 individual candidates, with a total of 854 enrolments by each paper/course.
5. The 4B Course did not run in 2006 (1).
6. 23 Individual Candidates enrolled, though some candidates only attempted either the Exam or the Case Study.



## Results

### Pass Rates

The number of candidates presenting for the Semester One 2006 Part III Exams, the recommended passes and the resulting pass rates are shown in the table below:

**Table C: Recommended Number of Passes by Part III Course**

	2006(1) Sat	2006(1) Passed	2006(1) %	2005(2)	2005(1)	2004 <sup>1</sup>	2003	2002
1 Investments	162	45	28%	29%	24%	30%	40%	36%
2A Life Insurance	53	17	32%	31%	23%	22%	28%	38%
2B Life Insurance	25	8	32%	29%	50%	26%	28%	38%
3A General Insurance	69	29	42%	35%	28%	33%	37%	36%
3B General Insurance	48	24	50%	32%	50%	25%	37%	36%
4A Super & PS	12	6	50%	18%	42%	24%	23%	31%
4B Super & PS	n/a	n/a	n/a	60%	80%	28%	23%	31%
5A Invest. Man. & Fin.	14	7	50%	26%	35%	29%	40%	36%
5B Invest. Man. & Fin.	14	6	43%	31%	40%	52%	42%	35%
10 CAP – Case Study	22 <sup>2</sup>	16	73%	68%	-	-	-	-
10 CAP – Exam	18 <sup>2</sup>	14	78%	82%				
<b>Total</b>	<b>420<sup>3</sup></b>	<b>156<sup>4</sup></b>	<b>37%</b>	<b>34%</b>	<b>30%</b>	<b>29%</b>	<b>35%</b>	<b>35%</b>

1. The 2004 Results have been adjusted to include the passes awarded separately for Paper 1 and Paper 2.
2. For CAP, in 2005 (2) the overall pass rate was 18/28 or 64%. In 2006 (1) the overall pass rate was 14/23 or 61%. 23 Unique candidates attempted CAP this semester.
3. Whilst there were 420 Candidates enrolled, the total numbers of candidates who sat each part does not sum to 420, as some candidates only sat part of the CAP Module.
4. The number of passes for CAP relate to the whole module and thus equals 14.

The Chief Examiners aim to produce a consistent standard of passing candidates, rather than a consistent pass rate from year to year. This semester, the overall pass rate of 37% is slightly higher than that achieved in recent years of 29% - 35%. The latest pass rate was boosted by the strong result in Course 10 CAP, of 73% for the Case Study and 78% for the Exam. However, excluding the CAP results the overall pass rate would have still been 36%. The strong results in Courses 3B, 4A and 5A also contributed to this small increase. The increase reflects the better standard of preparation of candidates, rather than a decrease in pass criteria.

The pass rates this semester were fairly consistent across subjects, as in the previous semester. There was a noted improved performance in General Insurance 3B. The fluctuations in Superannuation 4A and in Investment Management and Finance 5A and 5B are a result of the small candidate numbers in these subjects. The 4B Course did not run in Semester One 2006, due to very low numbers enrolling. The Investments pass rate was similar to last semester.

### Fellows

As the Part III Examinations are in transition from the pre-2005 system to the new post-2005 system, there are two ways in which candidates can qualify as Fellows.

- (i) Under the pre-2005 system, candidates have to pass two courses (Modules 2 and 3 for two separate subjects).



- (ii) Under the post-2005 system, candidates must pass Module 1 (Investments), one full specialist subject (Modules 2 and 3) and Module 4 (Commercial Actuarial Practice).

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

Category	2006 (1)	2005 (2)	2005 (1)	2004
Pre-2005 system	14	19	7	51
Post-2005 system	10	14	-	-
<b>Total New Fellows</b>	<b>24</b>	<b>33</b>	<b>7</b>	<b>51</b>



## CHAIRMAN'S REPORT

# **1. Examination Administration**

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## **1.1 The Board**

The Board of Examiners oversees the Part III examination process of the Institute of Actuaries of Australia (Institute). The Board of Examiners consists of the Chair and her assistants and the Chief Examiners for each subject, supported by Institute staff.

For Semester One 2006 the Chair and her Assistants were:

Chair	Ms Bozena Hinton
Assistant Chair	Mr Trevor McMahon
Assistant Chair	Ms Kim Cossart
Assistant Chair	Mr Wesley Caine
Assistant Chair	Mr Andrew Smith
Assistant Chair	Ms Caroline Bayliss

The Chief Examiners for Semester One 2006 were:

Course 1: Investments	Mr Stephen Woods
Course 2A: Life Insurance	Mr Mark Barda/Ms Sim Ng
Course 2B: Life Insurance	Mr Mark Barda/Ms Sim Ng
Course 3A: General Insurance	Mr Craig Price
Course 3B: General Insurance	Mr Craig Price
Course 4A: Superannuation & Planned Savings	Mr Phillip Everett
Course 5A: Investment Management & Finance	Mr Paul Carrett
Course 5B: Investment Management & Finance	Mr Brad Milson
Course 10: Commercial Actuarial Practice	Mr Ken McLeod

I would like to take this opportunity to thank all of the members of the Board of Examiners and their assistants for their efforts in preparing and marking the examination papers. The management of the examination process is an extremely important function of the Institute and it is currently being run by a small group of committed volunteers. I would also like to thank my assistants, Trevor, Kim, Caroline, Andrew and Wesley for their support and untiring efforts in ensuring the overview process of the Chair worked smoothly and that the quality of the examinations and results was maintained.

## **1.2 Meetings of the Board**

The Board met on four occasions as part of the Semester One 2006 exam process.

- The first meeting was held on 31 January. It was attended by representatives from each Course (Chief Examiners/Assistant Examiners) apart from Course 1 and from Course 5A where no examiners or assistants had yet been appointed. The purposes of this meeting were to:
  - identify Chief & Assistant Examiners and Course Leaders for each course for Semester One 2006
  - outline the responsibilities of Chief Examiners and the Semester One schedule
  - review progress on the drafting of the exams to date





- discuss the need to obtain scrutineers.
- The second meeting was held on 4 April. It was attended by a representative from all Courses. The purposes of this meeting were to:
  - discuss the status of Semester One 2006 examination papers and model solutions
  - discuss the assignment marking procedure
  - discuss the marking spreadsheets and how assignments will be incorporated into the marking process
  - review the recruitment of markers and arrangements for the marking day
  - review the recruitment of Course Leaders and Chief Examiners for Semester Two 2006.
- The third meeting was held on 13 June and was attended by Chief Examiners or their representative from all courses except 5B. The purposes of this meeting were to:
  - review the process adopted by each Chief Examiner in finalising results
  - review the recommended pass lists and treatment of borderline candidates
  - review the recruitment of Chief Examiners for Semester Two 2006.
- A fourth follow up telephone meeting was held on 16 June to discuss the finalisation of three of the outstanding Chief Examiners' reports and a fifth telephone meeting was held on 26 June to discuss the finalisation of the last two Chief Examiners' reports.

### **1.3 Administration and Exam Supervision**

The Board of Examiners was ably assisted by a number of Institute staff, in particular Mr Ken Guthrie, Mr Philip Latham, Ms Carmen Joseph and Ms Lauren O'Donnell. Ken, Philip, Carmen and Lauren were responsible for administering the entire process and ensuring key deadlines were met, compiling and formatting the examination papers, distributing material to candidates and to exam centres, processing results and collecting historical information for the production of this report. They did a great job for Semester One 2006 and the Board of Examiners team is indebted to them all.

The Semester One 2006 Part III examinations in Sydney and Melbourne were again run by an external consultancy – Language and Testing Consultancy (LTC). Other examinations were administered by Fellows or other approved supervisors. All examinations ran smoothly with the exception of the Melbourne Course 1 Investments exam, where all the students were evacuated for approximately 20 minutes during the exam. The students were together during the evacuation period and were able to talk freely. They were given additional time at the end of the exam. The disruption would have interrupted trains of thought in preparing responses, though may have also allowed some additional thinking minutes. The Chief Examiner has taken this event into account when assessing these students.



## **1.4 Course Leaders**

- In October 2004, Course Leaders were appointed by the Institute to undertake a variety of tasks relating to modules 1-3 of the new Part III education program. One of the roles of the Course Leaders was to draft examination questions in consultation with the Chief Examiners. This generally worked well in Semester One 2006.

Another role of the Course Leaders was to draft assignment questions in consultation with each subject Faculty. The Board of Examiners was not involved in this process. In most cases the drafting of the assignments worked well.

## **1.5 The Examination Process**

The Semester One examination process began officially in January 2006 with an initial meeting of the Board of Examiners. Course Leaders, however, had begun drafting examination questions from December 2005. Once Chief Examiners had been appointed in all subjects they met with Course Leaders (where applicable) to discuss the draft exam questions.

### **Question setting**

The basic framework followed by each subject to setting exam papers is the same. The Semester One 2006 Part III examinations were run on an open book basis. Each subject includes rigorous review processes. The general framework used to set examination papers is described as follows:

- The Course Leader (or equivalent) drafts the examination questions in consultation with the Chief Examiners.
- Draft exams and solutions are reviewed by scrutineers for coverage and fairness. The scrutineers are a mix of newly qualified actuaries and experienced actuaries.
- At least one scrutineer 'sits' the paper under exam conditions to assess the length of the paper.
- Exams are redrafted after feedback from the scrutineers.
- Draft exams, solutions and marking guides are then submitted to the BoE team for review. Two members of the BoE team review the draft exams and solutions.
- Exams, solutions and marking guides are finalised by the Chief Examiners and their Assistants.
- The Course Chief Examiners sign off the final examination papers and solutions.
- A member of the BoE team also signs off on the examination papers and solutions.

### **Exam marking**

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

- Two markers marked each question. For Investments, due to the large number of candidates, a team of four markers marked each question with each marker marking half the papers, in teams of two. Inconsistencies in marks for a candidate were discussed by the markers and resolved (in most cases), before the results were forwarded to the Chief Examiner.



- Marks were scaled to allow for the fact that some questions were more difficult than others.
- Each candidate was awarded a grade for each question of A, B, C, D or E, where A was regarded as a strong pass and B an ordinary pass.
- Candidates' overall performance was determined using several metrics including total raw mark, total scaled mark, weighted average grade, weighted average rank and number of pass grades per question. The key determinant however was total scaled mark.
- Candidates were ranked based on these metrics, particularly total scaled mark.
- Candidates' assignment grades and marks were added to the exam metrics, with a weighting of 20%.
- Candidates were divided into clear passes, clear failures and a middle group that required further consideration.
- The Chief Examiner reviewed the middle group individually. The pass/fail decision was made after assessing the candidate's whole exam paper, his/her performance in the judgement questions, how badly he/she performed in the questions he/she failed and whether they were 'key' areas of the course and his/her performance in the assignments.

## **1.6 The Assignment Process (Modules 1-3)**

### **Question Setting**

The basic framework followed by each course to setting assignment questions is the same and all subjects contain review processes. The general framework used to set assignments is described as follows:

- The Course Leader drafts the two assignments. These are each worth 10% of the total marks for the subject.
- Draft assignments and solutions are then reviewed by each Faculty for coverage and fairness.
- Each Faculty signs off the assignments.

Students were given access to the assignments via the specific link on the Institute web site.

The Board of Examiners did not review nor comment on the assignments.

### **Assignment Marking**

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

- Each question was marked only once, with the assignments being divided up among multiple markers. Different markers had different marking standards and pass criteria. Course Leaders sample marked 5% of all assignments (or at least one assignment from each marker). Inconsistencies in marks for a candidate were to have been discussed by the relevant marker and the Course Leaders and resolved, before the results were forwarded to the Chief Examiner.



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

In Semester One 2006 assignments were submitted both electronically and in hard copy. The electronic copy was to be received by the due date and the hard copy was to be received within two days of the due date. The hard copy was to be submitted for Australian based students only.

The Institute also ran two workshops (Melbourne and Sydney) for markers outlining the process and the importance and value of appropriate feedback.

### **1.7 Module 4 CAP - The Case Study Process**

The CAP course was developed and delivered for the Institute by the ANU. The ANU Team were David Service, Richard Cumpston, Tim Higgins, Richard Madden, Peter Martin and Colin Priest. The team also developed the assessment materials for the course and did the marking.

ANU's development and delivery of the course was overseen by a Faculty, consisting of Ken McLeod (Chair), Andrew Brown, Arie van den Berg, David Knox and Donna Walker. Ken McLeod also acted as Chief Examiner, assisted by the other members of the Faculty.

During the one-week residential course, students were required to select one case study question from one of the four defined traditional practice areas, i.e. life insurance, general insurance, superannuation or investments. The case assessment questions were reviewed by members of the Faculties for the different areas of practice, specifically:

Life Insurance:	Sue Howes
General Insurance:	Daniel Smith
Superannuation:	Steve Schubert & Mark Nelson
Investments:	Andrew Leung & Cary Helenius

The assessment questions were also reviewed by at least one member of the CAP Faculty. All candidates were again awarded exactly 8 out of 10 for participation in the residential course. This element thus did not impact on the ranking of candidates and currently has little benefit. We recommend that a more meaningful marking system is devised such that candidates' participation ranking can be differentiated.

### **1.8 Examination Centres**

Candidates sat the exams in 6 centres in Australia and 13 centres overseas. Individual exam locations were arranged in Beijing (1), Canada (1), Ireland (1), Japan (1), New Zealand (2), Shanghai (1), Taiwan (1), United Kingdom (14) and USA (3).



**Table 1: Candidates by Exam Centre - Semester One 2006**

	Number of Candidates
Australia	
Adelaide	1
Brisbane	4
Canberra	8
Melbourne	61
Sydney	258
Perth	2
Overseas	
Canada	1
China	2
Hong Kong	21
Japan	1
Malaysia	6
New Zealand	10
Singapore	17
Taiwan	2
United Kingdom	22
USA	4
Total	420

## 1.9 Exam Candidature

### Candidate Numbers

The number of candidates sitting the Part III exams in Semester One remained fairly static compared with the previous Semester.

**Table 2: Candidate Numbers Sitting by Part III Courses (old courses)**

	Subject	2000	2001	2002	2003	2004
1	Investment Management	102	92	80	110	136
2	Life Insurance	82	79	86	111	118
3	General Insurance	55	59	73	89	91
4	Superannuation & P.S.	25	23	26	26	25
5	Finance	45	47	68	74	62
	<b>Total</b>	<b>309</b>	<b>300</b>	<b>333</b>	<b>410</b>	<b>432</b>



**Table 3: Candidate Numbers Sitting by Part III Courses (new courses)**

	Subject	2004	2005 (1)	2005 (2)	2006 (1)
1	Investments	136 <sup>1</sup>	187	129	162
2A	Life Insurance	118	61	62	53
2B	Life Insurance	114	22	28	25
3A	General Insurance	91	68	79	69
3B	General Insurance	91	18	34	48
4A	Superannuation & Planned Savings	25	19	11	12
4B	Superannuation & Planned Savings	25	5	10	n/a <sup>5</sup>
5A	Investment Management & Finance	136 <sup>2</sup>	20	19	14
5B	Investment Management & Finance	118 <sup>3</sup>	10	16	14
10	Commercial Actuarial Practice	n/a	n/a	28	23 <sup>6</sup>
	<b>Total</b>	<b>432 / 854<sup>4</sup></b>	<b>410</b>	<b>416</b>	<b>420</b>

1. The 2004 Investment Paper 1 is broadly equivalent to the 2005 Investment Course.
2. The 2004 Investment Paper 2 is broadly equivalent to the 2005 Finance Course 5A.
3. The 2004 Finance Courses 5A and 5B are broadly equivalent to the 2005 Finance Course 5B. In 2004, 62 candidates sat Finance Paper 1 and 56 Candidates sat Finance Paper 2.
4. In 2004 there were 432 unique candidates, with a total of 854 enrolments by each paper / course.
5. The 4B Course did not run in 2006 (1).
6. 23 Individual Candidates enrolled in the CAP course, though some candidates only attempted either the Exam or the Case Study.

Table 2 reflects numbers of candidates presenting at the exam prior to 2005 (old courses).

Table 3 shows the number of candidates presenting at the exam in the new program from 2005, with the 2004 figures repeated for comparison purposes. In 2004 candidates sat two papers per subject. For transition purposes, for the 2004 Life Insurance, General Insurance and Superannuation & Planned Savings courses, Paper 1 now equates to the 'A' component of the new 2005 course and Paper 2 equates to the 'B' component of the new 2005 course. For the 2004 Investment Management course, Paper 1 equates to the 2005 Course 1 (Investments) and Paper 2 equates to the 2005 Course 5A (Investment Management & Finance). For the 2004 Finance course, Papers 1 and 2 equate to the 2005 Course 5B (Investment Management & Finance) with students only requiring to receive a pass in either one of the 2004 Finance papers to be given credit for Course 5B.

### Withdrawal Rates

In Semester One 2006, 467 candidates initially enrolled in courses, however 47 candidates subsequently withdrew from courses or did not present for the examination.

