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

Exam GIFREU

AFTERNOON SESSION

Date: Thursday, November 2, 2017
Time: 1:30 p.m. – 3:45 p.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This afternoon session consists of 9 questions numbered 14 through 22 for a total of 40 points. The points for each question are indicated at the beginning of the question.

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 14

14. (*4 points*) In 1944, the Supreme Court of the United States agreed to hear the *United States vs. the South-Eastern Underwriters Association* (SEUA) case.

(a) (*1 point*) Summarize the two key points of the Supreme Court's *U.S. vs. SEUA* decision.

(b) (*0.5 points*) Identify the Act of Congress that was enacted in 1945 as a reaction to the Supreme Court's *U.S. vs. SEUA* decision.

(c) (*1 point*) Describe two elements pertaining to the regulation of the business of insurance included within the Act identified in part (b).

In this case, the SEUA, its officers and its members were indicted for a number of criminal activities.

(d) (*1.5 points*) State three criminal activities that were included in the indictments against the SEUA.

15. (*5 points*) Free Star Commercial (FSC) and Revolution General Insurance (RGI) are two U.S.-based general insurance companies that both write only Commercial Auto Liability insurance. RGI has been in operation since January, 2012 and FSC has been in operation since January, 2014.

On January 1, 2016, FSC purchased RGI and entered the two companies into a pooling arrangement. Under the pooling arrangement, the total business of FSC and RGI is pooled together. FSC and RGI are the only companies in the pool; each company is allocated a percentage of the business in the pool. The pooling percentage has not changed since it was set at inception of the pooling arrangement.

RGI's year-end 2015 Annual Statement Schedule P – Part 2D exhibit included the following amounts:

RGI 2015 Sched. P-2D: Amounts reported at year-end ($000)				
Year in Which Losses were Incurred	7 2012	8 2013	9 2014	10 2015
8. 2012	7,250	5,750	6,625	7,625
9. 2013	xxx	6,250	7,500	7,875
10. 2014	xxx	xxx	8,450	9,875
11. 2015	xxx	xxx	xxx	10,600

The following tables represent the amounts in FSC's year-end 2016 Annual Statement Schedule P – Part 2D exhibit and FSC's underlying data before pooling transactions:

FSC 2016 Sched. P-2D: Amounts reported at year-end ($000)					
Year in Which Losses were Incurred	6 2012	7 2013	8 2014	9 2015	10 2016
7. 2012	4,350	3,450	3,975	4,575	5,100
8. 2013	xxx	3,750	4,500	4,725	6,525
9. 2014	xxx	xxx	13,650	14,025	13,575
10. 2015	xxx	xxx	xxx	14,100	14,175
11. 2016	xxx	xxx	xxx	xxx	15,975

FSC 2016 underlying amounts before pooling transactions at year-end ($000)					
Year in Which Losses were Incurred	6 2012	7 2013	8 2014	9 2015	10 2016
9. 2014	xxx	xxx	14,300	13,500	10,500
10. 2015	xxx	xxx	xxx	12,900	10,050
11. 2016	xxx	xxx	xxx	xxx	13,650

(a) (*0.5 points*) Demonstrate that the pooling percentage is 40% for RGI.

(b) (*1.5 points*) Calculate RGI's underlying Schedule P-Part 2D amounts before pooling transactions as of year-end 2016 for accident years 2012 to 2016.

15. Continued

(c) (*1.5 points*) Compare RGI's year-end 2016 Schedule P-Part 2D total two-year development (Column 12, Row 12 of a complete Schedule P Part 2) versus the comparable amounts using underlying data before pooling transactions.

RGI's policyholders' surplus was reported as 32.5 million in its Annual Statement as of year-end 2016.

(d) (*0.5 points*) Calculate RGI's 2016 NAIC IRIS Ratio 12.

(e) (*1 point*) Describe any potential regulatory scrutiny based on the results from parts (c) and (d).

