SOCIETY OF ACTUARIES
Financial and Regulatory Environment – U.S.

Exam GIFREU

AFTERNOON SESSION

Date: Thursday, April 26, 2018
Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 8 questions numbered 13 through 20 for a total of 40 points. The points for each question are indicated at the beginning of the question. No questions pertain to the Case Study.

2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.

3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.

2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.

3. The answer should be confined to the question as set.

4. When you are asked to calculate, show all your work including any applicable formulas.

5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets because they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam GIFREU.

6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

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****BEGINNING OF EXAMINATION****
Afternoon Session
Beginning with Question 13

13. (*4 points*)

(a) (*2 points*) Describe the four building blocks of total insurance liability under International Financial Reporting Standards (IFRS) 4.

(b) (*2 points*) Compare the accounting treatments under IFRS 4 and GAAP for the following:

(i) Reporting of premiums

(ii) Use of risk margins

(iii) Recognition of profit

14. (*4 points*) Teng and Perkins describe an approach by Charles Berry for estimating the premium asset on retrospectively rated policies. This approach by Berry was to estimate ultimate premium, using the historical premium emergence pattern, and then subtract the current booked premium.

(a) (*1.5 points*) Explain why the Teng and Perkins method is generally favored over the Berry approach.

You are given the following estimates from an analysis of empirical data from a company's retrospectively rated policies:

Retro Adjustment Period	Percentage of Loss Emerged Since Prior Evaluation	Selected Premium Development to Loss Development (PDLD) Ratio
First	65%	1.65
Second	25%	0.70
Third	10%	0.40

- No losses are reported after the third retro adjustment.

You have the following amounts from the company's retrospectively rated policies from policy year 2016 as of year-end 2017:

Completed Retro Adjustments	Reported Losses as	Expected Loss Emergence after Last Completed Retrospective Adjustment	Booked Premium	Premium Booked from Prior Retrospective Adjustment
0	605,000	320,000	370,000	0

- None of the unbilled premiums from the retrospectively rated policies are secured.

(b) (*1.5 points*) Calculate the premium asset on retrospectively rated policies as of December 31, 2017 arising from policy year 2016.

(c) (*0.5 points*) Calculate the admitted portion of the premium asset from part (b) under the rules of U.S. statutory accounting.

(d) (*0.5 points*) Explain how the use of nonadmitted assets for receivables may make statutory income greater than GAAP income.

15. (*6 points*) An excess of loss reinsurance treaty has the following terms and parameters:

- Loss layer: 250 million excess of 500 million
- Premium: Fixed at 3.2 million, payable at inception

The loss distribution for the 250 million excess of 500 million layer is as follows:

Loss Layer Amount	Probability	Net present value of gain/(loss)
0	96.0%	3,200,000
50,000,000	2.0%	(11,420,000)
150,000,000	1.5%	(40,260,000)
250,000,000	0.5%	(68,800,000)

Net present value in the table assumes that losses are settled one year after inception of the treaty with an annual after-tax investment yield of 4.0%.

(a) (*3.5 points*) Calculate the following for this treaty:

(i) Expected Reinsurer Deficit (ERD)

(ii) Risk Coverage Ratio (RCR) in percent form

(b) (*1 point*) Determine whether or not this treaty should be recognized as containing risk transfer under U.S. statutory accounting.

The treaty is up for renewal and the reinsurance company is considering including several new contract features.

(c) (*1.5 points*) Describe how each of the following contract features affects the determination of risk transfer under U.S. statutory accounting:

(i) Refund clause - Partial refund of reinsurance premiums to the ceding insurer for incurring no losses to the layer.

(ii) Loss payment clause - The reinsurer is to settle and pay all incurred losses in the layer twelve months after the expiration of the treaty.

(iii) Premium payment clause - Half of the premium is paid by the ceding insurer at contract inception while the remainder is held in trust by the ceding insurer in an investment account in which the ceding insurer guarantees a minimum annual investment return of 8%.

16. (*7 points*) You are an actuarial analyst working at a financial rating agency and are actively involved in the interactive rating process with a general insurance client, Specialty Assurance Mutual (SAM). SAM has recently hired your company to issue a financial rating on their insurance business.

To prepare for the upcoming interactive meeting with senior management at SAM, you tailor your focus on non-public qualitative attributes including regulatory interactions and reinsurance.

(a) (*1 point*) Identify four other key non-public qualitative attributes that should be discussed in an interactive meeting.

(b) (*2 points*) Provide one question to ask the senior management at SAM for each of the four key qualitative attributes identified in part (a).

During the interactive meetings with SAM's senior management, you learned of the following:

- Regulatory interactions: SAM does not lobby directly but relies on trade organizations to work with regulators. SAM also relies on bureau filings and classification plans for state filings.
- Reinsurance: SAM disclosed information showing that their recent reinsurance transactions have higher attachment points than their prior transactions.