The number of candidates that enrolled for a course but withdrew prior to the examination was highest for Investments (15 officially withdrew prior to the examinations and 10 did not present for the exam, out of 187 originally enrolled). For other courses, the absolute number of withdrawals was similar to the previous semester. The overall percentages that withdrew were broadly consistent with past experience. The withdrawal rates for all subjects were:



**Table 4: Withdrawal Rates by Part III Course – Semester One 2006**

	Subject	Initially Enrolled	Withdrew prior to Exam	Absent from exam	Total Withdrawing	%
1	Investments	187	15	10	25	13.4%
2A	Life Insurance	60	2	5	7	11.7%
2B	Life Insurance	26	1	0	1	3.8%
3A	General Insurance	74	4	1	5	6.8%
3B	General Insurance	48	0	0	0	0%
4A	Superannuation & P.S.	12	0	0	0	0%
4B	Superannuation & P.S.	n/a	n/a	n/a	n/a	n/a
5A	Invest Management & Finance	18	2	2	4	22.2%
5B	Invest Management & Finance	17	3	0	3	17.6%
10	Commercial Actuarial Practice	25	2	0	2	8.0%
	<b>Total</b>	<b>467</b>	<b>29</b>	<b>18</b>	<b>47</b>	<b>10.1%</b>

**Candidate Mix**

The mix of courses sat by candidates is broadly similar to that in previous years. The numbers for Investments has increased compared with last Semester, though not to the same high level as in Semester 1 2005. It is expected that the percentage enrolling in Investments will be higher in Semester One than in Semester Two as it is compulsory under the new Part III structure and new students are likely to sit it first. Similarly, more students are likely to sit CAP in Semester Two. It can be seen that the CAP numbers have decreased slightly compared with last semester.

The enrolments for Life Insurance have been fairly constant at approximately 20% for the last three semesters, down from a previous trend of 27%. This pattern is reversed for the General Insurance Course, where the last two semesters show enrolments at 27%, while previously they were trending around the 20% mark. The enrolments in Superannuation show a continuing gradual decline, reflecting the perceived reduction in employment opportunities in this area.

**Table 5: Candidate Mix by Part III Course – Enrolments Semester One 2006**

	Subject	2001	2002	2003	2004	2005 (1)	2005 (2)	2006 (1)
1	Investments <sup>1</sup>	31%	24%	27%	32%	46%	31%	39%
2	Life Insurance	26%	26%	27%	27%	20%	21%	19%
3	General Insurance	20%	22%	22%	21%	21%	27%	28%
4	Superannuation & P.S.	8%	8%	6%	6%	6%	5%	3%
5	Investment Mgt & Finance <sup>2</sup>	16%	20%	18%	14%	7%	10%	7%
10	Comm. Actuarial Practice	n/a	n/a	n/a	n/a	n/a	6%	5%
	<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

1. Course 1 Investments prior to 2005 was equivalent to Investment Management.

2. Investment Management and Finance prior to 2005 was equivalent to Finance.



## **2. Examination Papers and Assignments**

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### **2.1 Examination Structure**

The structure of the examinations in Semester One 2006 was a single three-hour exam paper for Modules 1-3 and a two-hour exam paper for Module 4 (Course 10 – Commercial Actuarial Practice). Exams for Modules 1-3 were worth 80% of the final assessment, with the two assignments each worth 10%.

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

For Module 4, Commercial Actuarial Practice, assessment was determined as follows:

- *First piece:* participation in a one-week residential course (5%) and completion of a case study in a traditional practice area, over 8 hours, on the course's 6<sup>th</sup> day (45%).
- *Second piece:* two-hour exam paper on non-traditional areas of actuarial practice, answering 2 out of 5 questions (50%).
- In order for a candidate to obtain an overall pass in Module 4, both pieces of the assessment had to be passed. Students receiving an overall fail could be awarded a pass for either assessment piece and would only need to complete the other piece in a future semester, within a two-year period.

### **2.2 Assignment / Case Study Structure**

The structure of the assignments in Semester One 2006 was two assignments for each Module (1-3 only), with each assignment worth 10% of the final assessment.

Module 4 (Course 10 – Commercial Actuarial Practice) was assessed by 50% exam and 50% case study. Within the 50% case study assessment, which needed to be passed independently of the exam, the case study itself was worth 90% of the final assessment. Candidates completed the case study on the final day of the residential course, under exam conditions. In addition, general participation in the residential course was assessed at 10% of the case study marks.

### **2.3 Examination Standards**

In each course there was a mix of questions covering three categories:





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

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

The standards to be achieved by candidates sitting each course, the principles on which papers are to be set and the marking procedures are set out in the Guidelines to Examiners. To ensure the examination papers had proper balance, guidance as to the proportion of marks given to each category needed to be established. The standards of difficulty as determined by the Chief Examiners at the time they set the papers are set out below, with a comparison to the prior semester.

**Table 6: Standards of Difficulty by Part III Course**

	Subject	Knowledge & Understanding		Simple Judgement		Complex Judgement	
		2006 (1)	2005 (2)	2006 (1)	2005 (2)	2006 (1)	2005 (2)
1	Investments	23%	22.5%	40%	40.5%	37%	37%
2A	Life Insurance	24%	20%	36%	40%	40%	40%
2B	Life Insurance	22%	22%	37%	37%	41%	41%
3A	General Insurance	24%	21%	43%	42%	33%	37%
3B	General Insurance	19%	28%	49%	39%	32%	33%
4A	Superannuation and PS	30%	22%	38%	37%	32%	41%
4B	Superannuation and PS	n/a	29%	n/a	39%	n/a	32%
5A	Invest. Management & Finance	18%	31%	44%	33%	38%	36%
5B	Invest. Management & Finance	27%	26%	48%	32%	25%	42%
	<b>Targets</b>	<b>15% - 25%</b>		<b>35% - 45%</b>		<b>35% - 45%</b>	

The examination papers were broadly similar in standard of difficulty to prior periods, with perhaps a slightly greater weighting to simple judgment questions.

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

## 2.4 Assignment Standards

The setting of standards for the assignments used the same approach as for the examinations, that is, questions were set covering the following three categories:

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



Whilst the target weighting of each category for the exams was essentially 20% KU / 40% SJ / 40% CJ, the target weighting for the assignments was 40% KU / 40% SJ / 20% CJ. From 2005, as the exam is only worth 80% of the final assessment, this has effectively reduced the target weighting of the overall assessment to 24% KU / 40% SJ / 36% CJ. This means that a higher component of the assessment is KU (“bookwork”) and a lower proportion of the assessment is CJ (“complex judgement”), from 2005, compared with 2004 and earlier.

Although the target weightings of the assignments for each subject were 40%/40%/20% the Board of Examiners was not informed of the actual weightings of any of the assignments. Copies of the assignments were not supplied to the Board of Examiners, but should be available from the Institute if required.

## **2.5 Comments on Candidates’ Examination Performance**

General observations on candidates’ performance in each subject are as follows. These observations include my own comments.

### **Course 1 - Investments**

In summary, the exam acted as a good discriminator with raw marks ranging from 24.5 to 124.0 out of 200. However, the examination overall was considered to be undemanding. Nevertheless several markers reported that in spite of this, the quality of candidate responses was weak.

The pass rate this semester of 28% is similar to last semester’s pass rate of 29% and slightly better than the Semester One 2005 pass rate of 24%. The relatively low pass rate compared to other Part III courses may be a reflection of:

1. a lower level of subject specialisation since this course is compulsory; or
2. the inclusion of candidates embarking on the Part III examinations who will later struggle with and/or withdraw from the actuarial examination process.

### **Course 2A - Life Insurance**

Overall the exam paper acted as a good discriminator, with raw marks ranging from 60 to 125 out of 200, with an outlier mark at 15. This range is similar to the November 2005 exam where the raw marks ranged from 50 to 113. It demonstrates an improvement in the overall quality of the responses.

There is continued evidence of candidates copying points from the textbook and failing to put the comments in the context of the question. Candidates still need to realise the exam is predominantly about applying judgment and not regurgitating points from the textbook.

In addition, candidates also need to be reminded that good handwriting and answers that are structured and set out clearly are part of good exam techniques. It needs to be understood examiners cannot second-guess from the candidates’ responses. The points need to be communicated clearly by the candidate.

### **Course 2B - Life Insurance**

Overall the exam paper acted as a good discriminator, with raw marks ranging from 48.5 to 111.0 out of 200. This range was narrower than in the previous semester (50 to 131 out



of 200). Whilst the exam this year was not assessed as any more difficult than last year, as evidenced by the breakdown of question difficulty outlined above, overall student performance has improved slightly over previous years (with the exception of May 2005).

As in past years, the markers made comments on poor exam technique. In particular, not relating answers to the particular scenarios described in the questions was a common issue.

### **Course 3A - General Insurance**

The pass rate this semester of 42% is higher than that of the previous years which have mainly been in the mid to low 30's. In setting the paper, the examiner team aimed for a consistent level of difficulty with the previous paper. The average raw exam mark this semester was however significantly higher than last semester's exam being 100 versus 86. The raw marks in each of the six exam questions ranged from 43% to 55% of the total marks available, comparing with a range of 26% to 57% for the previous paper.

The exam was reasonably spread over the 4 units. However there was a significant focus (as appropriate) on Unit 3, Actuarial Techniques and Analysis of Claims Experience.

This examination required some calculations to demonstrate key knowledge.

### **Course 3B - General Insurance**

The pass rate this semester of 56% is higher than that of the previous semester of 32%. It is in keeping with pass rates achieved in Semester One 2005 of 50%, though the candidate numbers that semester were much lower (19 compared with 48 candidates this semester). It may be a case of when candidate numbers are higher there are more repeating students, who have a better success rate. (This hypothesis has not been tested as candidates are not identified as either new or repeating students.)

In setting the paper, the examiners aimed for a consistent level of difficulty compared with the previous paper. The average raw exam mark this semester was, however, significantly higher than last semester's exam being 102 versus 86. The raw marks in each of the six exam questions ranged from 44% to 60% of the total marks available, comparing with a range of 32% to 51% for the previous semester's paper. This indicates that the candidates found this paper easier overall, as reflected in the higher pass rate.

There was again a significant focus on Unit 5, Premium Rating, which was covered in substantial parts of questions 1, 2, 4 and 6. In addition, this exam had a significant component relating to reinsurance issues. There was also a reasonable allocation of questions to Financial Control, Solvency, Capital, Appraisal & FCR issues.

This examination required some calculations to demonstrate key knowledge.

### **Course 4A - Superannuation and Planned Savings**

Overall, 50% of students passed the course and 25% of candidates received a grading of C for the exam. The candidates' performance this semester was stronger than for November 2005 and similar to that for May 2005. The stronger performance in May exams appears to reflect the strong candidates passing this subject then sitting 4B in the second semester.

Most candidates passed question 1, which related to tax and question 3, which related to funding methods, valuation assumptions and ability to use given valuation results to calculate contribution rates.



Question 6 was poorly answered. This question covered students' understanding of options available for superannuation arrangements as well as the factors to consider in choosing the solution. The second part of the question aimed to test the students' understanding of defined benefit liabilities and costs and the application of judgment as to how these could be considered in a sale agreement. Question 5 aimed at testing the students' knowledge of and implications of AASB119 valuations and reporting. This question was also poorly answered which was a disappointing result as this is an area where many actuaries and students are currently working in superannuation and a better overall result was expected.

Question 4 covering salary packaging was answered satisfactorily. Question 2 covering methods of determining crediting rates and their impact on the fund had patchy responses.

#### **Course 4B - Superannuation and Planned Savings**

This course did not run in Semester One 2006, due to insufficient enrolments.

#### **Course 5A - Investment Management and Finance**

As is par for the course, this year's exam proved to be difficult for the majority of candidates. The pass rate of 50%, however, is considerably higher than previous examinations. While some concerns could be expressed regarding the overall performance, an analysis of the results indicates that there was a core group of students who performed capably across the range of targeted areas of study.

Each individual question was tolerably well handled by the students, with a majority of students passing in the specific case of each question. That only half the students passed overall then, is a function of the fact that students were, quite reasonably, required to perform at a consistent level across the whole exam and not just in parts.

The results should also be considered in light of the fact that the exam was challenging in terms of its breadth and the level of detailed knowledge required. Students were, as planned, presented with some difficult challenges, especially in light of the time constraints involved.

#### **Course 5B - Investment Management and Finance**

The pass rate this semester of 43% has improved from last semester's result of 31% and is more in line with earlier exam periods of 40% in Semester 1 2005, 52% in 2004 and 42% in 2003.

In the Chief Examiner's opinion, the exam this semester was relatively easy, with a strict, relatively difficult, marking level enforced. This resulted in a split between those students with a good understanding and those without adequate preparation. The narrow theoretical focus of students (particularly those that were under prepared) was also evident, but not to the same extent as in previous exams. Overall the exam paper acted as a good discriminator, with raw marks ranging from 38.6 to 80.6 out of 100.

The standard of candidates remains relatively poor overall where practical understanding is required or where the theory studied needs to be related to the real world. The study process needs to relate the in-depth theory studied as part of this course back to practical applications, in order to generate candidates with useful skills.



Of those non-passing candidates, most demonstrated either significant gaps in their knowledge with a number of weak responses, or an inability to respond to any of the more difficult questions requiring complex judgement.

### **Course 10 – Commercial Actuarial Practice**

The Commercial Actuarial Practice (CAP) Course was conducted for the second time in Semester One 2006. The overall assessment was focused on the practical application of judgement and on the communication skills of the students, rather than on bookwork.

There were two separate pieces of assessment. The first assessment was based on participation in a one-week residential course and on completion of a case study in one of the traditional areas of actuarial practice on the last day of the residential course. The second assessment was a 2-hour examination on non-traditional areas of actuarial practice. Students were required to pass each of these assessments in order to pass the Module. An overall pass rate of 61% (14 candidates) was achieved including a pass rate for the case study of 73% and a pass rate for the exam of 78%. These pass rates match those hoped for at the time the course was developed.

Overall, most of the students produced a *case study report* that was well set out and that communicated their recommendations clearly. The residential course included additional sessions on communications this semester and this may have contributed to the generally good standard of communication in the report. Across the different subjects, those that passed were the ones that showed an understanding of the main technical and business issues.

Overall, the pass rates in the *exam* were quite good, although all passing students scored in the 50s and low 60s. The average marks in the exam were lower than in the case study. This showed a sound understanding of the basic issues, but students did not typically reveal a strong understanding of the context presented by the non-traditional exam questions.

The quality of the answers in the exam was lower than for the case study. This was to be expected given that the case study focused on one area where students were expected to have specialist knowledge and where they were given 8 hours to prepare a properly-structured, typed report. By contrast, the students were given only 2 hours to answer two questions in the exam and were not expected to demonstrate specialist knowledge. The standards required by the markers reflected these differences.



## **3. Results**

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### **3.1 Pass Standards**

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

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

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

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

### **3.2 Candidates' Results**

Candidates' results in each subject and at each level are set out in the attachments to each Chief Examiner's report. In summary the results are:



**Table 7: Recommended Candidate Passes by Part III Course**

	Subject	2002	2003	2004	2005(1)	2005(2)	2006(1)
1	Investments <sup>1</sup>	29	44	39	45	38	45
2A	Life Insurance	33	31	21	14	19	17
2B	Life Insurance	33	31	21	11	8	8
3A	General Insurance	26	33	23	19	28	28
3B	General Insurance	26	33	23	9	11	24
4A	Superannuation & P.S.	8	6	6	8	2	6
4B	Superannuation & P.S.	8	6	6	4	6	n/a
5A	Invest. Mngmt & Finance <sup>2</sup>	29	44	39	7	5	7
5B	Invest. Mngmt & Finance <sup>3</sup>	21	31	22	4	5	6
10	Comm. Actuarial Practice	-	-	-	-	18	14 <sup>5</sup>
	<b>Total (pre 2005)<sup>4</sup></b>	<b>117</b>	<b>145</b>	<b>111</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>
	<b>Total (post 2005)</b>	<b>213</b>	<b>259</b>	<b>200</b>	<b>121</b>	<b>140</b>	<b>156</b>

1 The 2004 Investment Paper 1 is broadly equivalent to the 2005 Investment Course.

2 The 2004 Investment Paper 2 is broadly equivalent to the 2005 Finance Course 5A.

3 The 2004 Finance Courses 5A and 5B are broadly equivalent to the 2005 Finance Course 5B.

4 Pre 2005, only complete (A+B) passes were awarded, so the Total only includes one pass per complete Course.

5 CAP had 14 overall passes. out of 23 candidates presenting. It had 16 passes out of 22 candidates presenting for the case study and 14 passes out of 18 presenting for the exam. (Note the 14 passing the exam were not the same 14 as those passing the entire module – four failed the exam and four others did not sit as they had passes carried forward from last semester.)

**Table 8: Recommended Pass Rates by Part III Course**

	Subject	2002	2003	2004 <sup>4</sup>	2005(1)	2005(2)	2006(1)
1	Investments <sup>1</sup>	36%	40%	30%	24%	29%	28%
2A	Life Insurance	38%	28%	22%	23%	31%	32%
2B	Life Insurance	38%	28%	26%	50%	29%	32%
3A	General Insurance	36%	37%	33%	28%	35%	42%
3B	General Insurance	36%	37%	25%	50%	32%	50%
4A	Superannuation & P. S.	31%	23%	24%	42%	18%	50%
4B	Superannuation & P. S.	31%	23%	28%	80%	60%	n/a
5A	Invest. Mngmt & Finance <sup>2</sup>	36%	40%	29%	35%	26%	50%
5B	Invest. Mngmt & Finance <sup>3</sup>	31%	42%	52%	40%	31%	43%
10	CAP – Case Study	-	-	-	-	68%	73%
10	CAP – Exam					82%	78%
	<b>Total</b>	<b>35%</b>	<b>35%</b>	<b>29%</b>	<b>30%</b>	<b>34%</b>	<b>37%</b>

1 The 2004 Investment Paper 1 is broadly equivalent to the 2005 Investment Course.

2 The 2004 Investment Paper 2 is broadly equivalent to the 2005 Finance Course 5A.

3 The 2004 Finance Courses 5A and 5B are broadly equivalent to the 2005 Finance Course 5B.

4 The 2004 Results have been adjusted to include the passes awarded separately for Paper 1 and Paper 2.

The Chief Examiners aim to produce a consistent standard of passing candidates, rather than a consistent pass rate from year to year. This semester, the overall pass rate of 37% is slightly higher than that achieved in recent years of 29% - 35%. The latest pass rate was boosted by the strong result in Course 10 CAP, of 73% for the Case Study and 78% for the Exam. However, excluding the CAP results the overall pass rate would have still been 36%. The strong results in Courses 3B, 4A and 5A also contributed to this small increase.