16. (*6 points*) The general insurance "NAIC Risk Based Capital (RBC) formula for informational purposes" that was introduced in 2013 is as follows:

$$R_0 + \sqrt{(R_1)^2 + (R_2)^2 + (R_3)^2 + (R_4)^2 + (R_{5A})^2 + (R_6)^2 + (R_7)^2}$$

You are given the following information about A1 Casualty Company (A1CC) and HP General Insurance (HPGI):

- A1CC and HPGI are both general insurance companies that write homeowners insurance and are licensed in all 50 states. They both have moderate catastrophe exposure from hurricanes.
- A1CC owned HPGI until its sale for 25 million in cash on January 1, 2016. Before the sale, A1CC and HPGI were in a pooling arrangement and were the only companies in the pool. A1CC was the parent company and HPGI was a domestic insurance subsidiary.
- After the sale of HPGI, A1CC completely replaced the written premiums lost from policies written by HPGI through the acquisition of business from a managing general agent (MGA). The MGA business acquisition was at a cost of 10 million cash.
- The MGA business that was acquired includes commercial multiple peril policies in California and Florida. The California business has significant risk of catastrophes from earthquakes and wildfires. The Florida business has significant risk of catastrophes from hurricanes.
- A1CC's loss reserves grew by 5% from 2015 to 2016 due to the MGA business acquisition.
- A1CC's amounts of investments and other assets remain stable from 2015 to 2016 with the exception of the sale of HPGI stock and acquisition of the MGA business.
- A1CC's reinsurance terms remain stable from 2015 to 2016.
- Off-balance sheet items are zero for both A1CC and HPGI.
- A1CC estimates that its operational risk increased by 20% from 2015 to 2016.
- All NAIC supplied RBC factors remain unchanged from 2015 to 2016.

Describe the likely change to each risk charge within A1CC's "NAIC RBC formula for informational purposes" from 2015 to 2016 attributable to these transactions.

17. (*3 points*) You are given the following information for U.S.-based general insurer, B&D Insurance:

- Taxable operating income of:
  - 13 million in 2013
  - 10 million in 2014
  - 8 million in 2015
- Taxable operating loss of 40 million in 2016
- Tax rate of 35%
- No capital gains/(losses) reported in any of the past five years
- Any tax refunds are received as cash
- Any tax liabilities are paid with cash

(a) (*1 point*) Determine B&D's tax loss carryover from the 2016 taxable operating loss.

B&D has a greater than 50% probability of experiencing an operating loss in 2017.

(b) (*2 points*) Determine the admitted and non-admitted assets created from B&D's 2016 tax loss carryover from part (a) under U.S. statutory accounting in 2017.

18. (*6 points*) The "10-10" rule was historically used to test for risk transfer in reinsurance contracts.

(a) (*0.5 points*) Define the "10-10" rule.

(b) (*0.5 points*) Describe a weakness of the "10-10" rule.

(c) (*0.5 points*) Demonstrate that a reinsurance contract that passes the "10-10" rule has an expected reinsurer deficit (ERD) of at least 1%.

Pasta Re is a company that reinsures all types of general insurance coverages. You are given the following information for Pasta Re's annual assumed reinsurance contract with Two-K General Insurance (Two-K):

- Quota share reinsurance: Two-K cedes 20% of premiums and losses to Pasta Re.
- Reinsurance commission: one-to-one sliding scale commission sliding from a minimum commission of 20% at a loss ratio of 75% to a maximum commission of 35% at a loss ratio of 60%.
- Reinsurance premium and the minimum commission are settled at contract inception.
- Assume that any sliding scale premium adjustment and all reinsured losses are settled twelve months after inception of the reinsurance contract.
- The 1-year U.S. Treasury rate at inception of the reinsurance contract is 4.0%.
- Two-K's direct premium volume is 28 million. Assume all the direct business is annual and written at the same time as inception of the reinsurance contract.
- Two-K's direct loss distribution is estimated in the following table:

Annual aggregate direct loss (in millions)	**Probability**
7.0	21%
12.0	35%
17.0	25%
22.0	11%
28.0	7%
35.0	1%

(d) (*4.5 points*) Determine whether or not this reinsurance contract meets the requirement of risk transfer based on each of the following:

