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# WRITTEN-ANSWER QUESTIONS ADDED TO MLC EXAM

BY KEN BONVALLET AND STUART KLUGMAN

**THOSE WHO REMEMBER** receiving Society of Actuaries (SOA) exam scores by U.S. mail often express alarm and confusion at changes in the exam system. They are reassured, however, when told that “contingencies” is still part of the exam system, and it is still a difficult exam to pass.

Actuarial mathematics continues to be the heart of an actuary’s education and one of the requirements common to all tracks. In recent years, the name of this exam has gone from Course 3 to Exam M (for models) to Exam MLC (models for life contingencies).

The syllabus at various times has included risk theory, simulation and Poisson models, but the central topic has always been actuarial present values of risk and how they are applied to basic pricing and reserving.

Exam MLC has been a three-hour multiple-choice exam since May 2007. When the syllabus changed in 2012 to emphasize multiple state models and modern insurance models and products, the number of questions was reduced, from 30 to 25. Effective with the May 2014 exam, written-answer questions will be added,

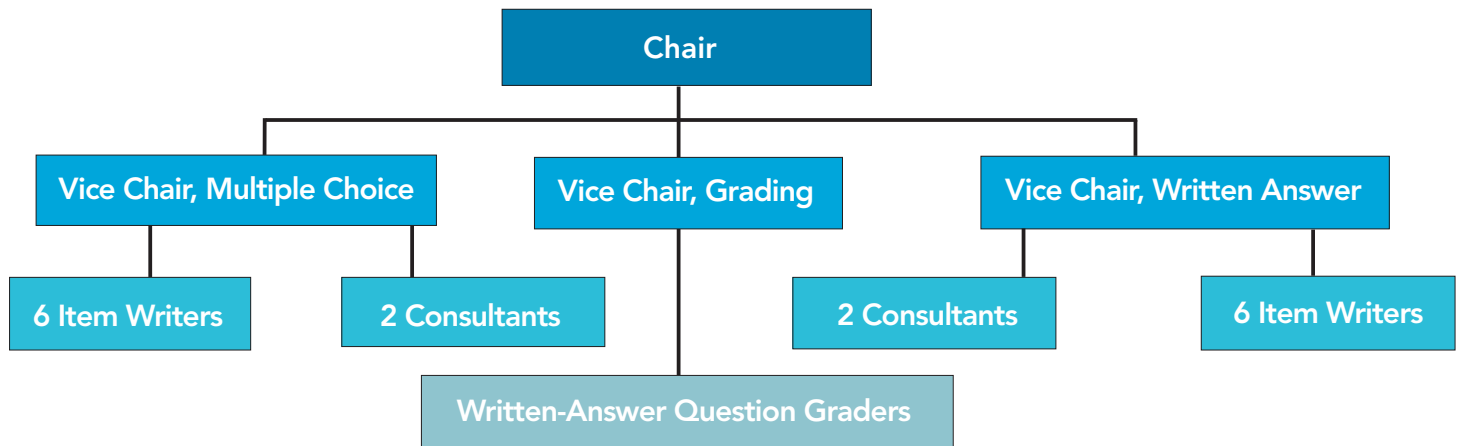
the exam time will be extended to four hours, and the learning outcomes will reflect the expectation that candidates demonstrate mastery of the material at a higher cognitive level.

### WHY CHANGE?

Two years ago, the SOA Board of Directors directed a task force to examine whether changes were needed to Exam MLC because of the following.

- Fellowship exam committees reported that candidates were not successfully

## MLC Exam Committee



making the transition to written-answer exams.

- Employers complained that some actuaries who had passed MLC were unable to do practical actuarial work.
- The MLC Exam Committee found it difficult to write seven-minute, multiple-choice questions at appropriate cognitive levels on some topics.
- Multiple-choice questions cannot reward a candidate who correctly works all but the last step of a problem correctly but then makes a mistake, i.e., there is no provision for partial credit.
- Multiple-choice questions cannot differentiate between a candidate who can work nearly all of a problem and a candidate who has no idea how to start the same problem.
- Guessing may cause a borderline candidate to pass or fail inappropriately.

The task force recommended adding written-answer questions, and the MLC Curriculum and Exam committees went to work to implement the change.

**WHO IS THE MLC EXAM COMMITTEE?**

We have all heard about the hundreds of volunteers that support the SOA education structure, which includes the exam committees. The MLC Exam Committee consists of 20 of those volunteers (not counting written-answer graders)—some newly recruited for the change in exam, some veterans whose service began earlier than Exam M and Course 3, all the way back to Course 150. To handle the new exam structure, new item writers and

consultants were recruited, and the committee was restructured shown on page 36.

The Exam Committee has two functions.

- It creates an exam every six months, subject to the approval of the Education Committee officers. Starting May 2014, it will also grade the written-answer exams.
- It is an expert body that collectively expresses its opinion as to what pass mark will discriminate between candidates who demonstrate mastery and those who do not. The result is a recommended pass mark.