The increase reflects the better standard of preparation of candidates, rather than a decrease in pass criteria.

The pass rates this semester were fairly consistent across subjects, as in the previous semester. There was a noted improved performance in General Insurance 3B. The fluctuations in Superannuation 4A and in Investment Management and Finance 5A and 5B are a result of the small candidate numbers in these subjects. The 4B Course did not run in Semester One 2006, due to very low numbers enrolling. The Investments pass rate was similar to last semester.

The pass rate for Course 10, Commercial Actuarial Practice (CAP), of 61% overall and 73% for the Case Study and 78% for the exam was significantly higher than the average pass rate for Modules 1-3 of 36%. As discussed with the CAP Chief Examiner in the previous semester, this was due to the following factors:

- CAP is a fundamentally different subject to those in Modules 1-3. It is undertaken as a one-week residential course, rather than as distance education, and has two assessment pieces, that is, the case study and the exam.
- CAP is undertaken by more experienced candidates that are generally closer to final qualification. These candidates would be expected to achieve a higher pass rate than the average rate across all candidates.
- The actual pass rate achieved of 61% was close to that expected at the outset of the course.
- Each assessment piece was double marked by ANU staff and then reviewed by the CAP Chief Examiner. To ensure consistency across the different subjects, one of the ANU markers marked all case studies and all exams.
- CAP will be compulsory to all Part III students once transition ends. Any fundamental differences between CAP and Modules 1-3 will impact equally on all students.

The Board agreed that the standard applied to marking the exams for all subjects was ultimately the same as in previous years.

Further detail on the deliberations of each Chief Examiner is contained in their individual reports. I am satisfied that the processes adopted in the marking of papers and grading of exam papers have been fair and robust. Every effort has been made to ensure consistency between years and between subjects.





### 3.3 Pass Rates by Centre

The pass rates by exam centre were as follows:

**Table 9: Comparison of Pass Rates by Centre**

	2002	2003	2004	2005(1)	2005(2)	2006(1)
Sydney	37%	40%	28%	33%	43%	36%
Melbourne	32%	32%	38%	33%	30%	38%
Other*	32%	30%	15%	21%	19%	39%
<b>Total</b>	<b>35%</b>	<b>35%</b>	<b>26%</b>	<b>30%</b>	<b>34%</b>	<b>37%</b>

\* Other Australian and overseas exam centres

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

- The overall pass rate for non-Sydney/Melbourne examination centres is slightly higher than the overall pass rate for the Sydney/Melbourne examination centres (39% compared with 37%).
- The pass rate in Sydney, the largest centre with 61% of all candidates, was 36% this semester, compared with previous semesters.
- The improved performance of non Sydney/Melbourne centres has contributed to the overall improvement in exam performance.
- In Course 2B, 60% of overseas candidates passed compared with 13% of Australian candidates. This is against the trend of previous years, but is not necessarily statistically significant given the small size of the candidature.
- A total of 49 candidates sat for examinations in Hong Kong, Singapore, Japan, China, Taiwan and Malaysia for 14 passes (29% pass rate). This has improved compared with recent semesters.
- There were 4 passes in New Zealand from 10 attempts (40%).
- There were 10 passes in the United Kingdom from 22 attempts (45%).

### 3.4 Pass Marks and Scaling

The scaled pass marks from 2000 to 2004, out of 400 marks, have been as follows, together with the scaled pass marks for 2005 Semesters one and two, out of 200 marks:

**Table 10: Scaled Pass Marks by Part III Course**

	Subject	2002	2003	2004	2005(1) <sup>4</sup>	2005(2) <sup>4</sup>	2006(1) <sup>4</sup>
1	Investments <sup>1</sup>	215	216	220	103	114	103
2A	Life Insurance	225	231	224	121	115	114
2B	Life Insurance	225	231	224	123.5	110	119
3A	General Insurance	229	230	225	117	109	116
3B	General Insurance	229	230	225	116	112	115
4A	Superannuation & P.S.	250	250	230	111	115	122
4B	Superannuation & P.S.	250	250	230	112	115	n/a
5A	Invest. Mngmt & Finance <sup>2</sup>	215	216	220	120	107	120
5B	Invest. Mngmt & Finance <sup>3</sup>	239	251	236	110	108	120
10	Comm. Actuarial Practice	-	-	-	-	50 - 50 <sup>5</sup>	50 - 50 <sup>5</sup>



- 1 The 2004 Investment Paper 1 is broadly equivalent to the 2005 Investment Course.
- 2 The 2004 Investment Paper 2 is broadly equivalent to the 2005 Finance Course 5A.
- 3 The 2004 Finance Courses 5A and 5B are broadly equivalent to the 2005 Finance Course 5B.
- 4 The post 2004 exams are only one paper and are out of 200. Prior years consist of two papers out of 400.
- 5 For CAP, the case study and the exam each had a pass mark of 50%.

The relationship between scaled and raw marks for 2006 Semester One was:

**Table 11: Raw and Scaled Pass Marks by Part III Subject**

	Subject	Raw	Scaled
1	Investments	100	103
2A	Life Insurance	101	114
2B	Life Insurance	103	119
3A	General Insurance	110	116
3B	General Insurance	112.5	115
4A	Superannuation & Planned Savings	110	122
4B	Superannuation & Planned Savings	n/a	n/a
5A	Investment Management and Finance	110	120
5B	Investment Management and Finance	130	120

The same pass criteria were applied as in 2004, with adjustments as necessary to allow for the reduced number of questions from a single paper. Following the recommendation from the 2003 BoE Report, a study was made of recent pass criteria across the different subjects and years.

The BoE team subsequently agreed to use consistent pass criteria for all subjects. These have been updated to reflect assessments based on a single paper of approximately six questions. The criteria are:

- the scaled mark
- a grade point average of around 2.5
- number of questions passed being “50% of questions + 1, rounded down” e.g. pass 4 from 6 questions; pass 4 from 7 questions or pass 3 from 5 questions.
- no more than 1 or 2 D’s or E’s.
- borderline candidates are to be assessed carefully, with the examiners re-marking their papers, as in previous years.
- assignments were included in the assessment process, with passes in the assignments being added to the numbers of questions passes, in the assessment process. The assignments were weighted at 20% of the overall assessment.

This initiative in setting consistent pass criteria was quite successful and has meant the range of scaled marks reduced from 216 – 251 out of 400 in 2003 (i.e. a range of 35) to 220 – 236 out of 400 in 2004 (a range of 16).

The range of scaled marks in Semester One 2006 was low, being 103 - 122 out of 200, a range of 19 marks, with most courses concentrated in the 114-122 mark band. This range was slightly higher than for the previous semester but similar to that of Semester One 2005. This gives the Board some comfort that subjects have been treated consistently. For Course 5B there is the unusual situation whereby the scaled mark is lower than the raw mark. This is a consequence of the exam being relatively ‘easy’ this semester.



It should be noted that, as discussed above, the scaled mark was not the sole factor used to determine whether a candidate passed or did not pass.

### **3.5 Fellows**

As the Part III Examinations are in transition from the pre-2005 system to the new post-2005 system, there are two ways in which candidates can qualify as Fellows:

- (i) Under the pre-2005 system, candidates have to pass two courses (Modules 2 and 3 for two separate subjects).
- (ii) Under the post-2005 system, candidates have to pass Module 1 (Investments), one complete specialist subject (Module 2 and Module 3) and Module 4 (Commercial Actuarial Practice).

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

Category	2006 (1)	2005 (2)	2005 (1)	2004
Pre-2005 system	14	19	7	51
Post-2005 system	10	14	-	-
<b>Total New Fellows</b>	<b>24</b>	<b>33</b>	<b>7</b>	<b>51</b>



## **4. Recommendations for Semester Two 2006**

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### **4.1 Board of Examiners**

The recommended constitution for the Board of Examiners for Semester Two 2006 is as follows:

#### **Chairman and Assistants**

Chairman	Mr Andrew Smith
Assistant Chairman	Ms Bozenna Hinton
Assistant Chairman	Ms Caroline Bayliss
Assistant Chairman	Mr Wesley Caine
Assistant Chairman	Ms Raewin Davies

#### **Chief Examiners**

Course 1: Investments	Mr Stephen Woods
Course 2A: Life Insurance	Ms Sim Ng
Course 2B: Life Insurance	Mr Brett Cohen
Course 3A: General Insurance	Mr Don Johnstone
Course 3B: General Insurance	Ms Laurel Kong
Course 4A: Superannuation & Planned Savings	Ms Jenny Dean
Course 4B: Superannuation & Planned Savings	Ms Jenny Dean
Course 5A: Investment Management & Finance	Mr Philip Pepe
Course 5B: Investment Management & Finance	Mr Brad Milson

### **4.2 Examination Dates**

The dates for the examinations in Semester Two 2006 are as follows:

#### **Semester 2 2006**

Module 1	Investments	Mon 30 October am
Module 4 (10)	Commercial Actuarial Practice	Mon 30 October pm
Modules 2/3 (2A/2B)	Life Insurance	Tues 31 October am & pm
Modules 2/3 (3A/3B)	General Insurance	Wed 1 November am & pm
Modules 2/3 (4A/4B)	Superannuation & Planned Savings	Thur 2 November am & pm
Modules 2/3 (5A/5B)	Investment Management & Finance	Fri 3 November am & pm

### **4.3 Exam Solutions**

The Board of Examiners has agreed to release the Semester One 2006 examination papers along with the examination specimen solutions and marking guides. The 2006 Semester One examination papers have already been published on the Institute website and it is recommended that the exam solutions and marking guides be released on 17 July 2006 or as close to this time as possible.

Bozenna Hinton  
Chair, Board of Examiners  
26 June 2006



# CHIEF EXAMINERS' REPORTS

## ***Course 1: Investments***

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### ***Results summary***

Students enrolled	187
Withdrawals prior to examination	15
Candidates absent from examination	10
Candidates sitting examination	162
Candidates recommended for pass	45 (28% of sitting candidates)

### ***Examiners***

Chief Examiner: Stephen Woods  
Assistant Examiner: Sam Kouroupidis

Course Leader: Andrew Leung

### ***Comparison of pass rates***

The following table shows the pass rate for course 1 in previous sessions.

	Percentage of passing candidates
2006 (1) – recommended	28%
2005 (2)	29%
2005 (1)	24%
2004	30%
2003	40%
2002	36%

The recommended pass rate is consistent with previous sessions.



### ***Analysis of candidates***

Location	Candidates sitting	Candidates passed	Pass rate
Brisbane	1	0	0%
Canberra	2	1	50%
China	1	0	0%
Hong Kong	6	1	17%
Japan	1	1	100%
Malaysia	4	1	25%
Melbourne	29	11	38%
Perth	2	1	50%
Singapore	3	1	33%
Sydney	99	24	24%
Taiwan	1	0	0%
UK	11	3	27%
USA	2	1	50%
<b>Total</b>	<b>162</b>	<b>45</b>	<b>28%</b>

Australian locations overall and overseas locations overall both produced a pass rate equal to the total pass rate of 28%. However there was considerable variation between individual locations due to the small number of candidates at some locations.

After the markers had returned their spreadsheets, the chief examiner combined the results for analysis and recommendation.

### ***Degree of difficulty and course coverage***

Question	Syllabus Aims	Knowledge & Understanding	Simple Judgement	Complex Judgement	Total Marks
1	1, 2, 3	2	4	6	<b>12</b>
2	2	2	7	7	<b>16</b>
3	2	4	7	7	<b>18</b>
4	4, 2	6	7	9	<b>22</b>
5	5	4	8	6	<b>18</b>
6	5, 6, 3	5	7	2	<b>14</b>
<b>Total</b>		<b>23</b>	<b>40</b>	<b>37</b>	<b>100</b>

### ***Overall performance***

The examination paper acted as a good discriminator, with raw marks ranging from 24.5 to 124.0 out of 200.



The examination overall was considered to be undemanding. Nevertheless several markers reported that the quality of candidate responses was weak. The relatively low pass rate may also reflect:

1. a lower level of subject specialisation since this course is compulsory; or
2. inclusion of candidates embarking on the Part III examinations who will later struggle with and/or withdraw from the actuarial examination process.

\* \* \* \* \*

Stephen Woods  
Chief Examiner  
25 June 2006



## Course 2A: Life Insurance

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### Results Summary

For the May 2006 exam, there were 57 candidates enrolled. Of these, 4 candidates did not present at the exam.

It is proposed that 17 candidates be awarded a pass, which implies a pass rate of 32%. This compares with pass rates of 31% and 23% respectively for the November and May examination sessions in 2005.

In summary:

Number of candidates	
Originally enrolled	60
Absent from exam	7
Presented at exam	53
Passed	17
Failed	36

The analysis by examination centre is as follows:

Centre	Presented May 2006	Passed May 2006	Pass Rate May 2006	Pass Rate Nov 2005	Pass Rate May 2005
Auckland	2	0	0%	100%	n/a
Brisbane	1	1	100%	67%	0%
Hong Kong	8	2	25%	7%	13%
Japan	0	0	n/a	0%	0%
Korea	0	0	n/a	100%	0%
Malaysia	1	0	0%	0%	0%
Melbourne	7	2	29%	33%	25%
Singapore	3	0	0%	17%	20%
Sydney	28	12	43%	37%	27%
United Kingdom	1	0	0%	100%	n/a
USA	1	0	0%	n/a	n/a
Wellington	1	0	0%	n/a	n/a
Total	53	17	32%	31%	21%





### ***Examiners***

Examiners for the 2A course this semester were:

Chief Examiner: Sim Ng  
Assistant Examiner: Owen Wormald  
Assistant Examiner: Puvan Arulampalam

Course Leader: Sue Howes

### ***Degree of Difficulty and Course Coverage***

The analysis of the degree of difficulty of exam questions in the format specified by the IAAust is as follows:

Question	Syllabus Aims	Knowledge & Understanding	Straight-Forward Judgement	Complex Judgement	Total Marks
1	1,2,4,5,7,9	6	2	6	14
2	1,2,5,8	6	7	5	18
3	1,2,3,6,14,16	4	6	4	14
4	2,7,8,9,10,13,14	3	6	10	19
5	1,2,3,6,7	2	8	8	18
6	4,5,7,8,9,13	3	7	7	17
<b>Total</b>		<b>24</b>	<b>36</b>	<b>40</b>	<b>100</b>

The overall degree of difficulty is within the permissible range.

### ***Overall Performance***

Overall the exam paper acted as a good discriminator, with raw marks ranging from 60 to 125 out of 200, with an outlier mark at 15. This range is similar to the November 2005 exam where the raw marks ranged from 50 to 113.

We continue to observe evidence of candidates merely copying points from the textbook and failing to put the comments in the context of the question. Candidates need to realise the exam is predominantly about applying judgment and not regurgitating points from the textbook.

In addition, candidates also need to be reminded that good handwriting and answers which are structured and set out clearly are part of good exam techniques. It needs to be understood examiners cannot second guess from the candidates' responses. The points need to be communicated clearly by the candidate.



## ***Question by Question Analysis***

### **Question 1 (14 Marks)**

This question is about a company considering a strategy in response to reduced product profitability due to market competition. In this question, candidates were presented with a scenario where a medium sized life insurance company is proposing to expand its distribution channels to include direct marketing of individual investment and lump sum risk products to increase sales and improve profitability. Details were given of the direct marketing method and products to be sold.

Candidates were asked to -

- (a) explain whether the anticipated additional profits would be achieved (KU),
- (b) describe how they would determine suitable mortality and morbidity assumptions for pricing the risk products (SJ), and
- (c) identify the risks to the existing distribution channels (CJ).

Overall, the question was not well answered. For part (a), candidates wrote a lot of true statements without directly answering the question. Very few also realised the importance of response rates for direct-marketed products. For part (b), most candidates managed to gain some marks. Part (c) was ordinarily handled. Many candidates recognised the two most obvious points (independent advisers reducing sales and tied advisers leaving the company/reducing sales) without identifying other risks. A few candidates seemed to confuse channel risks with product risks, and therefore spent a lot of time discussing the risks of selling direct-marketed products.

### **Question 2 (18 Marks)**

This is a comprehensive question on reinsurance. It tests the candidates' understanding of reinsurance jargon (e.g. reinsurance commission) and reinsurance arrangements (quota share and surplus arrangements). Candidates were presented with an outline of two reinsurance tenders – one is a Quota Share proposal and the other is a Surplus reinsurance arrangement for a mutual life insurer.

Candidates were required to -

- (a) calculate the expected net payment from each of the reinsurers over the first 3 years of the treaty for both the quota share and surplus reinsurance proposals (KU),
- (b) draft a memo advising the Board on the suitability and profitability of the tenders and recommend which tender to accept (SJ & CJ), and
- (c) describe how the advice would change if the Board's main priority was stability of profits, and assess whether this would be in the interests of the company (CJ).

Candidates had difficulty with the calculations for part (a) of the question. It reflected a lack of understanding of reinsurance commission and the numerical workings of reinsurance arrangements, in particular surplus reinsurance. Candidates had difficulty interpreting from the calculations that reinsurance profits were expected in early years and this was due mainly to high levels of new business growth and the high levels of reinsurance commission in those years.