(c) (*1 point*) Assess whether SAM's regulatory interactions are a positive, negative, or neutral factor from a financial rating perspective.

(d) (*1 point*) Assess whether the recent change in SAM's reinsurance program is a positive, negative, or neutral factor from a financial rating perspective.

To evaluate SAM's capital adequacy, you look at using different risk measures. You are given the following information:

- The expected fair value of unpaid losses is 500 million.
- The probability of the aggregate fair value of unpaid losses is uniformly distributed from 200 million to 800 million.
- Capital held is 100 million.

(e) (*2 points*) Calculate the following for SAM:

(i) Expected policyholder deficit (EPD)

(ii) EPD ratio

(iii) 99% Value at Risk (VaR)

(iv) 99% Tail Value at Risk (TVaR)

17. (*5 points*) On December 15, 2016, Jay Joe, employee and Appointed Actuary of ABC Insurance Company became seriously ill. On January 6, 2017, Jay died. ABC had no other actuarial employees and had never used actuarial consultants. The following table outlines key activities regarding ABC's year-end 2016 actuarial valuation:

Date	Activity
January 20, 2017	ABC management selected consulting actuary Mary Martin as the new appointed actuary and forwarded her name to ABC's Board of Directors.
February 1, 2017	ABC's Board of Directors appointed Mary Martin to issue the Statement of Actuarial Opinion (SAO) for ABC as of December 31, 2016.
February 10, 2017	Mary issued a reasonable opinion for the SAO on both the net and gross reserves of ABC. Both net and gross reserves totaled 11 million. The materiality standard identified in the SAO was 2 million, and the SAO stated that there was a significant risk of material adverse deviation.
February 15, 2017	Mary provided ABC with an Actuarial Opinion Summary (AOS) stating that there had been no adverse loss development and that the range of reasonable estimates was 8 to 10 million on both a gross and a net of reinsurance basis.
March 1, 2017	Mary provided an oral report to the Board, regarding both the SAO and the AOS. Mary answered all questions posed to her by the Board members and management.
May 15, 2017	Mary Martin issued the Actuarial Report as of December 31, 2016. The external auditors of ABC signed off on the statutory financial statements for ABC as of December 31, 2016.
June 1, 2017	ABC provided a copy of the Actuarial Report to its reinsurer.

(a) (*2 points*) Identify four potential irregularities described in the above table.

(b) (*1 point*) Describe any two actions that the Appointed Actuary should take based upon the irregularities identified in part (a).

In December of 2017, the company discovered claim files from 2016 that had been mistakenly omitted from the year-end 2016 actuarial opinion analysis. Mary determined that consideration of the new information would have changed the year-end 2016 actuarial range of reasonable estimates from 8 - 10 million to 12 - 15 million.

(c) (*2 points*) Outline any actions that Mary Martin and ABC should take regarding the year-end 2016 SAO with respect to the omission.

18. (*5 points*)

(a) (*1 point*) Identify two main types of flooding that flood coverage must address.

The drafting legislation for the U.S. National Flood Insurance Program (NFIP) included several principles and expectations.

(b) (*1 point*) Describe three of these principles or expectations.

The country of Islantis has experienced widespread uninsured flood damage caused by recent hurricanes. You are a consulting actuary engaged by the country of Islantis to outline the actions and considerations needed to start a publicly sponsored property insurer, the Islantis Flood Insurance Program (IFIP).

(c) (*2 points*) Describe two potential benefits and two potential uncertainties that IFIP might have if it offers flood insurance as well as other property coverage.

(d) (*1 point*) Describe the biggest financial impediment to Islantis in starting the IFIP.

19. (*6 points*) Tort costs are often funded through liability insurance.

(a) (*1 point*) Describe two key purposes of tort compensation.

(b) (*0.5 points*) Identify two direct costs of the tort system other than amounts paid to plaintiffs.

(c) (*0.5 points*) Identify two indirect costs of the tort system.

(d) (*1 point*) Describe the difficulties in getting countrywide data for amounts paid to plaintiffs from torts.

Tort cost trends are important to pricing liability insurance.

(e) (*3 points*) Critique the applicability of the following measures when estimating tort cost trends for liability insurance:

(i) CPI

(ii) Medical care CPI

(iii) U.S. tort costs as a percent of GDP

20. (*3 points*) Insurance producers are the principal contacts for most consumers who need insurance or have insurance-related questions. An agent is a producer that works for an agency. Agents may work as an independent agent for an independent agency or an exclusive agent for an exclusive agency.

(a) (*1 point*) Compare independent agencies to exclusive agencies for general insurance with respect to:

(i) Placement of policies

(ii) Ownership of a book of business

(b) (*1 point*) Explain how producer licensing requirements protect both consumers and producers.

(c) (*1 point*) Identify two possible reasons for a producer's license to be suspended, revoked, or non-renewed by state regulators.

****END OF EXAMINATION****
Afternoon Session

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