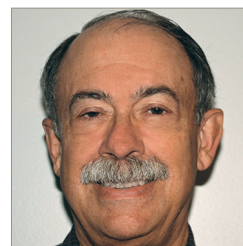
The committee does not determine the learning outcomes, determine which texts or which sections of texts will be recommended in support of those outcomes or set the pass mark. However, it does provide input to those who do make such decisions.

**WHAT HAPPENED TO COMPUTER-BASED TESTING FOR MLC?**

MLC was to move to computer-based testing (CBT), but later than the other preliminary examinations because it was not jointly sponsored by the Casualty Actuarial Society. When it came time to begin the MLC transition, a new syllabus was in the planning stage. This syllabus was introduced in May 2012.

CBT requires a large bank of exam-tested questions, but the past unpublished exams had few questions that were appropriate for the new syllabus. This meant deferring CBT until a sufficient number of exams had been given under the new syllabus. In the meantime, the decision was made to add written-answer questions.

We are working with the CBT vendor to be able to meet the needs of MLC; after that happens, MLC will move to CBT.



Ken Bonvallet

**PLANNING FOR THE NEW EXAM STRUCTURE**

The Board of Directors approved a structure that included the following specifications.



Stuart Klugman

- The exam will be four hours long; the current 15-minute read-through period would continue.
- Approximately 60 percent of the exam points will be written answer, but candidates may allocate their time as they wish.
- The multiple-choice questions will tend to be more straightforward than those currently being asked.
- The pass mark will be set based on total exam points and will be such that a candidate cannot pass with a poor written-answer paper.
- Candidates who perform poorly on the multiple-choice questions will not have their written-answer questions graded.

Examinations are first drafted 12 months before they are given, to allow time for thorough review, editing, testing by experts and approval. So the May 2014 exam was drafted shortly after the revised syllabus and exam structure were developed. Since no existing exam includes

both multiple-choice and written-answer components, several major steps had to be completed with little precedent.

- A.** Restructure and enlarge the Exam Committee to be able to write, edit and review more questions.
- B.** Recruit dozens of graders who would commit to many hours of first grading in a period of 10 days, then two days of second grading at a meeting site, twice per year.
- C.** Develop a process that would produce a total exam that covered the learning outcomes with appropriate weights and whose multiple-choice exam would be an appropriate screening exam.
- D.** Publish sample questions well in advance of the May 2014 exam.
- E.** Develop a schedule to get multiple-choice scores compiled quickly so that a cutoff score will be set and graders may begin their work. Then, total scores must be compiled on a timely basis so that the subset of papers near the likely pass mark can be established, second grading completed for these papers and scores sent to candidates.

Some past examinations containing actuarial mathematics had included written-answer questions, so past chairs were consulted. When the timeline was laid out, it became clear that scores could be prepared for communication to candidates one week later than currently, provided the exam was given in late April and late October.

## IMPLEMENTING THE NEW STRUCTURE

The Curriculum Committee has restated the learning outcomes to reflect the higher cognitive levels expected in a written response. Verbs such as calculate were replaced by explain, apply, interpret and compare.

Grading written-answer papers is a time-consuming task, and especially difficult when done by volunteers in their spare time. To be fair to candidates, all SOA written-answer exams provide for a second grading of papers that are close to the expected pass mark. If the two graders cannot agree on the score for a paper, then they discuss the paper in detail.

This process is a challenge for fellowship exams with a few hundred candidates, but MLC has had well over 2,000 candidates per session for years, and the numbers are rising. In May 2013, there were more than 3,000 candidates. To meet the challenge, the board agreed that not all written-answer papers would be graded.

- The multiple-choice exam will serve as a screening exam; candidates who do not achieve a minimum score on this part of the exam will not have their written-answer papers graded.
- When the exam results are announced, the minimum score will be announced, and those who did not achieve it will be told their score.

The timing of the second grading of written-answer papers was set so that the entire Exam Committee is able to review the exam results at its regular semi-annual meeting. This gives the committee the opportunity to request that more papers receive second grading.

## GOOD NEWS FOR CANDIDATES AND OUR PUBLICS

For well-prepared candidates, these changes are good news.

- They will have more time and better ways to demonstrate their knowledge of the syllabus.
- They will receive partial credit for demonstrating what they know.
- Borderline papers will receive a second grading and discrepancies between the first and second scores will be resolved.

For our profession and our publics, these changes will better identify candidates who demonstrate mastery of the material. **A**

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**Ken Bonvallet, FSA, MAAA**, is retired from Nationwide Financial.

**Stuart Klugman, FSA, CERA**, is a staff fellow, Education, at the Society of Actuaries. He can be reached at [sklugman@soa.org](mailto:sklugman@soa.org).