Part (b) of the question was fairly well answered in terms of making an assessment of the reinsurance tenders and providing a recommendation to the Board. However, candidates were unable to comment on the profitability of the business after Year 3 as they had not previously understood that growth in new business was a driver to the profits arising from the reinsurance arrangement.

For part (c), most candidates were able to respond that surplus reinsurance would be preferable if the priority was stability of profits. However, few could assess if this would be in the interest of a mutual company.

### **Question 3 (14 Marks)**

This is a reasonably straightforward question which tests the student's understanding of a traditional life insurance product. In this question, candidates were asked to evaluate and comment on the details of two non-participating endowment policies issued in different calendar years to lives of different ages. Details on age at policy commencement, duration in force, annual premium, total premiums paid to date and surrender value were provided. Candidates were required to -

- (a) explain why the ratio of premium to (sum insured divided by policy term) is different for the two policies (KU),
- (b) explain the difference in surrender values, compared with total premiums paid to date (KU),
- (c) compare the returns with a unit linked equity trust product which had a high return in the past year (SJ), and
- (d) respond to a request for advice on whether to continue with the endowment policy or invest in a unit linked contract (CJ).

Overall, the standard of answers was disappointing, with an average raw mark of less than 50% and less than a quarter of candidates being awarded a pass grade. The standard deviation was about 2.2, indicating the question had moderate discriminating power.

General comments on the answers:

- In part (a), most candidates were able to identify either the time effect of interest or differences in mortality as influences on the relative premium. However very few candidates got both of these points.
- In part (b), most candidates were aware of the impact of unrecouped initial expenses on the surrender value, although the associated explanations were not very clearly expressed. Several candidates did not read the question properly and made irrelevant comments about the surrender value approaching the maturity value towards the end of the policy term.
- In parts (c) & (d), some of the answers were too narrowly focused (eg on volatility of equity returns), and did not consider the broader issues.
- A majority of candidates in part (d) lost a mark for not mentioning the need for licensed financial advice. This weak understanding of FSRA is a concern.
- Many students showed poor exam technique by writing similar-length answers to each section, even though far more marks were allocated to parts (c) and (d).



In sections (c) and (d), some candidates made reasonable points which weren't included in the marking guide. Credit was given for relevant comments on flexibility of unit linked products (including investment choice), expected long-term equity returns & relative taxation of the two products.

#### **Question 4 (19 Marks)**

This question concerns the interactions between expenses, premium rates and profit results. The scenario is one where the valuation results of a company that sells renewable term insurance products show that expense experience has been favourable. An expense experience analysis shows actual to expected expenses as well below 100% in all cases. At the same time, the company's market share has been falling. It has therefore decided to introduce a new, competitive product range with expenses in pricing assumptions that reflect the actual experience, and the new product to replace the existing product range which will be closed to new business. Specifically, candidates were asked to -

- (a) identify how the sales experience (i.e. falling market share) of the existing product may be explained by the favourable results of the expense experience (KU),
- (b) describe the effect on the existing product if a new product based on the current expense experience (SJ) is introduced,
- (c) identify the factors affecting the planned profitability of the new product relative to the existing one (SJ), and
- (d) describe the expected overall financial effect on shareholders of a dramatic increase in sales following launch of the new product (CJ).

In part (a), many candidates missed the clear signals that expenses were being charged at excessive levels, leading to uncompetitive rates and loss of market share. A disturbingly large majority of candidates made little or no mention of the implications of such a situation as far as competitors are concerned.

Candidates fared much better on the whole in part (b), where most identified an increase of lapses and its selective effect on mortality under the old product as negative effects on its profits. A good proportion of candidates also picked up on the impact of falling levels of business in the old product for unit costs, i.e. deteriorating expense results. Too many candidates seemed to miss (or not state the obvious) that the old product was closed, which means it will make no further sales.

The marks scored in part (c) reflected the difficulty that candidates had in identifying the factors that would affect the profitability of the new product relative to that of the old. It is "obvious" that lower, more competitive premium rates would be one of the main factors; yet less than a quarter of candidates effectively mentioned this point.

Part (d) carried a lot of marks, as candidates would be aware. Despite that, most answers were lacking the corresponding breadth and depth for the marks available. One pleasing exception was that a majority of papers included mention of capital requirements and the implications of capital strain. Far fewer candidates seemed to realise (or state) that this is a feature of the rapid growth phase, which would abate at some future point – after which there would be a steady release of profit.



### Question 5 (18 Marks)

As a topical question, this one concerns “unit linked errors”. In this question, candidates were presented with the investment strategy of a Capital Stable fund in the form of an extract from a Product Disclosure Statement (“PDS”). The current asset allocation for the product reflects a significant departure from the investment strategy specified in the PDS. Candidates were asked to -

- (a) comment on the current asset allocation compared to the PDS and identify the implications of this for the company (KU & SJ),
- (b) identify what liability the fund manager may have as a result of a 15% reduction in asset values due to a fall in the equity market (SJ), and
- (c) describe how compensation payments should be determined and how the process for compensation should be managed (CJ).

In part (a), the majority of candidates identified that the current asset allocation was well out of line from benchmark and range spreads. Many also understood the implications of this in terms of the levels of growth (instead of defensive) asset classes, investment strategy, and client expectations. There was a modest drop in the numbers of candidates who could effectively apply that understanding to identify the issues that it raises for the company.

Moving to part (b) asked candidates to consider what liability might apply to the company in this situation; many were able to indicate that there would indeed be a liability for the company to “make good”, in terms of compensation. Very small proportions of answer papers went any further than that – about a quarter of all candidates referred to how the fix would operate; fewer still mentioned investors in different situations (e.g. entrants, exits); and while a number did indicate that recourse could come from counter-claim upon the asset manager, very few considered (or at least mentioned) the costs involved in such a compensation exercise.

In part (c), the solutions contained many points that would earn marks; the average mark per candidate of 4.2 (out of 8) indicates that most were able to make a good attempt at this essentially practical problem, while the standard deviation (2.2) and range (0 to 8) suggests it was a good discriminator of candidate performance. Points that were well canvassed include –

- calculation of “correct prices” for period of error, based on proper asset allocation;
- reverting to the date of first breach; and
- communication strategies with both regulators and investors.

On the other hand, points that were not well addressed include –

- determining “cause” and remediating any systemic issues, etc;
- adjusting current unit price, asset allocation, and historical fund performance; and
- a range of practical administrative matters, e.g. tax, distributions, suspension, etc.

A number of candidates mentioned “independent expert review”, and were awarded a mark for that (even though it wasn’t in the solution/marking guide – it will be added). As



a general observation, there was a good awareness of the broad issues, along with a lack of appreciation for how extensive the implications can really be in practice.

### **Question 6 (17 Marks)**

In this question, candidates were asked to re-price the death only premium for a large group life scheme. They were provided with the loss ratios and expense experience for this scheme for the last five policy years. Candidates were asked to -

- (a) identify the factors to for determining suitable mortality and expense pricing assumptions (KU),
- (b) identify the factors for determining the mortality trend (SJ),
- (c) identify the issues of incorporating past mortality experience profits in the current pricing basis (SJ), and
- (d) present their views on a profit share formula that was proposed (CJ).

Overall, the marks were disappointing for what appeared to be a relatively straight-forward question. Candidates seemed to have difficulties differentiating the responses for parts (a) and (b), and vice-versa. Some candidates gave the impression that they had not read the question properly. Many candidates also wrote generic answers which failed to address the specifics of the question.

For part (c), some students were confused and focused on equity between past and future members. Since the historic profits belonged to the shareholder, such answers reflected a lack of understanding.

Most students were able to identify the main issues with the proposed profit-share formula. These include the inadequate allowance for current level of expenses and the absence of a loss carried forward component. However, few managed to identify further points.

Sim Ng

Chief Examiner – Life Insurance Course 2A, May 2006 exams

20<sup>th</sup> June, 2006



## **Course 2B: Life Insurance**

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### **Results Summary**

The May 2006 examinations represent the third examination session under the new Part III syllabus of the Institute of Actuaries of Australia (which involves twice yearly exams of a split course). There were 25 candidates enrolled for the May 2006 exam. All of these candidates presented at the exam.

It is proposed that 8 candidates be awarded a pass, which implies a pass rate of 32%. A comparison with pass rates from previous years is set out in the table below.

	<b>Pass Rate</b>
May 2006	32%
November 2005	29%
May 2005	50%
November 2004	18%
November 2003	28%
November 2002	38%

The pass rate for May 2006 is consistent with past years. (In May 2005, there was a general belief that the B subject for both Life Insurance and General Insurance benefited from a more select group of candidates sitting the new subject. I.e., repeating students being practitioners in the subject area and candidates moving to the new Investment & CAP modules rather than attempting to qualify with two specialist subjects).

In summary:

	<b>Number of candidates</b>
Originally enrolled	26
Absent from exam	1
Presented at exam	25
Passed	8
Failed	17

The analysis by examination centre is as follows:

<b>Centre</b>	<b>Presented</b>	<b>Passed</b>	<b>Pass Rate May 2006</b>	<b>Pass Rate Nov 2005</b>	<b>Pass Rate May 2005</b>
Auckland	2	2	100%	0%	100%
Brisbane	1	0	0%	0%	n/a
Canberra	1	0	0%	0%	100%
Hong Kong	3	1	33%	0%	43%
Malaysia	0	0	n/a	33%	0%
Melbourne	1	0	0%	0%	0%
Singapore	3	2	67%	0%	n/a
Sydney	12	2	17%	46%	63%
Taiwan	0	0	n/a	0%	100%
United Kingdom	1	1	100%	100%	0%
USA	1	0	0%	n/a	n/a
<b>Total</b>	<b>25</b>	<b>8</b>	<b>32%</b>	<b>29%</b>	<b>50%</b>

As discussed above, the overall pass rate is consistent with past years. This year overseas locations performed significantly better than Australian locations (60% compared with 13%). This is a surprising result, against the trend of previous years; however, it is not necessarily statistically significant given the size of the candidature.

### ***Examiners***

Examiners for this semester were:

Chief Examiner: Mark Barda and Sim Ng

Assistant Examiner: Dennis Mosolov

Assistant Examiner: Brett Cohen

Course Leader: Sue Howes

### ***Degree of Difficulty and Course Coverage***

The analysis of the degree of difficulty of exam questions in the format specified by the IAAust is as follows:

<b>Question</b>	<b>Syllabus Aims</b>	<b>Knowledge &amp; Understanding</b>	<b>Straight- Forward Judgement</b>	<b>Complex Judgement</b>	<b>Total Marks</b>
1	1,2,4,6,12	2	3	6	<b>11</b>
2	1,2,5,12	2	15	3	<b>20</b>
3	1,3,4	10	3	3	<b>16</b>
4	1,2,3,4,7,8,9,11	5	5	8	<b>18</b>
5	1,2,5,13	0	0	16	<b>16</b>
6	1,3,4,7,12	0	10	9	<b>19</b>
<b>Total</b>		<b>22</b>	<b>37</b>	<b>41</b>	<b>100</b>





The degree of difficulty would suggest that this exam was comparable to those from prior years. Pass marks and proportions passing were also similar to November 2005. The following table illustrates this point:

Question	Nov 2005 Proportion of Marks required to pass	Nov 2005 Proportion of Candidates Passing	May 2006 Proportion of Marks required to pass	May 2006 Proportion of Candidates Passing
1	70.5%	55%	45.5%	28%
2	44.7%	24%	60.0%	52%
3	45.6%	21%	54.7%	28%
4	50.0%	7%	38.9%	32%
5	64.7%	31%	40.6%	16%
6	41.3%	24%	50.0%	44%

The more settled Part III exam structure has in the last year, supported by a stable examination team appears to assist in maintaining the stable exam standard and pass rates.

### ***Overall Performance***

Overall the exam paper acted as a good discriminator, with raw marks ranging from 48.5 to 111.0 out of 200. This range was narrower than November 2005 (50.3 to 131.3 out of 200). Whilst the exam this year was not assessed as any more difficult than last year, as evidenced by the breakdown of question difficulty outlined above, overall student performance has improved slightly over previous years (with the exception of May 2005).

The “Question by Question Analysis” section identifies common mistakes by candidates. In each table the column headed “Marks Required” represents the sum of the two markers for each grade.

As in past years, comments on poor exam technique were made by the markers. In particular, not relating answers to the particular scenarios described in the questions was a common issue.

### ***Question by Question Analysis***

#### **Question 1 (11 Marks)**

This question tested students on the choice of appropriate assumptions and margins (where applicable) to be used in calculating policy liabilities and capital adequacy reserves. Specifically the question focused on the servicing expense assumption for a unit-linked product.

Candidates were provided with the pricing assumption, the previous year’s experience and management’s choice of assumption and margin for policy liability and capital adequacy calculations. Candidates were expected to ensure compliance with the standards and also comment on the appropriateness of the assumptions/margins chosen in light of the recent experience.

This question was not particularly well answered. The pass mark was not particularly high. Despite this, the question was a fair discriminator bearing in mind that the question was worth only 11 marks. Issues particularly identified through the marking process were the following:

- While many students referenced the relevant actuarial standards, many students failed to mention the pertinent point of making allowance for one-off expenses. This was surprising given the prominence of the issue in the question.



- On average students fared far worse in the simple judgement components of the question (parts (a) and (b)) than the complex judgement component (part (c)).

## **Question 2 (20 Marks)**

Candidates were given information on a non-par endowment insurance product which was closed to new business. They were given last year's expected and actual cash flows and asked to perform an analysis of profit. The next part of the question asked candidates to comment on the appropriateness of reviewing assumptions for this block of business once every 5 years and specifically to comment on whether they felt the surrender assumption was reasonable. Candidates were expected to understand the way in which surrenders impact the end of year policy liability.

This question was well answered and was a fair discriminator. This was despite the markers identifying this question as being relatively easy (as indicated by the higher marks required for a pass). Issues particularly identified through the marking process were the following:

- Part (a) was a straight-forward knowledge and understanding question with all candidates scoring full marks.
- Part (b), requiring the students to analyse the profit was reasonably well answered with most students picking up the majority of the marks.
- Part (c) proved to be the most difficult part of the question. Many students failed to recognise that using in force annual premium as a trigger for the need for an investigation was inappropriate and inadequate. Many of them had given very generic answers, resulting in the loss of marks.
- Part (d) was reasonably well answered, with many candidates recognising that the surrender rate assumption was too high and that it is likely that the surrender rate will reduce as maturities increase.
- Most candidates did well for part (e). However, a number of candidates mistakenly concluded that expensed future surrender claims will decrease. By having more policies on the book (due to lower than expected surrender rate), the expected future surrender claims should be higher unless the surrender assumption is reduced. Also, some candidates only mentioned that liabilities will increase/decrease, without stating the impact on the PVs, which was asked in the question.

## **Question 3 (16 Marks)**

This question required candidates to calculate the solvency requirement for a company which only sold yearly renewable term business. Candidates were given all the necessary information to perform the calculation and were asked to do this both before and after a shock to asset markets. Candidates were also asked to comment on appropriate ways for this company to reduce its risk position given the solvency position after the shock.

This question was not particularly well answered. However, the question was a good discriminator.

Issues particularly identified through the marking process were the following:



- Answers to part (a) were generally disappointing given that this was a straightforward application of (open) bookwork. While the summation of solvency requirement components generally was well understood, a number of students missed out the comparison with the policy liability. As for individual components, most correctly concluded that the MTV was nil, but a number provided no explanation as to why. There were also a few candidates who were not expecting a negative solvency liability and so assumed it was a misprint and used a positive solvency liability instead. With the expense reserve, it was common for candidates to include variable marketing cost instead of just the fixed costs. Few candidates were able to correctly calculate the resilience reserve (with particular difficulty in calculating the diversification factor and A'). Further, even fewer provided a reason why  $L = L'$  (many clearly assumed this because they couldn't find an alternative course of action).
- In part (b), few provided any explanation as to why the change in solvency requirement is zero. Most correctly determined the change in value of equities, but few recognised that the value of fixed interest investment would be affected, let alone able to calculate it correctly. Most incorrectly recalculated fixed interest asset values using the same method as for equities. Very few commented on the solvency position.
- In part (c), in general little reasoning was provided to support suggestions. Many students suggested increasing diversification to reduce the diversification factor and hence the resilience reserve without recognising that the underlying issue of the asset/liability mismatch. Despite this, on the whole, students performed better in this section where there were no calculations, even though it was a complex judgement part.

#### Question 4 (18 Marks)

In this question candidates were provided with two suggested methods for repatriating future profits to the American parent of an Asian life insurance subsidiary. One was essentially a profit measure with reserves calculated on a conservative, cash-accounting basis. The other was based on a change in the embedded value of the subsidiary.

Candidates were asked to compare and contrast the two methods, as well as comment on the way in which conservative reserves using a cash-accounting approach will distort the release of profit over future periods. Candidates were also asked to compare the reserving basis provided to the Capital Adequacy Requirements in Australia described in AS3.03.

The question was only moderately well answered, despite a relatively low pass mark.

Issues particularly identified through the marking process were the following:

- In part (a), most students recognised that the use of conservative assumptions and high commissions significantly deferred any profit recognition on new policies. Few students noted the impact on cash accounting on the performance of an insurance company, mainly that cash accounting ignores IBNR, RBNA and outstanding claims and is based on premiums received rather than premiums earned.
- Part (b) asked students to compare the two bases and discuss the practical implications of assessing the business against two different bases. Many students misconstrued this as a simple "similarities and differences" question and while some marks were awarded for this approach it was difficult to allocate to justify a



good score for these students as the approach over simplifies the question and missed the practical considerations – in particular, the repatriation of profit.

