INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 100 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 40 points).
   
a) The morning session consists of 13 questions numbered 1 through 13.
   
b) The afternoon session consists of 9 questions numbered 14 through 22.

The points for each question are indicated at the beginning of the question. Questions 10 - 13 pertain to the Case Study, which is enclosed inside the front cover of this exam booklet.

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.
CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular investment structure to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.
1. (4 points) The appointed actuary considers a range of reasonable estimates when providing a U.S. Statement of Actuarial Opinion (SAO).

(a) (2.5 points) Compare this concept of a “range of reasonable estimates” to a “range of possible outcomes.”

(b) (1.5 points) Outline three approaches to selecting a range of reasonable estimates for an SAO.
2.  (4 points) Reinsurance can be used to offset the surplus strain from prepaid expenses under U.S. statutory accounting.

(a) (0.5 points) Identify the following regarding the surplus strain from prepaid expenses:
   (i) Type of reinsurance used to offset this surplus strain
   (ii) Source of the surplus relief from the reinsurance identified in (i)

(b) (0.5 points) Identify how a reinsurance treaty should be structured to maximize surplus relief regarding:
   (i) The attachment basis (losses-occurring or policies-attaching)
   (ii) The effective date

The current rules of U.S. statutory accounting for recognizing retroactive reinsurance were set in 1992, as a compromise between the state of New York and other states.

(c) (1.5 points) Explain the pre-1992 rationale for recognizing retroactive reinsurance in:
   (i) The state of New York
   (ii) The other states

(d) (1.5 points) Describe how retroactive reinsurance is currently recognized under U.S. statutory accounting for the following annual statement items:
   (i) Surplus
   (ii) Loss reserves
3.  (5 points) Many insurers have introduced usage-based insurance pricing for automobile risks.

(a)  (1 point) Explain how pricing factors under usage-based insurance differ from those of traditional coverages for automobile insurance.

Telematics collects in-vehicle data on driver behavior and transmits it to the insurer.

(b)  (0.5 points) Identify two types of telematics devices used by automobile insurers.

(c)  (1.5 points) Compare the telematics devices identified in part (b) from the perspective of:

(i) Cost

(ii) Tamper-proofing

(iii) Reliability of data captured

(d)  (0.5 points) Provide two uses of telematics devices in automobiles other than for the pricing of automobile insurance.

In 2013, the Association of British Insurers (ABI) produced a guide to good practice for telematics. The ABI recommended that insurers provide clear disclosures to consumers and regulators with respect to the selling and managing of telematics policies.

(e)  (1.5 points) Identify three disclosures, as recommended by the ABI, that insurers should provide to consumers.
4. (4 points) The U.S. insurance regulatory system can be described as a three-stage process. During the first stage, state lawmakers and regulators eliminate or limit some risks through restriction on activities or by requiring prior approval.

(a) (1 point) Describe the other two stages.

The NAIC RBC calculation is a standardized approach to measure the minimum amount of regulatory capital required for an individual insurance company.

(b) (1.5 points) Explain how the NAIC RBC formula addresses correlation and diversification.

(c) (1.5 points) Describe the statistical safety levels to which the NAIC RBC capital requirements for an individual company are calibrated with respect to:

(i) The total capital requirement

(ii) Capital required for individual risk elements
5. (5 points) Canada, Australia and New Zealand are all commonwealth countries with a great number of similarities.

Canadian tort law is greatly influenced by U.S. tort law. However, the influence of U.S. tort law in Australia and New Zealand has been relatively minimal.

(a) (1.5 points) Provide three reasons why the influence of U.S. tort law has been minimal in Australia and New Zealand.

By the end of the 1970s, awards for noneconomic damages in the U.S. had become very large. There was a great deal of general concern in Canada that awards for noneconomic damages would follow the trends of U.S. tort law. In 1978, the Supreme Court of Canada (SCC) ruled on three cases (known as the trilogy of cases) involving serious injuries and awards for noneconomic damages.

(b) (1 point) Describe the approach taken in Canada regarding awards for noneconomic damages following the SCC ruling on the trilogy of cases.

Most jurisdictions in the U.S. have a “loser pays” rule to reduce frivolous suits.

(c) (1 point) Describe two issues with the “loser pays” rule.

The concept of “privity of contract” has been important in U.S. product liability law.

(d) (1.5 points) Explain how U.S. product liability law has developed with respect to this concept.
6.  (3 points)

(a)  (1.5 points) Compare U.S. statutory accounting and U.S. GAAP accounting with respect to the following:

(i)  Primary user

(ii)  Focus of accounting rules

(b)  (1.5 points) Provide one example of a difference between U.S. statutory accounting and U.S. GAAP accounting for each of the following:

(i)  Assets

(ii)  Expenses

(iii)  Reinsurance recoveries
7. **(6 points)**

(a) **(2 points)** Describe four key reasons that would motivate a government to provide general insurance.

(b) **(2 points)** Describe four key evaluations that should be performed periodically to assess the performance of a governmental program that provides general insurance.

The multi-peril crop insurance program in the United States is a partnership between the federal government and the private insurance market.

(c) **(2 points)** Outline the process used by private insurers to determine how risk transfer is accomplished under the U.S. Standard Reinsurance Agreement (SRA) for the multi-peril crop insurance program.
8. (4 points) Insurance contracts are in many ways similar to other contracts.

(a) (1 point) State the four elements that insurance contracts, like other contracts, must contain in order to be legally enforceable.