- Part (c) was mostly a bookwork (knowledge and understanding) question and was well answered. A number of students simply mentioned that, under Capital Adequacy, there were non-product reserves without mentioning them by name, eg inadmissible assets, resilience reserves, other liabilities.

The question proved only to be a fair discriminator, possibly due to the following:

- The layout of issue of cash accounting in part (a) was easily missed.
- Many students interpreted part (b) as only a simple compare and contrast style question, missing the complexities that a strong answer required.

### **Question 5 (16 Marks)**

This question focused on the setting of appropriate bonus systems and assumptions for participating products. Candidates were given information about a long-term care product which a company was considering introducing into an Asian country with a similar regulatory regime to Australia. The pricing basis and suggested bonus rules were provided to candidates. Candidates were asked to comment on the merits of making this a participating product, the equity of the proposed bonus system and the impact of future policyholder behaviour on assumptions used in pricing the product.

The question was poorly answered. The question was entirely complex judgement. Most students failed to show meaningful insight across the entire question. The question proved to be a poor discriminator.

Issues particularly identified through the marking process were the following:

- Part (a) was generally well answered.
- Part (b) was generally poorly answered. Almost all students failed to comment on why the bonus scheme might be equitable and instead only focused on why the bonus scheme was inequitable.
- Also in part (b), some students adopted a scatter-gun approach, writing a lot of points, but might have only made two genuine points. Also some students wrote quite erroneous points such as comments that capital adequacy requirements would be higher if the business was participating.

- In part (c) most students picked up on the fact that an increase in competition would lead to repricing, but failed to state what impact this would have on assumptions (i.e., more experience leading to more certainty). Few students picked answered that part of the question which asked about behaviour change.

### **Question 6 (19 Marks)**

Candidates were provided with the asset allocation for funds backing a statutory fund containing products with significant embedded options and guarantees (traditional policies and capital guaranteed investment account business). The asset allocation included a large investment in the government bonds of a small Asian country. Candidates were also provided with information about the company's current Capital Adequacy Requirement including the resilience reserve and inadmissible assets reserve.

Candidates were asked to comment on the appropriateness of the asset allocation and the compliance with AS3.03 given the information provided. Candidates were also asked to analyse the solvency position after a significant fall in the value of the Asian government bonds and the effect on the company's appraisal value.

This question was well answered in general, although no student answered well enough to earn a strong pass. The question proved to be a fair discriminator.

Generally, students performed better in the complex judgement parts of the question than in the simple judgement parts. Part (b) was particularly poorly answered, with most students commenting no more than on the technical parts of the capital adequacy standard and failing to identify that the actuary has scope within the standard to increase the reserve where the prescribed reserve does not adequately address the risks, particularly credit risk.

\* \* \* \* \*

Mark Barda

Chief Examiner – Life Insurance Course 2B, May 2006 Exams

16 June 2006



## Course 3A: General Insurance – Part A

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### Results Summary

74 candidates enrolled for the May 2006 Subject 3A.

4 candidates withdrew prior to the exam, and 1 candidate didn't present at the exam, leaving 69 candidates who presented at the exam. This represents a withdrawal rate of 6.8%.

It is proposed that 29 candidates be awarded a pass, giving a pass rate of 42%. This pass rate is higher than the 35% awarded last semester.

The analysis by examination centre is as follows:

Centre	Presented		Passes	Pass Rate (full subject)
Adelaide	1	1	1	100%
Melbourne	4	4	2	50%
Sydney	52	52	20	38%
Subtotal: Australia	57	57	23	40%
Auckland	2	2	1	50%
Canada	1	1	1	100%
China	0	0	0	0%
Dublin	1	1	1	100%
Hong Kong	2	2	1	50%
Singapore	4	4	1	25%
UK	2	2	1	50%
Subtotal: International	12	12	6	50%
<b>Total</b>	<b>69</b>	<b>69</b>	<b>29</b>	<b>42%</b>

### Examiners

The examiners for this semester were:

Chief Examiner: Craig Price  
Assistant Examiner: Don Johnstone  
Assistant Examiner: Kaise Stephan

Course Leader: IAAust General Insurance Faculty



### ***Degree of Difficulty and Course Coverage***

The table below summarises the exam coverage of the course by syllabus aim and by degree of difficulty. The level of difficulty is grouped into Knowledge and Understanding (KU), Straightforward Judgement (SJ) and Complex Judgement (CJ) components.

Question	Syllabus Aims		Units		KU	SJ	CJ	Total Marks
1a	1c		1			2		2
1b	1c		1			2	2	4
1c	7b		3		3			3
1d	6a		3		1		1	2
1e	6a		3			1	1	2
1f	6e		3	4		2	1	3
<b>1SubTotal</b>					<b>4</b>	<b>7</b>	<b>5</b>	<b>16</b>
2a	4c		2			2		2
2b	4c	7c	2	3		2	3	5
2c	4c	4c	2		2	3	2	7
2d	8f	9d	4			3		3
<b>2SubTotal</b>					<b>2</b>	<b>10</b>	<b>5</b>	<b>17</b>
3a	3d		1		1			1
3b	1c	5a	1	2	2	1		3
3c	2a		1			4		4
3d	6a		3		2	3		5
3e	5a		2		3			3
<b>3SubTotal</b>					<b>8</b>	<b>8</b>	<b>0</b>	<b>16</b>
4a	7c		3		2		2	4
4b(i) (ii)	6a		3			6		6
4c	7b		3				2	2
4d	7c		3				2	2
4e	8a	8f	4		4			4
<b>4SubTotal</b>					<b>6</b>	<b>6</b>	<b>6</b>	<b>18</b>
5a	9a	3d	4	1			2	2
5b	9b	3d	4	1			3	3
5c&d	8a	9d	4		3	2		5
5e	7c		3				4	4
5f	7c		3			2		2
<b>5SubTotal</b>					<b>3</b>	<b>4</b>	<b>9</b>	<b>16</b>
6a	9d		4				3	3
6b	6a	3d	3	1		6		6
6c	9d		4				5	5
6d	1a	1c	1			2		2
6e	3d		4		1			1
<b>6SubTotal</b>					<b>1</b>	<b>8</b>	<b>8</b>	<b>17</b>
<b>TOTAL</b>					<b>24</b>	<b>43</b>	<b>33</b>	<b>100</b>



The next table summarises the exam proportion by Syllabus Unit. It should be noted that issues relating to ‘professionalism’ are covered across many of the questions rather than the small proportion specifically directed to the topic.

Aim	Description	Unit	Marks	%
1	GI Contracts and Aust GI Market	1	9.5	10%
2	Legislative, Statutory, Regulatory Environment	1	4	4%
3	Functions of GI Coys & Acc Comp Schemes	1	7.5	8%
4	Principles, Design & Funding of Acc Comp Schemes	2	11.5	12%
5	Risk Management & Self Insurance Schemes	2	4.5	5%
6	Analysis of Claims using Major Actl Techniques	3	21	21%
7	Appropriate Application of Actl Methods	3	19.5	20%
8	Reserving Philosophy & Determination	4	8	8%
9	Unearned Prem, Unexpired Risk, Prem Liabs	4	14.5	15%
<b>TOTAL</b>			<b>100</b>	<b>100%</b>

This paper was the third to be written under the Course Leader structure. The original intention was that the Course Leader would write all of the examination questions, subject to the oversight of the examiners. The course leader role for this year has been taken up by the GI Education Faculty. In practice, the examiners wrote all of the questions, with significant assistance from the previous Course Leader, Colin Priest. The examiners consider that this process again gave a paper that assessed candidates’ ability to apply what they had learned from the readings to practical situations.

The exam was reasonably spread over the 4 units. However there was a significant focus (as appropriate) on Unit 3, Actuarial Techniques and Analysis of Claims Experience.

This examination required some calculations to demonstrate key knowledge.

### **Overall Performance**

In setting the paper, the examiner team aimed for a consistent level of difficulty with the previous paper. The average raw exam mark this semester was however significantly higher than last semester’s exam being 100 versus 86. The raw marks in each of the six exam questions ranged from 43% to 55% of the total marks available, comparing with a range of 26% to 57% for the previous paper.

Questions 1, 2 and 6 had similar pass rates of around 40%. These questions covered the insurance market, accident compensation scheme changes, the calculation of a premium liability and financial reporting. Questions 3 & 4 had higher pass rates of around 50%. These questions covered public liability policy issues, tort reform, and reserving methodologies. Question 5 covered premium earning and the practical application of a bird flu epidemic on insurance liabilities. This question was generally poorly answered with only a 10% pass rate.

There is more detail in the question by question analysis below, however some knowledge areas where there has been some general weakness in this exam include:

- premium earning, earned versus written premiums
- what drives the need to increase or decrease risk margins over time
- the estimation of tort reform effects
- premium liability calculations





## **Question By Question Analysis**

### **QUESTION 1 (16 MARKS)**

Course coverage:	Units 1 & 3, Syllabus Aims 1, 6 & 7
Mark allocation:	Knowledge and Understanding – 4 marks
	Straightforward Judgement – 7 marks
	Complex Judgement – 5 marks

This question asked students to discuss various issues concerning a soft insurance market. It also covered standard valuation issues, focusing in on the Bornheutter Ferguson technique.

Part a) was reasonably well done, with most students familiar with the main contributors to the softening insurance market. The average score awarded was 1.2 out of 2.0 marks.

Part b) asked students to discuss how they would assess whether the recent business written had been adversely affected by the soft market, and also how they would assess if their competitors had been offering unprofitable rates. For the first part, many students failed to directly mention the need to compare the premiums charged to the technical rates, an obvious but practical point.

The second part was generally poorly answered. Most candidates failed to mention the need to investigate the premium rates/conditions of the unsuccessful business. Few candidates mentioned the need to talk to underwriting staff, brokers or agents. Again few candidates mentioned the need to look at your retention rates or new business rates. The average score awarded for this part was only 1.4 out of 4.0 marks possible.

Part c) asked students to identify which accident periods would best be served by the PPCI, BF and PCE valuation methodologies. This question was generally answered well with the majority of students identifying where the methods were suitable, but many did not elaborate enough on their reasoning. The average mark awarded was 2.5 out of 3.

Part d) asked students to describe how they would select the ‘a priori’ loss ratio for the BF method, given a pricing loss ratio and some recent valuation loss ratios by accident period. Many students failed to mention the importance of using the pricing loss ratio as the starting point adjusted for experience etc. Few candidates considered the reliability of using PPCI for the most recent accident years. The average score awarded was 1.2 marks out of 2 total.

Part e) asked students to consider the potential distortions from an early large reported claim when using either the BF or incurred chain ladder method. Most students mentioned that the BF was the preferred method but many failed to recognize that the CL method could overstate the ultimate cost. A number of candidates wanted to take the large claim out and apply the CL method. The average score awarded was 1.2 out of 2.0 marks.

Part f) asked students to discuss whether they’d change the risk margin as a result of the soft market. This question was generally answered poorly. Many students failed to draw the direct connection between the risk margin being increased in response to greater uncertainty, and why the softening market may lead to greater uncertainty. Most students stated that they would increase the risk margin because of poorer business being written. Some students seemed to link a higher risk margin to greater uncertainty in profitability



rather than making a case for why the claims cost distribution may be more uncertain in a soft market. The average mark awarded for this part was only 1.2 marks out of 3.0 in total.

## **QUESTION 2 (17 MARKS)**

Course coverage: Units 2 & 4, Syllabus Aims 4, 7, 8 & 9  
Mark allocation: Knowledge and Understanding – 2 marks  
Straightforward Judgement – 10 marks  
Complex Judgement – 5 marks

This question asked students to analyse the various impact of a workers' compensation scheme that was about to have a substantial change in benefits.

Part a) asked students to discuss the effects on workers' behaviour in relation to claiming benefits under the new scheme. Most students did reasonably well in this part. Most got the main point that there would be lesser incentive to return to work so claimants will be on benefit longer. Slightly less got the point that there will less common law claimants due to the restrictions. The average score awarded was 1.2 marks out of 2.0.

Part b) asked students to discuss the standard drivers of superimposed inflation in the scheme, and then the impact that the proposed changes would have on these sources. Surprisingly, most students only gave a couple of points for sources of superimposed inflation. However students did better at assessing the impact of the scheme changes on superimposed inflation (although mainly in terms of the upfront effect as opposed to the ongoing effect). The average score awarded was 2.4 marks out of 5.

Part c) asked students to calculate the cost impact of the scheme changes, given certain information on claimant's potential continuance rates. In general this part was answered poorly. In terms of the calculations, a lot of students forgot to apply the 80% factor to current benefits after the first 13 weeks. Very few students gained marks for the assumptions that should have been made. Most either did not provide any assumptions or simply repeated the factors specified in the question as assumptions. The average mark awarded for this question was 2.9 out of 7 possible.

Part d) asked students to broadly advise the impact of the changes from a reserving and pricing point of view. Most students realised that there should be no impact on outstanding claims and that premium liabilities should need to increase (although only a select few picked up that risk margins may need to increase). Most students realised that prices needed to increase but examples and calculation varied quite a bit between students. The average mark awarded was 1.4 out of 3 possible.

## **QUESTION 3 (16 MARKS)**

Course coverage: Units 1, 2 & 3, Syllabus Aims 1, 2, 3, 5 & 6  
Mark allocation: Knowledge and Understanding – 8 marks  
Straightforward Judgement – 8 marks  
Complex Judgement – 0 marks

Question 3 was about the issues a local council would face in buying insurance – the regulatory, legal and economic environment, retention setting and risk pooling. It also covered issues relating to tort reform, and how its impact would be analysed on the portfolio.



Part (a) asked students whether the insurance liabilities in the council's accounts should be discounted or not – a question which was arguably outside of the standard focus of students. Few candidates referred to accounting standards; some mentioned APRA requirements. The average mark awarded was 0.3 out of 1.

Part (b) asked students to suggest three reasons why the council may have increased its excess level. This was generally well answered. Most students recognised the relationship between higher excess and lower premium but did not always tie the increases in premiums to the insurance cycle and the collapse of IJI. Some students did not directly refer to risk appetite but responded with other related statements such as the council's strong capital position, expectation of lighter claims experience due to a change in the council's risk management practice and/or a reduction in council-organised community activities etc. A few students mentioned the expected reduction in the number of small claims due to tort reform. The average mark awarded was 1.9 out of 3.

Part (c) asked the students how to estimate the effects of tort reform. This part was generally poorly answered. A number of students clarified that the effects would need to be evaluated for public liability claims. Some students made statements to the effect that the reform would "mainly" affect public liability claims thereby implying that motor fleet claims may also be affected.

Many students made a distinction between claim frequency and size but some did not discuss this appropriately. Some students listed and discussed the specific tort reform changes in NSW. The average mark awarded was 1.7 out of 4.

Part (d) asked for advice on increasing the public liability excess. Part (i) was well answered with most students obtaining at least one mark out of 2. There was often insufficient discussion of the cost-benefit of higher claim costs versus lower premiums. Part (ii) asked about the methodology to use in the analysis. This part included some non-attempts. Those who attempted the question usually recognised that the increased cost has to be considered relative to the premium saving. The responses relating to estimating the cost often failed to recognise the importance of volatility and discussed historical average claim sizes and frequencies. The average mark awarded was 2.9 out of 5.0.

Part (e) asked for advice on joining an insurance pool. Most candidates alluded to and/or discussed that the different risk profiles of the councils are a consideration. However, a number made the conclusion that if the other councils are more risky than this council will be subsidising the others without realising that some method of risk-adjusted cost sharing could be established. A few students mentioned experience rating analysis. The average mark awarded was 2.0 out of 3.0.

#### **QUESTION 4 (18 MARKS)**

Course coverage:	Units 3 and 4, Syllabus Aims 6, 7 and 8
Mark allocation:	Knowledge and Understanding – 6 marks
	Straightforward Judgement – 6 marks
	Complex Judgement – 6 marks

This was a reserving based question using variations of chain ladder techniques, namely the paid chain ladder and the "additive" chain ladder, both of which were explained to the students. This question was answered reasonably well overall. Candidates appeared to



have reasonable knowledge on most aspects that the question was testing. The following comments relate to each part of the question.

Part (a) of the question asked about the issues that should be considered and the information that should be sought in quantifying the tail assumptions. This part of the question was the least well answered of the entire question. Many candidates answered in very general or vague terms rather than tailoring the answer to the specifics of the insurer in question. It should have been noted by students that the claim data is collected only up to development 6 and many candidates mentioned that 'investigate experience in the tail' or fit a curve for the tail. Simply, the portfolio does not have its own experience in the tail. Given the limited experience, candidates should have thought about exposure (and its run-off pattern) and claim types. No candidate has attempted to look into the claim types in detail (e.g. non-completion vs. defect claims) which could be a significant factor in the tail. In answering this question, qualitative factors should be investigated along with actuary's judgment. The average score awarded by the markers was 1.8 out of 4.0 marks available.

Part (b) of the question asked the students to calculate the Ultimate Loss Ratios and the Projected Future Claim Payments (Projected Future Claim Payments were defined here as the undiscounted ultimate incurred cost estimate less the claim payments paid to date) for a specified underwriting year, using the paid chain ladder and additive chain ladder techniques. This part of the question was reasonably well answered. However, for part b(i) a handful of candidates failed to carry a simple paid chain ladder projection, some students used incurred cost to date figure as opposed to 'paid to date' figures. In part b(ii), the justifications given for the loss ratio selections were generally weak. It was important to recognise and comment on the change in loss ratio development pattern and not many students commented on the need for further investigations to identify the driver/impact of such change. The average score awarded by the markers was 4.1 out of 6.0 marks available.

Part (c) of the question asked students to comment on the issues that they would consider when re-selecting assumptions for the additive model to allow for change in premium rates. The question was reasonably well answered and most students discussed the core issues arising. The average score awarded by the markers was 1.4 out of 2.0 marks available.

Part (d) of the question involved discussing inherent weaknesses of both chain ladder models. This part was reasonably well answered. However, for a number of candidates, the discussion did not get to the heart of the problem and only talked about the general workings of each method. The average score awarded by the markers was 1.0 out of 2.0 marks available.

Part (e) of the question asked for a list of the additional issues that need to be considered in order to estimate the outstanding claims provision. This part was reasonably well answered. However, some candidates perhaps misread the question and only offered discussions around the issues concerning the outstanding claims central estimate rather than the provision and hence missed out some relatively easy marks. The average score awarded by the markers was 1.9 out of 4.0 marks available.



## QUESTION 5 (16 MARKS)

Course coverage: Units 1, 3 and 4, Syllabus Aims 3, 7, 8 and 9

i. Mark allocation: Knowledge and Understanding – 3 marks

Straightforward Judgement – 4 marks

Complex Judgement – 9 marks

This was a travel insurance question examining students on the premium earning patterns for this business and impact of outbreak of bird flu strain on insurance liability results for AASB and APRA reporting purposes. The question also asked the students how to estimate outstanding claims provision for bird flu exposures and discussing issues of latency of claims. Students appeared in the main to have had insufficient time available to think about this question. As a result many students' answers were characterised by half-finished thoughts. This question had the lowest pass rate of the entire paper.

Part (a) of the question asked students to explain why earning the premiums uniformly over a period of one month from the average underwriting date would underestimate the unearned premium provision. Few students picked up the two points in their answer required for full marks. Many failed to recognise that risk could arise prior to the commencement of the trip, despite proceeding to discuss cancellations in later sections of the question. Many also became preoccupied with the fact that risk would not arise uniformly over the exposure period and did not attend to the possible length of that period. Some became side-tracked by the reference in the question to possible processing delays. The average score awarded by the markers was 0.7 out of 2.0 marks available.

Part (b) of the question asked students to describe the analysis that they would undertake in order to determine the appropriate premium earning pattern for the travel insurance policies in question. Students tended to make a fair attempt at this section, but many failed to recognise the likely variation in claims incidence by geographic region. Many also seemed to struggle to cope with the idea of a variable length policy period and wanted to assume uniform risk over the period. There was some tendency to confuse reporting and incidence of claims. Also some students were again side-tracked by the reference to processing delays, failing to recognise this as a separate issue. The average score awarded by the markers was 1.0 out of 3.0 marks available.

Part (c) of the question asked students to explain the effect of travel warning issued due to an outbreak of a new strain of bird flu on the insurer's annual AASB1023 accounts. Most students recognised some of the areas of the balance sheet affected. Some became preoccupied with the treatment of premium liabilities and forgot about all other possibilities. No student mentioned the likely effect on assets. Some students were concerned about the short time available from receipt of the information but failed to recognize that this could be dealt with via risk margins. Quite a few failed to recognize that the LAT test was essentially excluded from the scope of the question. The average score awarded by the markers was 1.3 out of 3.0 marks available.

Part (d) of the question asked students how their answer to part (c) would change when considering the impact on the insurer's annual APRA accounts. There was a tendency to quote the difference in principle between AASB and APRA accounting without fully understanding the concrete ramifications for the formulation of the balance sheet. A majority of students recognized the difference in premium treatment, but less remembered the impact on risk margins and many failed to specify which risk margins they were



talking about. The average score awarded by the markers was 1.0 out of 2.0 marks available.

Part (e) asked the students to describe the analysis that can be undertaken to estimate the outstanding claims provision for the bird flu claims. Most students' answers implicitly recognized that standard actuarial methods would not be effective although few stated this explicitly. Only the better answers split the analysis by type of claim. Earned and unearned exposures were not well distinguished, and indeed many students did not recognize that liability would arise from the reporting of the outbreak rather than merely from the very few claims which would have been reported by the balance sheet date. The average score awarded by the markers was 2.3 out of 4.0 marks available.

Part (f) related to the issue of late claims development e.g. mad cows disease and why no IBNR provisions were held for them. Most students did not recognize that latent disease claims would not be covered by the policy, though quite a few advocated reading the policy wording to see if they were! Some became confused and seemed to think the question was still about avian flu. No student specifically identified where latent claims were likely to arise from, though some suggested the right sort of approaches to identifying them. The average score awarded by the markers was 0.6 out of 2.0 marks available.

#### **QUESTION 6 (17 MARKS)**

Course coverage: Units 1, 3 & 4, Syllabus Aims 1, 3, 6 & 9  
Mark allocation: Knowledge and Understanding – 1 mark  
Straightforward Judgement – 8 marks  
Complex Judgement – 8 marks

Question 6 described a motor policy with a cash refund and then asked for advice about the refund and how it affects earning patterns and premium liabilities.

The question contained a reasonable number of "gimme" marks. Not all that many students actually got them.

Part (a) asked for a calculation of the cash refund and was generally well answered. Average marks awarded were 2.0 out of 3.0 possible.

Part (b) asked the students to calculate earned premium and premium liabilities. Many students did not read the question in relation to Get Real being a start up - i.e., GEP very affected in year 1. Some common errors were:

- to calculate Gross Written Premium instead of Gross Earned Premium
- to put earned premium into premium liability calculations rather than unearned premium
- to include acquisition expenses in premium liability calculation

The question was partially unclear in specifying whether the results required were accounting period or underwriting period, although the fact that premium liabilities were asked for should have pointed students to the former possibility. Marginal candidates who took the latter path and explicitly noted this were given some credit when they were reviewed. The average mark awarded was 3.1 out of 6.0.



Part (c) asked how Get Real's experience would differ from industry experience. Students generally got the key change in frequency and retention, but very few students commented that expenses or risk margins might be affected due to start up nature of the company. The average mark awarded was 2.4 out of 5.0.

Part (d) asked about whether catastrophe claims should be included for the purposes of calculating the cash refund. A number of students failed to realise that catastrophes are not something that you can actively eliminate the risk of. The average score awarded was 1.0 mark out of 2.0.

Part (e) asked how product differentiation distorts market comparisons. Some candidates talked about the risk characteristics of policies without linking that back to the fairness of comparing prices for different products. Overall this relatively simple part was well answered, with an average 0.8 marks awarded out of 1.

Craig Price

Chief Examiner – General Insurance Subject 3A & 3B, May 2006  
25 June 2005





## **Course 3B: General Insurance – Part B**

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### **Results Summary**

48 candidates enrolled for the May 2006 Subject 3B. There were no withdrawals and hence 48 candidates presented for the exam.

It is proposed that 24 candidates be awarded a pass, giving a pass rate of 50%.

This pass rate is higher than the 32% awarded last semester.

The analysis by examination centre is as follows:

<b>Centre</b>	<b>Presented</b>	<b>Passes</b>	<b>Pass Rate (full subject)</b>
Brisbane	1	1	100%
Canberra	1	1	100%
Melbourne	3	1	33%
Sydney	31	16	52%
Subtotal: Australia	36	19	53%
Auckland	3	1	33%
China	1	1	100%
Hong Kong	1	0	0%
Singapore	3	0	0%
UK	4	3	75%
Subtotal: International	12	5	42%
<b>Total</b>	<b>48</b>	<b>24</b>	<b>50%</b>

### **Examiners**

The examiners for this semester were:

Chief Examiner: Craig Price  
Assistant Examiner: Don Johnstone  
Assistant Examiner: Kaise Stephan

Course Leader: IAAust General Insurance Faculty

### **Degree of Difficulty and Course Coverage**

The table on the next page summarises the exam coverage of the course by syllabus aim and by degree of difficulty. The level of difficulty is grouped into Knowledge and Understanding (KU), Straightforward Judgement (SJ) and Complex Judgement (CJ) components.

The next table summarises the exam proportion by Syllabus Unit. It should be noted that issues relating to 'professionalism' are covered across many of the questions rather than the small proportion specifically directed to the topic.





Question	Syllabus Aims		Units		KU	SJ	CJ	Total Marks
1a	11c		5			2		2
1b	12a	11b	5			3	2	5
1c	11c		5		2			2
1d	12a	10a	5			4		4
1f	14a		6		1			1
1g	14a		6				3	3
<b>1SubTotal</b>					<b>3</b>	<b>9</b>	<b>5</b>	<b>17</b>
2a	12a	10a	5			3		3
2b	11b		5				3	3
2c	11b		5				2	2
2d	17b		7			3		3
2e	17b		7		2			2
2f	12e	17c	5			2	2	4
<b>2SubTotal</b>					<b>2</b>	<b>8</b>	<b>7</b>	<b>17</b>
3a	18b		7		2			2
3b	18b		7				6	6
3c	16a	15a	7	6		3		3
3d	15a		6				2	2
3e	17b	15b	7	6		2	1	3
<b>3SubTotal</b>					<b>2</b>	<b>5</b>	<b>9</b>	<b>16</b>
4a	16a		7			5		5
4b	12e		5			2		2
4c	20a		7		2			2
4d	11c		5			2	1	3
4e	12e	11c	5			3		3
4f	11c		5				2	2
<b>4SubTotal</b>					<b>2</b>	<b>12</b>	<b>3</b>	<b>17</b>
5a	15d		6			4		4
5b	15a		6			1		1
5c	15b		6			2	1	3
5d	15b		6		2			2
5e	15c		6		3			3
5f	15d		6			3		3
<b>5SubTotal</b>					<b>5</b>	<b>10</b>	<b>1</b>	<b>16</b>
6a	20d		7		1			1
6b	13b		5		1		1	2
6c	12d		5			5		5
6d	20e	12e	7	5			4	4
6e	19b	19c	6	6	3			3
6f							2	2
<b>6SubTotal</b>					<b>5</b>	<b>5</b>	<b>7</b>	<b>17</b>
<b>TOTAL</b>					<b>19</b>	<b>49</b>	<b>32</b>	<b>100</b>

Aim	Description	Unit	Marks	%
10	Risk Classification, Forecasting, Premium Rating	5	3.5	4%
11	Premium Rating / Philosophy of Pricing	5	18	18%
12	Application of pricing principles to practical situations	5	18.5	19%
13	Evaluate and apply experience rating systems	5	2	2%
14	Understand impact of investment policy for GI coy's	6	4	4%
15	Understand Th&Ph of RI, prog design, inwards re	6	21	21%
16	Fin Control of GI incl profit/solvency/invs/fin planning	7	6.5	7%
17	Solvency / risk based capital / MCR	7	8.5	9%
18	Appraisal Values of GI coys & portfolios	7	8	8%
19	Understand key risks impacting FC of insurer / prepare FCR	7	5	5%
20	Actuary's responsibilities under prof and prudential stds	8	5	5%
<b>TOTAL</b>			<b>100</b>	<b>100%</b>



This paper was the third to be written under the Course Leader structure. The original intention was that the Course Leader would write all of the examination questions, subject to the oversight of the examiners. The course leader role for this year has been taken up by the GI Education Faculty. In practice, the examiners wrote all of the questions, with significant assistance from the previous Course Leader, Colin Priest. The examiners consider that this process again gave a paper that assessed candidates' ability to apply what they had learned from the readings to practical situations.

There was again a significant focus on Unit 5, Premium Rating, with substantial parts of the Questions 1, 2, 4 and 6. This exam had a significant component relating to reinsurance issues. There was also a reasonable allocation of questions to Financial Control, Solvency, Capital, Appraisal & FCR issues.

This examination required some calculations to demonstrate key knowledge.

### ***Overall Performance***

In setting the paper, the examiner team aimed for a consistent level of difficulty with the previous paper. The average raw exam mark this semester was however significantly higher than last semester's exam being 102 versus 85. The raw marks in the each of the six exam questions ranged from 44 to 60% of the total marks available, comparing with a range of 32% to 51% for the previous paper.

Questions 1, 4, 5 and 6 had similar pass rates of around 40%. Question 2 covered rating, capital and profit and had a high pass rate of 58%. Question 3 was probably the hardest question on the paper, and covered appraisal values, DFA and reinsurance. The pass rate for this question was only 27%.

### ***Question By Question Analysis***

#### **QUESTION 1 (17 MARKS)**

Course coverage:	Units 5 & 6, Syllabus Aims 10, 11, 12 & 14
Mark allocation:	Knowledge and Understanding – 3 marks
	Straightforward Judgement – 9 marks
	Complex Judgement – 5 marks

This question asked students to consider a new insurance product which paid a benefit if policyholders had to sell their property due to specific circumstances, at a loss within 5 years of buying it. Questions related to the pricing of this product. Later sections asked candidates to consider an appropriate investment policy for this product.

Part (a) asked students to explain the economic drivers affecting the incidence of claims under this policy. This part was answered quite well with an average of 1.8 marks awarded out of 2.0.

Part (b) was a 5 mark question which asked students to outline how they would calculate the undiscounted risk premium for this product. Students tended to provide generic answers. Few students appreciated the need for a stochastic model to model the influence of the economic environment on claims cost. The markers awarded students an average of 1.4 marks for this question. When judging borderline candidates, the examiners gave some



credit where understanding of the general pricing process was demonstrated even if they had missed some of the specifics relating to the new product.

Parts (c) and (d) asked for a listing of the relevant information sources, and an explanation of the key rating factors. These parts were generally answered well with students able to get many of the required points. The average score awarded was 1.5 out of 2.0 marks, and 2.7 out of 4.0 marks respectively.

The examiners were surprised to find that many students did poorly on part (e) which was a basic question on the immunisation of policy liabilities. Many students were not able to describe the benefits of duration matching and how it works. Many just stated that the strategy allowed for cash to be available when the policy benefits became due. The average score awarded was 0.4 marks out of 1.0 available.

Part (f) was a 3 mark question asking why the standard matching strategy wouldn't work for this product. Most students recognised why fixed interest was not appropriate, but very few students were able to recommend a sound alternative strategy. The average score awarded was 1.2 marks out of 3.0.

## **QUESTION 2 (17 MARKS)**

Course coverage: Units 5 and 7, Syllabus Aims 10, 11, 12 and 17  
Mark allocation: Knowledge and Understanding – 2 marks  
Straightforward Judgement – 8 marks  
Complex Judgement – 7 marks

This question concerned a Fidelity Guarantee product and asked students to discuss issues relating to rating and underwriting the product, its capital needs and insurance profit calculations. Overall, the question was well answered with a relatively high pass rate. Most students discussed the issues required and understood the nature of insurance risks inherent in the product.

Part (a) of the question asked students to list the rating factors to consider for this type of business and explain how the level of the rating factor affects the level of risk. Most candidates did well on this question. A number of candidates mentioned using salary and or position of employee as a rating factor. The average score awarded by the markers was 2.4 out of 3.0 marks available.

Part (b) of the question asked students to describe three underwriting restrictions or limitations of coverage that students would build into the underwriting guidelines. Very few candidates mentioned anything relating to restricting when/how a claim could occur for insurance purposes. Some credit was given to candidates mentioning deductibles and placing limits on the cover annually or on a per loss basis. This part was generally poorly answered with candidates not providing good reasons for their answers. The average score awarded by the markers was 1.5 out of 3.0 marks available.

Part (c) of the question asked students to describe two features of the incurred cost development from the triangle provided in the question. Most candidates answered this question well. Not many candidates commented on reductions in loss ratios in later



development years which for this class are usually recoveries. A number of candidates mentioned noticing that development completed by year 3 however they mentioned it in relation to payments. Distinction needed to be made between incurred development vs paying the claim out. The average score awarded by the markers was 1.5 out of 2.0 marks available.

Part (d) of the question asked students to comment on how the capital requirements for this class of business compares with those of the Professional Indemnity class of business. For the key parts of the answer, some candidates had the right idea but did not justify the answer enough to get full marks.

The concentration risk part of the question was the hardest and few candidates this correctly. Most of them thought that it wasn't possible to have a concentration of risk for fidelity vs PI, some students incorrectly discussed concentration risk in terms of exposure to large claims rather than event or accumulation type risks. Some students mentioned that concentration risk "depends on the reinsurance arrangements ...". Although this is true, it does not help in answering the question or comparing Fidelity vs PI as the extent of reinsurance for each class can vary depending on the reinsurance programme selected, hence Fidelity can be higher or lower than PI. The average score awarded by the markers was 1.4 out of 3.0 marks available.

Part (e) of the question asked students to comment on the relative capital needs of Outstanding Claims to Premium Liabilities risks given a table of capital figures for each. Question answered reasonably well although some candidates left the question blank or didn't understand the point about startup line of business having a relatively large unearned component at the end of the year. The average score awarded by the markers was 1.0 out of 2.0 marks available.

Part (f) of the question asked students to calculate the before-tax insurance profit required on an annual basis such that the after tax return on capital is 15%. This part of the question was generally well answered. However, a number of candidates did not understand the last part of the question on tax rates or just simply forgot/ignored the question. Students are advised to read the question carefully to ensure question is fully answered and full marks potential is gained. The average score awarded by the markers was 2.4 out of 4.0 marks available.

### **QUESTION 3 (16 MARKS)**

Course coverage: Units 6 & 7, Syllabus Aims 15, 16, 17 & 18  
Mark allocation: Knowledge and Understanding – 2 marks  
Straightforward Judgement – 5 marks  
Complex Judgement – 9 marks

Question 3 was probably the hardest question on the paper, and covered appraisal values, DFA and reinsurance.