Insurance contacts also have distinctive characteristics not found in other contracts. One distinctive characteristic is that they can follow the “principle of indemnity.”

(b) (1.5 points) Describe three other distinctive characteristics found in insurance policies.

(c) (0.5 points) Describe how the “principle of indemnity” applies in insurance contracts.

(d) (0.5 points) Identify a provision usually found in insurance contracts that is meant to reinforce the “principle of indemnity.”

There are, however, insurance policies that do not adhere to the “principle of indemnity.”

(e) (0.5 points) Describe one example of such an insurance policy.
9. (4 points) The reporting of reinsurance by Schedule P line of business differs by type of reinsurance.

Describe how each of the following types of reinsurance are reported by Schedule P line of business:

(i) Assumed nonproportional reinsurance treaty

(ii) Assumed proportional reinsurance treaty

(iii) Assumed reinsurance treaty with both proportional and nonproportional sections

(iv) Ceded nonproportional reinsurance treaty

(v) Ceded proportional reinsurance treaty
10. (6 points) Statement of Statutory Accounting Principles (SSAP) No. 55, *Unpaid Claims, Losses and Loss Adjustment Expenses*, classifies general insurance loss adjustment expenses (LAEs) into two broad categories: Defense and Cost Containment (DCC) and Adjusting and Other (A&O).

(a) (1 point) Indicate whether each of the following LAE items is categorized as DCC or A&O under SSAP No. 55:

(i) Surveillance expenses
(ii) Attorney fees incurred in the determination of coverage, including litigation between the reporting entity and the policyholder
(iii) The cost of engaging experts
(iv) Loss adjustment expenses for participation in voluntary and involuntary market pools if reported by accident year

(b) (5 points) Calculate the calendar year (CY) amounts below for R-Dan General Insurance Company (R-Dan):

(i) CY 2017 Paid DCC expenses
(ii) CY 2017 Incurred DCC expenses
(iii) CY 2016 Unpaid A&O expenses
11. (6 points) R-Dan’s historical reserve development NAIC IRIS ratios were as follows:

<table>
<thead>
<tr>
<th>IRIS Ratio 11 (One-Year Reserve Development)</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.5%</td>
<td>17.3%</td>
</tr>
<tr>
<td>IRIS Ratio 12 (Two-Year Reserve Development)</td>
<td>10.5%</td>
<td>19.7%</td>
</tr>
</tbody>
</table>

The incurred net losses and DCC expenses reported at year-end 2018 for accident years 2017 and prior are $34 million higher than reported at year-end 2017. Accident year 2017 accounted for 80% of this amount.

(a) (2 points) Calculate R-Dan’s 2018 results for the following:

(i) IRIS Ratio 11

(ii) IRIS Ratio 12

(b) (3 points) Assess the results of the ratios calculated in part (a) making reference to:

(i) Usual ranges for the ratios

(ii) Areas for further analysis

(iii) Implications for the 2018 Statement of Actuarial Opinion (SAO) and Actuarial Opinion Summary (AOS)

(c) (1 point) Explain the overlap of results from IRIS Ratio 11 and IRIS Ratio 8 (Change in Adjusted Policyholders’ Surplus).

(a)  (1 point) Describe the purpose of a PDR.

Assume Sue Calvin recommended that R-Dan management evaluate setting up a PDR as of December 31, 2017 in accordance with SSAP No. 53.

(b)  (2 points) Assess the reasonability of Sue Calvin’s recommendation for a PDR evaluation.

(c)  (0.5 points) Describe one place in the Statement of Actuarial Opinion where Sue could comment on a PDR.

(d)  (0.5 points) Describe how a PDR would be recorded in the balance sheet of the statutory annual statement.
Questions 10 to 13 pertain to the Case Study. Each question should be answered independently.

13. (5 points) You have been informed that the prior years’ row in R-Dan’s 2017 Schedule P – Part 3J – Auto Physical Damage (APD) was completed incorrectly. The amounts in the schedule should have been as follows (cells with the changed amounts are shaded and italicized):

<table>
<thead>
<tr>
<th>Year in which Losses were Incurred</th>
<th>Cumulative Paid Net Losses and DCC Expenses Reported at Year-End ($000 Omitted)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>Prior</td>
<td>000</td>
</tr>
<tr>
<td>2016</td>
<td>XXX</td>
</tr>
<tr>
<td>2017</td>
<td>XXX</td>
</tr>
</tbody>
</table>

You are also given the following 2018 loss and DCC expenses data for R-Dan with respect to its APD line of business ($000 Omitted):

<table>
<thead>
<tr>
<th>Year in which Losses were Incurred</th>
<th>Total Net Losses and DCC Expenses Paid During Calendar Year 2018</th>
<th>Case Basis Net Losses and DCC Expenses Unpaid at Year-End 2018</th>
<th>Bulk and IBNR Reserves on Net Losses and DCC Expenses Reported at Year-End 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 and prior</td>
<td>200</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2016</td>
<td>400</td>
<td>300</td>
<td>–200</td>
</tr>
<tr>
<td>2017</td>
<td>5,100</td>
<td>600</td>
<td>–300</td>
</tr>
<tr>
<td>2018</td>
<td>150,000</td>
<td>7,000</td>
<td>–4,000</td>
</tr>
</tbody>
</table>

Construct the following Schedule P exhibits for R-Dan’s 2018 Annual Statement using the corrected historical amounts and the 2018 data provided. (Columns containing only entries of XXX need not be shown.)

(i) Part 3J

(ii) Part 2J

**END OF EXAMINATION**

Morning Session
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