Parts (a) and (b) tested the candidates' understanding of an appraisal value, why it differs from net asset value, and why it changes over time. Answers were generally poor to moderate - the average mark for these sections was only 3 out of 8. In part (a), quite a few candidates didn't appreciate that investors attribute value to the margin between reported



liabilities and central estimate liabilities; few discussed the fact that potential economies of scale could be factored into the price an acquiring company is willing to pay. Most candidates realised that profits on future business weren't factored into net asset value and some restated this concept several times.

For part (b), half the candidates scored 1.5 out of 6 or worse. There are many methods for valuing a general insurance company and candidates explored a number of different approaches: a few students used P/E ratios; a few tried to calculate PV of future profits, mostly unsuccessfully. Most didn't understand how to roll forward their chosen valuation model - a lot didn't seem to realise that profit not paid out as dividends leads to an increase in net assets. Most allowed for the impact of achieved premiums being less than technical, but were unclear about how the insurance cycle was factored into the appraisal valuation.

Part (c) required candidates to calculate a net earned premium, which was generally well answered with an average score of 2.3 out of 3. A number of students treated exchange commission as a premium offset. A number calculated Written rather than Earned Premium.

Part (d) asked about the drivers of XOL reinsurance rates, which was not well understood by the candidates with an average of 0.6 marks out of 2. Many students missed the simple fact that inflation and volume growth erode the value of a fixed catastrophe treaty retention.

Part (e) tested candidates' understanding of DFA modelling and what the key assumptions are that drive simulated profit. Answers ranged from very poor to very good with an average score of 1.2 out of 3. A lot of candidates mentioned relevant items but not their impact on profit. Some wrote a laundry list of DFA assumptions. The key assumptions that were most often mentioned were volume of business, reinsurance and premium rates (and only rarely expense assumptions).

The correlation between the markers was high (98% for marks, 94% for ranks, and 100% for grades) and there was very little change to marks of borderline candidates upon review. As might be expected, this question had the lowest pass rate in the exam (13 candidates out of 48).

#### **QUESTION 4 (17 MARKS)**

Course coverage:	Units 5 and 7, Syllabus Aims 11, 12, 16 and 20
Mark allocation:	Knowledge and Understanding – 2 marks
	Straightforward Judgement – 12 marks
	Complex Judgement – 3 marks

This question was based on a motor insurance product with a variety of issues covered for the product including calculation of underwriting results, commenting on a retention rate model and professional issues relating to whether a particular report constitutes actuarial advice. The question was a good differentiator between the students. The last few parts of the question, relating to retention rate modeling were on the whole not very well answered.

Part (a) of the question asked the students to calculate an estimate of the underwriting result for the 2005 accounting period given some information. A number of students did well and got full marks or close to full marks. In general, this part provided a good



indication of a student's understanding of the question. In general students failed the question if they didn't calculate earned premium or earned exposure. If they calculated earned premiums correctly but not exposure then they probably got around 3.5 out of 5 marks. If they did both those things correctly they got between 4 and 5. Many students used GWP instead of GEP. The average score awarded by the markers was 3.1 out of 5.0 marks available.

Part (b) of the question asked the students how a 6 monthly policy premium would differ from half of an annual policy premium. This was well answered. A majority of students got 1 or more marks. The average score awarded by the markers was 1.4 out of 2.0 marks available.

Part (c) of the question asked the students whether a report prepared by an actuarial consultancy relating to the price elasticity for the portfolio constitutes actuarial advice. This part was not well answered. A lot of people didn't mention that the code of conduct governs the actuarial advice definition. Some students quoted part of the definition and 0.5 marks were awarded for such a mention (although students had not stated that it is code of conduct governing the quote). Also 0.5 marks were awarded to students who explained that the report is regarded as actuarial advice is because it is expected to be within the expertise of an actuary. The average score awarded by the markers was 0.7 out of 2.0 marks available.

Part (d) of the question asked the students to discuss what characteristics of a recommended retention function make it suitable to model renewal retention rates. The majority of students stated that curve was bound by 0 and 1 and that retention rates decrease for increases in premiums. Very few students mentioned other important points concerning varying sensitivity to premium rate changes. The average score awarded by the markers was 1.4 out of 3.0 marks available.

Part (e) of the question asked the students to show that a particular average premium was optimal in terms of maximising the underwriting result (UWR) where a function for the UWR was provided. Very few students got the gist of the question. Many students tended to mention that the maximum UWR can be obtained by differentiating the function but then no further working was shown. Many students did not opt for the simpler approach of manually calculating in \$1 bounds around the particular average premium to show that a local maximum exists. Some students used wider than \$1 bands, marks were awarded for these calculations. The average score awarded by the markers was 0.8 out of 3.0 marks available.

Part (f) of the question asked the students about the practical issues associated with pursuing a pricing strategy which maximised the underwriting result and its associated low retention rate. This part of the question was poorly answered. Most students got minor points but not the major gist of the question. The average score awarded by the markers was 0.6 out of 2.0 marks available.

#### **QUESTION 5 (17 MARKS)**

Course coverage: Unit 6, Syllabus Aim 15  
Mark allocation: Knowledge and Understanding – 5 marks  
Straightforward Judgement – 10 marks  
Complex Judgement – 1 marks



This was a relatively straight forward reinsurance question covering quota share and catastrophe treaties as well as testing understanding of financial reinsurance. Most candidates picked up the main points but few picked up some of the less important points.

Part (a) asked about the drivers of exchange commission. Most candidates understood that the main drivers were the loss ratio on the business and the expense structure and profit target of the reinsurer. Many mentioned the expenses of the insurer, but frequently to the exclusion of the expenses of the reinsurer. The average score awarded by the markers was 2.6 out of the 4 marks available.

Part (b) was a straight forward calculation of net earned premium, which was done correctly by many candidates with an average of 0.8 marks out of 1. Many candidates added the exchange commission back to the NEP, which was not a major error.

Part (c) asked for a calculation of the effective retention and limit of a catastrophe treaty. The grossing up of the retention to allow for the quota share was generally done correctly but only a few candidates calculated the gross PML correctly. Many candidates were confused about the how the event limit would operate, and tried to apply it to the XOL cover as well as the QS. Hardly anyone went back to check how their answer fitted the information (i.e. if the event was \$145m then the QS would pay lesser of 25% or \$25m = \$25m, leaving \$120m to be claimed against the XOL cover, which reaches exactly the limit of its cover, so this is the correct amount). Average score for part (c) was 1.6 out of 3.

Part (d) asked why an insurer would buy an aggregate excess of loss treaty with an annual aggregate deductible and limit. This part was done poorly with an average score of 0.9 out of 2. Many candidates did not have it clear in their minds that this new cover fitted underneath the existing XOL cover, and provided protection in the event of multiple small events. Some, for example, thought that it replaced the existing XOL cover.

Part (e) tested the candidates' understanding of financial reinsurance. This was done very poorly with an average mark of 0.7 out of 3. Not one candidate had a clear idea what financial reinsurance was and what some of the tests for it are.

Part (f) asked what conditions might be placed on the reinsurance contract described in (d). Candidates were overly concerned with the possible moral hazard from the insurer i.e. that the insurer will in some way manipulate the cover to create a claim against the reinsurer. In reality this is a minor risk. Few mentioned the necessity of keeping the QS in place. Most understood that growth or change in regional mix would affect the cover. The average mark was 0.95 out of 3.

#### **QUESTION 6 (17 MARKS)**

Course coverage: Units 5, 6 and 7, Syllabus Aims 12, 13, 19 and 20  
Mark allocation: Knowledge and Understanding – 5 marks  
Straightforward Judgement – 5 marks  
Complex Judgement – 7 marks

Part a) was a straightforward question on the actuarial involvement in NSW CTP. Most students however failed to recognise the requirement for an actuarial report to document





the filing. Also, there were many students who stated that proposed premium rates must be fully funded, when in fact they do not. An average of 0.6 marks was awarded out of 1.0.

Part b) asked students to explain why an experience rating system wouldn't be appropriate for CTP. This part was generally well answered by students with no significant misinterpretation issues. Some students simply listed the criteria of a good experience rating scheme, without providing an explanation of why experience rating wouldn't be appropriate in this case. Better candidates were able to provide solid arguments. Many students recognised and discussed the issue of low claims frequency in CTP, but few discussed the volatility of the average claim size and the long time it takes for experience to eventuate. The average score awarded was 0.9 marks out of 2.0.

Part c) was a 5 mark question asking students to perform an expense analysis. Despite this being a simple judgement question, answers were generally poor. The calculation of overhead and total expenses was answered correctly in most cases. The allocation between components was not documented in many cases, which made it difficult to assess the reasonableness of expense allocation. In some cases, students did not recognise that expenses must be allocated between either policy or claims, and thus created an "other" category of expenses. Due to the numerous items asked for by the question, many students either forgot or omitted their calculation of the total expense and/or policy expense rates. Many students struggled with the calculation of expenses for total premium, and failed to recognise that the CHE amount quoted in the budget was for claims paid during the budget year, and not in fact, equivalent to the total paid over a claim's life. An error which was not uncommon was the failure of some students to recognise that risk premium is not the premium charged to insureds, that expenses and profit margin must also be included. The average score awarded for this question is 2.4 marks out of 5.0.

Part d) asked students to respond to the MD of the company about the impact of growth on the expense rate adopted for the pricing and what else could be done about the overall competitiveness of the rates.

This part was poorly answered with many students identifying some potential issues, but few made suggestions of "next steps" or solutions. Only partial credit was awarded in these instances. Most students recognised the difference between fixed and variable expenses and recognised that profit margins could be changed. Many students discussed tighter underwriting measures and better claims management in supporting a more competitive set of rates, rather than focusing on expenses even though the question clearly pointed in that direction. Very few candidates discussed the possibility of filing below a "fully funded" basis.

The average score awarded was 1.5 marks out of 4.0.

Part e) was a bookwork question asking for a listing of information to be provided in an FCR. Almost all students obtained full marks in this question. Several candidates did not receive full marks because they interpreted the question as what should be provided in an FCR only in this particular case, rather than for FCRs in general. 2.9 marks out of 3.0 were awarded on average.





Part f) asked students to what issues should be specifically highlighted in this particular company's FCR, given the information that there had been a recent change in the actuarial analysis which is now calculating a much higher underlying claims cost. This part was not well answered. While many students were able to recognise that previous reserves and the premium basis were not adequate, they did not discuss the reasons or the implications of these inadequacies. The average score awarded was 0.9 marks out of 2.0.

Craig Price

Chief Examiner – General Insurance Subject 3A & 3B, May 2006  
25 June 2005



## **Course 4A: Superannuation & Planned Savings**

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### **Results Summary**

12 candidates enrolled for the May 2006 exam. Of these, 12 were present at the exam.

It is proposed that 6 candidates be awarded a pass, which implies a pass rate of 50%. This compares with a pass rate of 18% for the November 2005 exam and 42% for the May 2005 exam.

In summary:

<b>Number of candidates</b>	
Originally enrolled	12
Absent from exam	-
Presented at exam	12
Passed	6
Failed	6

The analysis by examination centre is as follows:

<b>Centre</b>	<b>Presented</b>	<b>Passed</b>	<b>Pass Rate</b>
Melbourne	5	3	60%
Sydney	5	2	40%
Hong Kong	1	1	100%
Malaysia	1	0	0%
<b>Total</b>	12	6	50%

### **Examiners**

Examiners for this year were:

Chief Examiner: Phillip Everett  
Assistant Examiner: Sally Hopwood



### ***Degree of Difficulty and Course Coverage***

The degree of difficulty of questions on each paper and course coverage is summarised in the tables below:

Question	Syllabus Aims	Units	K&U	SJ	CJ	Total Marks
1	1,3,5	1,2,3	4	8	6	18.0
2	1,2,3,4	1,2,3	6	6	5	17.0
3	4,5,6	3,4	6	5	4	15.0
4	3,4,6	2,3,4	4	6	5	15.0
5	1,3,6	1,3,4	8	6	6	20.0
6	1,3,4	1,2,3	2	7	6	15.0
			30	38	32	100.0

### ***Question by Question Analysis***

#### **Question 1 (18 Marks)**

This question was aimed at testing the student's knowledge of tax, fees and modelling as they apply to an individual.

It was answered well by most candidates, with 8 passing.

#### **Question 2 (17 Marks)**

This question was aimed at testing student's knowledge of the methods of determining crediting rates and their impacts on a fund.

Many students did not answer all parts of the question.

In respect of part (c) many students did not address the issue of negative reserves and ownership issues. It was also noted that a number of students did not differentiate between fund choice and portability – which is disappointing as this is a basic and fundamental concept.

In respect of part (d) there were two groups of students – those who knew about stochastic models and those who did not.

#### **Question 3 (15 Marks)**

This question tested students understanding of funding methods, valuation assumptions and ability to use given valuation results to calculate contribution rates. The question was quite well answered with 10 students passing.

In respect of part (a) students generally picked up the “standard” funding methods, with only two noting that targeting a coverage of vested benefits as a method. The markers noted that a few of the comments made about the unsuitability of some of the methods were not cogent.



In part (b) few students mentioned the “gap” between investment earnings and salary increases as an important issue in determining the economic assumptions.

In part (d) where calculations were performed, the contributions calculated were too high as students did not appreciate that the value of benefits related to both past and future service benefits, ran out of time or did not appreciate what information was provided.

#### **Question 4 (15 Marks)**

This question was aimed at testing student’s knowledge of salary packaging, setting up a new arrangement and the impact of transfer bases on funding (including the issues surrounding a technically insolvent fund).

Students performed relatively well, although a number of students were unaware that both unsatisfactory financial position and technical insolvency apply when the minimum requisite benefit is equal to the vested benefit. Many students were also not aware of the implications of salary packaging for defined benefits.

#### **Question 5 (20 Marks)**

This question was aimed at testing the students’ knowledge of and implications of AASB119 valuations and reporting. The question was poorly answered with only 4 students passing. This was a disappointing result as this is an area where many actuaries and students are currently working in superannuation and a better overall result was expected.

The markers commented that students tended to produce textbook answers in this question and judgement was lacking.

#### **Question 6 (15 Marks)**

Part (a) of this question was aimed at testing students’ understanding of options available for superannuation arrangements as well as the factors to consider in choosing the solution. Part (b) was aimed at testing the students understanding of defined benefit liabilities and costs and to apply judgment as to how these could be considered in a sale agreement. Overall the question was poorly answered with only 3 candidates managing to pass the question.

In part (a), most candidates mentioned the possibility of converting the defined benefit members to accumulation, but the merging the two existing plans into one was generally overlooked. Some candidates did not even mention the obvious issues surrounding the return of surplus to the employer.

Generally there was not enough detail regarding the implications of merging the funds or converting to accumulation.

In part b(i), most candidates identified the 3 main measures of surplus as possible bases for determining the purchase price. Some missed easy marks by not quantifying the amount of surplus on each basis. Reducing the purchase price to reflect the risks associated with a defined benefit plan was barely mentioned.



Part b(ii) was poorly answered. Only about half the candidates identified the advantage to the purchasing company of using the vendor's fund surplus to finance contributions to the purchaser's fund.

Phillip Everett  
Chief Examiner, Superannuation & Planned Savings 4A  
June 2006



## **Course 5A: Investment Management and Finance**

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### **Results Summary**

18 Candidates enrolled for the 2006 semester one Investment Management and Finance 5A exam. All candidates were present at the exam.

It is proposed that 7 Candidates be awarded a pass, which implies a pass rate of 50%. This compares quite favourably with a pass rate of 29% for the 2004 Investment Management exam, 35% for the 2005 Semester One Investment Management exam and 26% for the 2005 Semester Two Investment Management exam.

In summary

<b>Number of candidates</b>	
Originally enrolled	18
Withdrawn prior to exam	2
Absent from exam	2
Presented at exam	14
Passed	7
Failed	7

The analysis by examination centre is as follows:

<b>Centre</b>	<b>Presented</b>	<b>Passed</b>	<b>Pass Rate</b>
Canberra	2	2	100%
Melbourne	5	2	40%
Sydney	6	3	20%
<b>Total</b>	<b>14</b>	<b>7</b>	<b>50%</b>

### **Examiners**

Examiners for this year were:

Chief Examiner: Paul Carrett



### ***Degree of Difficulty for Examination and Course Coverage***

The degree of difficulty of questions in the examination paper and course coverage is summarised in the table below:

<b>Question</b>	<b>Units</b>	<b>Knowledge &amp; Understanding</b>	<b>Straight-forward Judgement</b>	<b>Complex Judgement</b>	<b>Total Marks</b>
1a	1	2	2		4
1b	1		2	2	4
1c	1		2	2	4
1d	1	2	3	1	6
2a	2	3	3		6
2b	2	3	2	1	6
2c	2		3	3	6
2d	2		2		2
3a	3	1	4	4	9
3b	3		2	3	5
3c	3	1	1	2	4
3d	3		2	3	5
4a	4	1	2	2	5
4b	4		2	2	4
4c	4		3	3	6
4d	4		2	2	4
4e	4			1	1
5a	5	3	3		6
5b	5	2			2
5c	5		2	3	5
5d	5			4	4
5e	5		2		2
<b>TOTAL</b>		<b>18</b>	<b>44</b>	<b>38</b>	<b>100</b>



## **Overall Performance**

As is par for the course, this year's exam proved to be difficult for the majority of candidates. The pass rate of 50%, however, is considerably higher than previous examinations. While some concerns could be expressed regarding the overall performance, an analysis of the results is suggestive of a core group of students that performed capably across a range of targeted areas of study that are deserving of passing. Keeping in mind that the marginal passes are just that – marginal, I am happy with where the line has been drawn and with the pass rate overall.

The results should also be considered in light of the fact that the exam was challenging in terms of its breadth and the level of detailed knowledge required in each of the areas. Students were, as expected, presented with some difficult challenges, especially in light of the time constraints involved.

## **Question by Question Analysis of the Examination**

### **Question 1**

<b>Question</b>	<b>Units</b>	<b>Knowledge &amp; Understanding</b>	<b>Straight-forward Judgement</b>	<b>Complex Judgement</b>	<b>Total Marks</b>
1a	1	2	2		4
1b	1		2	2	4
1c	1		2	2	4
1d	1	2	3	1	6

This question was based on an analysis of the accounting statements for an ASX listed media company. There were 8 passes out of 14 students and an average mark of 8.6 out of 18.

As demonstrated by the overall marks, this question was reasonably well answered, with students showing a reasonable aptitude for analysing a set of financial statements.

It should be noted, however, that part (d), which required a deeper understanding of financial theory in practice (i.e. the practical limitations of the Modigliani-Miller theorem), was not especially well answered.





## Question 2

Question	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
2a	2	3	3		6
2b	2	3	2	1	6
2c	2		3	3	6
2d	2		2		2

This question discussed the active management of credit risk. Given that similar questions have been (rightfully) a staple of recent year's investment exams, students appeared to be well prepared for this question. The average mark was 14.4 out of 20, with 10 out of 145 students passing.

Results were reasonably strong across all parts of this question, and hence this question was not a strong differentiator.

## Question 3

Question	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
3a	3	1	4	4	9
3b	3		2	3	5
3c	3	1	1	2	4
3d	3		2	3	5

Question 3 was about valuation techniques, applied to the specific case of a forest in a post carbon credit trading environment. The average mark was 13.6 out of 23. 11 students out of 14 passed this question.

Again, this question 3 was reasonably answered across the board.

If there was a general weakness in respect to the answers provided to this question it was in respect of the efficiency of the answers. When students were asked to outline key issues to impacting the valuation of the forest, many students spent far too long discussing the drivers of revenue in minute detail, but failed to mention (at least in sufficient depth) other core factors affecting valuation such as expenses and tax.

#### Question 4

Question	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
4a	4	1	2	2	5
4b	4		2	2	4
4c	4		3	3	6
4d	4		2	2	4
4e	4			1	1

Question 3 dealt with quantitative investment techniques, and proved to be a challenging question for most students.

Only 8 students passed this question, with the average mark being only 11.8 out of 20.

The average mark was 13.6 out of 23. 11 students out of 14 passed this question.

This is a difficult topic in its own right, and hence it is not surprising that this question was not handled well under exam conditions.

#### Question 5

Question	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
5a	5	3	3		6
5b	5	2			2
5c	5		2	3	5
5d	5			4	4
5e	5		2		2

Question 5 tests knowledge of asset allocation models. Only 3 students out of 14 passed this question.

This was the hardest question on the exam, and as borne out by the results.

#### Overall comments

Overall, each individual question was tolerably well handled by the students, with a majority of students passing in the specific case of each question. That only half the students passed overall, then, is a function of the fact that students were, quite reasonably, required to perform at a reasonably consistent level across the whole exam, and not just in parts.

Paul Carrett

Chief Examiner, Investment Management and Finance 5A 2006

June 2006



## **Course 5B: Investment Management & Finance**

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### **Results Summary**

The May 2006 examinations represent the third examination session under the new Part III syllabus of the Institute of Actuaries of Australia (which involves twice yearly exams of a split course). Fourteen candidates presented for the exam, with an additional 3 candidates enrolled, but did not present at the exam.

It is proposed that 6 candidates be awarded a pass, which implies a pass rate of 43%. This compares to a pass rate of 31% from the November examination session and 40% from the previous May.

The exam set this period was relatively easy, with a strict, relatively difficult marking level enforced. This resulted in a split between those students with a good understanding, and those without adequate preparation being clearly delineated. The narrow theoretical focus of students (particularly those that were under prepared) was also evident, but not as poor as previous exams.

Pass rates from prior years for the previous course were as follows:

- 2004 – 39%
- 2003 – 42%

In summary:

<b>Number of candidates</b>	
Originally enrolled	17
Absent from exam	3
Presented at exam	14
Passed	6
Failed	8

The analysis by examination centre is as follows (adjusting 2004 results for transitional passes):

<b>Centre</b>	<b>Presented</b>	<b>Passed</b>	<b>Pass Rate May 2006</b>	<b>Previous Pass Rate Nov 2005</b>
Melbourne	3	0	0%	33%
Sydney	9	5	56%	33%
United Kingdom	2	1	50%	0%
Total	14	6	43%	31%

### **Examiners**

Chief Examiner for the 5B course this semester was Brad Milson, with assistant examiner Razman Azmir. However, due to work commitments and the tight marking timetable, Raz was not able to contribute greatly this semester. The Course Leader was Gourav Choudry.



### ***Degree of Difficulty and Course Coverage***

The analysis of the degree of difficulty of exam questions in the format specified by the IAAust is as follows:

<b>Question</b>	<b>Syllabus Aims</b>	<b>Knowledge &amp; Understanding</b>	<b>Straight-Forward Judgement</b>	<b>Complex Judgement</b>	<b>Total Marks</b>
1	2,5	12	2		<b>14</b>
2	5,6	5	17	3	<b>25</b>
3	1,2,3,7,8	6	7	3	<b>16</b>
4	2,4,5,8		9	11	<b>20</b>
5	2,4,8,9	2	10	5	<b>17</b>
6	5	2	3	3	<b>8</b>
<b>Total</b>		<b>27</b>	<b>48</b>	<b>25</b>	<b>100</b>

### ***Overall Performance***

Overall the exam paper acted as a good discriminator, with raw marks ranging from 38.6 to 80.6 out of 100.

Overall, the candidate standard remains relatively poor where practical understanding was required or where the theory studied needed to be related to the real world. The study process needs to relate the in-depth theory studied as part of this course back to practical applications in order to generate candidates with useful skills.

Of those non-passing candidates, most demonstrated either a significant gaps in their knowledge, with a number of weak responses, or were unable to respond to any of the more difficult questions requiring complex judgement.

Brad Milson

Chief Examiner –Investments and Finance 5B,

May 2006 Exams

June 2006



## ***Course 10: Commercial Actuarial Practice***

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### **SUMMARY**

The overall objectives of the Commercial Actuarial Practice (CAP) Course are, in summary, 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 contextualising actuarial solutions or approaches
- 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 judgement and on the communication skills of the students rather than on bookwork.

There are two separate pieces of assessment. The first assessment is based on participation in a one-week residential course and on completion of a case in one of the traditional areas of actuarial practice on the last day of the residential course. The second assessment is a 2-hour examination on non-traditional areas of actuarial practice. Students are required to pass each of these assessments in order to pass the Module.

Students who fail one or both of these assessments may be permitted to resit the assessment(s) they failed without completing the whole course again. The rules for second attempts are set out in Attachment 1.

15 candidates enrolled for the Course for the first time in semester one of 2006. All of these candidates attended the residential course, completed the case assessment and also completed the non-traditional exam. A further 8 candidates resat one or both of the assessments after failing them in semester two of 2005.

Of the total 23 candidates who sat one or both assessments it is proposed that 14 of the candidates be awarded a pass, which implies a pass rate of 61%. This pass rate is slightly lower than the 64% who passed in semester two of 2005. It is not out of line with that anticipated at the time the course was being developed, although the examiners had hoped for an improvement.

In addition, it is proposed that 2 candidates be given a pass for the residential course and case assessment, but a failure in the exam, and 4 candidates be given a pass for the exam, but a failure for the case assessment.



In summary, the proposed results are:

	Number of candidates	Percentage
Enrolled	23	100%
Passed	14	61%
Failed case but passed exam	4	17%
Failed exam but passed case	2	9%
Failed case but passed exam last time	1	4%
Failed exam but passed case last time	1	4%
Failed both case and exam	1	4%

Of the 15 candidates who were enrolled in the Course for the first time and attended the residential course, 9 (60%) passed both the case and the exam.

## **EXAMINERS**

The CAP course was developed and delivered for the Institute by the ANU. The ANU Team for the Course were David Service, Richard Cumpston, Tim Higgins, Richard Madden, Peter Martin and Colin Priest. These people also developed the assessment materials for the course and did the marking.

ANU's development and delivery of the course was overseen by a Faculty, consisting of Ken McLeod (Chair), Andrew Brown, David Knox, Arie van den Berg and Donna Walker. Ken McLeod also acted as Chief Examiner, assisted by the other members of the Faculty.

## **ASSESSMENT PIECE 1**

### ***Residential Course and Case Assessment***

As mentioned above, there are two separate pieces of assessment for the course, and candidates are required to pass each in order to pass the course. Assessment Piece 1, in turn, has two parts: participation in the residential course and a case assessment.

10% of the potential marks for Assessment Piece 1 were based on the candidates' participation during the first five days of the residential course. The participation was graded according to the effort demonstrated in preparing a report and discussion notes prior to the course and to the candidates' general participation in syndicate work and plenary discussion at the course. This grading was performed by the ANU team at the course.

90% of the assessment was based on a single question delivered in "case study" format at the start of the sixth day of the residential course. The candidates were given up to 8 hours (the sixth day of the course) to absorb the question material, perform all the necessary



analyses and prepare the written communication of the answer. The answer was required to be a substantial piece of written communication. As a guide, the candidates were advised that a report of around 10 pages of text, plus graphs, tables, and a one page executive summary would be expected to be adequate.

Candidates were required to select one case study question from one of the four defined traditional practice areas, i.e. life insurance, general insurance, superannuation or investments. The assessment was open book, and candidates were allowed to bring any written material to the session, but were not allowed any outside communication.

## **Results**

All of the candidates were awarded 8 out of 10 for participation in the residential course. David Service and the ANU team confirm that they assessed each candidate individually and that all candidates completed the pre-work satisfactorily and all contributed actively to the syndicates and the plenary discussions. Candidates who sat the case assessment but did not attend the residential course this semester were awarded the marks gained for their participation in the residential course last semester.

The proposed pass results for Assessment Piece 1 as a whole were the same as the pass results for the case assessments. These are shown by subject below:

<b>Subject</b>	<b>Sat</b>	<b>Pass</b>	<b>Fail</b>	<b>Pass Rate</b>
Life Insurance	4	1	3	25%
General Insurance	10	7	3	70%
Superannuation	2	2	0	100%
Investments	6	6	0	100%
Total	22	16	6	73%

Overall, most of the candidates produced a report that was well set out and that communicated their recommendations clearly. The residential course included additional sessions on communications this semester and this may have contributed to the generally good standard of communication in the reports.

Across the different subjects, those that passed were the ones that demonstrated an understanding of the main technical and business issues. Those that failed typically demonstrated poor understanding of these issues.

## **Life Insurance**

The Life Insurance case required candidates to prepare a report for the Board of a life insurance company recommending the minimum amount the company should accept to take over a portfolio of disability income insurance from another company that wished to exit the business. Quite detailed data was provided on the experience of both companies.



In order to do a good job on this case, candidates should have considered the value of the business from a commercial perspective. For example, we would have expected students to look at the profitability and return on capital from the portfolio, as well as considering the actuarial reserves to support the outstanding claims and active lives.

With the benefit of hindsight, this was clearly the most difficult of the cases. The quality of the papers was disappointing. Most of the candidates demonstrated a poor understanding of disability income insurance and none demonstrated a good understanding of the commercial issues in the case. They all treated the case as an actuarial reserving exercise rather than focusing on the implications for the profitability and return on capital for the acquiring company.

Following the poor performance of candidates on this case, the CAP Faculty propose to strengthen the business and commercial component of the residential course next semester and also to provide feedback to the Life Faculty.

### ***General Insurance***

The General Insurance case required candidates to provide recommendations to permit their employer, a personal lines insurer, to take on the business of an underwriting agency specialising in insurance for vintage and other collectors' cars. The business of the agency was making money on the vintage cars but was making a loss overall because of its underwriting practices and pricing on a rapidly growing book of more recent models. There was a political component to the case because the new agency was introduced to the insurer through its best, most profitable existing agency and management was keen for the deal to go ahead.

In general, those awarded pass marks demonstrated that they understood the main technical and business problems with the underwriting agency's business issues. Those who failed typically did not understand these problems and did not come up with recommendations to resolve them.

Overall, however, we were disappointed in the level of commercial understanding demonstrated by the candidates. For example, no candidate was able to provide a competent analysis of the return on capital available from the underwriting agency's business. This reinforces the need to strengthen the business and commercial component of the residential course next semester. We have also provided feedback to the General Insurance Faculty.

### ***Superannuation***

The Superannuation case presented a situation where government employees are being transferred to a new semi-government corporation with its own new superannuation fund. Candidates are asked to project the payments that the government is required to pay under two different options for funding its share of the superannuation liabilities, and to advise the government on the issues surrounding these two different options.





## ***Investments***

Candidates selecting the Investments case were required to prepare a report for the trustees of a superannuation fund that provides both defined and accumulation benefits. The report was required to set out how the candidate would define the risks facing the fund, comment on competing views about investment strategy and recommend a strategy, including quantifying the risk of the recommended strategy.

All of the candidates passed. All identified and addressed the main issues

## ***ASSESSMENT PIECE 2***

### ***Non-Traditional Exam***

Assessment Piece 2 was a two-hour examination held in the usual examination session at the end of the semester. One question was offered in each of 5 defined non-traditional practice areas, i.e. infrastructure, ageing populations, banking, environment and health. Each candidate was required to attempt 2 out of the 5 questions. Candidates were permitted to take any materials into the examination.

## ***Results***

The proposed marks for each candidate for Assessment Piece 2 as a whole are shown in Attachment 6. It is proposed that 14 out of the 18 candidates who sat the exam, or 78%, should pass. In this case, this implies a pass mark slightly above 50.

The results by question are set out in the table below.

<b>Question</b>	<b>Sat</b>	<b>“Passed”<sup>1</sup></b>	<b>Percent Passed</b>	<b>Average Mark A</b>	<b>Average Mark B</b>	<b>Average Mark</b>
Ageing Populations	12	12	100%	58	57	57
Environment	6	5	83%	62	58	60
Health	11	9	82%	63	58	61
Infrastructure	4	3	75%	56	55	56
Banking	3	3	100%	60	62	61
All Questions	36	32	89%	60	58	59

It is noted that the marks awarded by the two independent markers are reasonably consistent across all of the questions, and there is no indication that any of the markers were systematically more or less generous.

<sup>1</sup> This refers to the number of candidates who received a mark of 50 or more in the specific question rather than those who passed the exam as a whole.

Overall, the pass rates in Assessment Piece 2 were relatively good, and better than in semester two of last year, when only 75% of individual questions received pass marks, compared with 89% this semester.

### ***Ageing Populations***

The Ageing Populations question asked candidates to prepare a draft report for an Australian bank considering entering the market for reverse mortgages as a supplier. Candidates were specifically asked to address the main drivers of demand, the outlook for demand, how to estimate market size, the main risk factors, how to cost a no-negative-equity guarantee, means of mitigating the risks and potential modifications to the product.

Most of the candidates addressed each of the required points systematically. They generally did a good job on the practical issues around drivers of demand and the main risks. Most of the candidates also gave sound answers to the question on how to cost the guarantee.

All candidates scored at least 50% on this question. In the Chief Examiner's view, the high pass rate may have partly reflected the relatively focused teaching and bookwork provided in this subject, although the question went beyond the bookwork. The other reason for the high pass rate was that the question was easier than the others. The elements of the question were set out clearly, rather than requiring candidates to apply judgement to identify the issues.

### ***Environment***

This question asked the candidates to draft their advice to the directors of the company that owns the Hazelwood power station in Victoria, a brown coal plant with a high level of carbon emissions. The candidates were asked to cover the implications and potential strategies for the power station under two different scenarios for carbon taxes, one with no taxes and one with taxes growing at a rate that would make Hazelwood uncompetitive over the coming decade or two.

Six candidates attempted this question. Most of them understood the implications of the scenarios and responded accordingly with logical advice. Quite a few made very unrealistic suggestions about converting the business to black coal, hydroelectric, gas or even nuclear power, but these shortfalls needed to be viewed in the context that specific understanding of the industry was not a requirement. The best answer was well-written, thoughtful and technically correct.

The one candidate who failed wrote at length about the general outlook for the industry, but completely failed to address the issues presented in the question.



## ***Health***

Candidates were asked to draft a reply to Diabetes Australia, the support and advocacy group for Australians with Type 2 diabetes, explaining how their consulting firm could help calculate the saving in future health expenditure from increased current expenditure on the disease.

The quality of the answers to this question varied significantly, with a number of very well written responses that covered the major issues and proposed good approaches. Most candidates identified and addressed the major issues. However, there were two candidates that had unconvincing approaches to the problem and scored less than 50.

## ***Infrastructure***

This question asked candidates how they would calculate the premium to insure the profitability of a new iron ore port facility in the north west of Western Australia. It also asked what data they would need to do so and what exclusions or restrictions they would recommend. The main risk in this case would be the volatility of the iron ore tonnage moving through the port over a 50-year period.

This was a relatively difficult question for the candidates. Only 4 attempted it. 3 of these candidates passed, although there were still shortcomings in a couple of the answers. A couple of the candidates missed important issues around the drivers of risk and a couple were relatively weak at explaining their approach. The candidate who failed was weak on both of these counts.

## ***Banking***

Candidates were asked to detail the approach they would use and data they would require to review the credit risk of a major Australian bank for its new CEO. The scope of the review was to include an assessment of the credit risk underlying existing loans and the soundness of the current processes for assessing credit risk in respect of applications for new loans.

Only 3 candidates attempted this question and all of them passed.

Ken McLeod

Chief Examiner, Commercial Actuarial Practice

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