(i) the "10-10" rule

(ii) ERD with a 1% threshold

19. (*5 points*) Certain U.S.-based general insurance companies may qualify for an exemption from the Statement of Actuarial Opinion (SAO) filing requirement. You are given the following information for four U.S.-based general insurance companies that have filed for an exemption from the 2016 SAO requirement:

Company	Facts used by the company for SAO exemption request	Exemption request filed
A	• Policyholders' surplus was $2,000,000 as of June 30, 2016. • Direct plus assumed written premium was projected at $4,500,000 for 2016. • The reasonable cost of the 2016 SAO was projected at $25,000.	October 1, 2016
B	• The company is under voluntary rehabilitation.	November 15, 2016
C	• The company only writes coverages for which all claims are completely settled 15 days or less after the occurrence date.	November 23, 2016
D	• Direct plus assumed written premium was projected at $800,000 for 2016. • Direct plus assumed loss and loss adjustment expense reserves was projected at $600,000 for year-end 2016. • Policyholders' surplus was projected at $950,000 for year-end 2016.	December 15, 2016

(a) (*2 points*) Explain whether or not each of the four companies qualified for this exemption from the SAO requirement for 2016.

In an SAO, the Appointed Actuary may determine that it is reasonable to make use of another's analysis for a portion of the unpaid claims. In order to make this determination, the Appointed Actuary should take into account a number of considerations, including the credentials of the individual that prepared the analysis.

(b) (*1 point*) Describe two other items the Appointed Actuary should consider in making this determination.

The International Actuarial Association (IAA) developed International Standard of Actuarial Practice 1A, *Governance of Models* (ISAP 1A). ISAP 1A states that an actuary involved in selecting, modifying, developing, or using a model should be satisfied that there is an appropriate model risk management framework in place.

(c) (*1 point*) Describe what is to be addressed in an appropriate model risk management framework based on ISAP 1A.

(d) (*1 point*) Describe the ISAP 1A requirements specific to stochastic models.

20. (*4 points*) Over the past five years CaliProp, a property developer in California, constructed one thousand residential units in total in fifty different developments. Each development has twenty units.

Twenty-four of the developments were sold to property management companies. The property management companies rent these units to individuals that use the unit as their principal residence. There are a total of six property management companies. Each property management company owns more than one development.

The units in the remaining twenty-six developments were sold to private individuals. Most of the individually owned units are the principal residence for the owners. Some of the individually owned units are used only as a seasonal residence for the owners.

The following information details the facts for a potential class action suit against CaliProp:

- Many of the units constructed have shown rot around stairwells and car ports. The rot was caused by wet soil and the improper treatment for support columns. The improper treatment of support columns was in violation of California's building codes.
- Older properties exhibit the greatest amount of damage.
- Damage encompasses both contents and structural damage to the property.
- Three of the property management companies want to form a class action that includes all property management companies, all renters and all individual unit owners. The class action is for the purpose of suing CaliProp claiming damage from poor construction and failure to follow codes.
- The three property management companies are the representative parties for this proposed class action. They own twelve of the developments in total. The developments that the representative parties own consist of the most recently constructed CaliProp properties.

Assess whether or not this CaliProp suit would meet the prerequisites for a class action.

21. (*3 points*) An insurance regulator may order an insurer in financial difficulty to take a number of actions under the NAIC's Model Hazardous Condition Regulation.

(a) (*1 point*) Identify four such actions.

When an insurer becomes insolvent and is forced by court order into liquidation, state guaranty associations play a vital role during the liquidation process to protect the policyholders. The NAIC has a model act regarding guaranty associations.

(b) (*1 point*) Describe two guaranty fund coverage limitations under this model act that apply in addition to policy terms.

(c) (*0.5 points*) Identify the source of funding for guaranty association claim payments in states that follow this model act.

(d) (*0.5 points*) Identify an alternative source of funding for guaranty association claim payments in states that do not follow this model act.

22. (*4 points*)

(a) (*2 points*) Describe four risks to insurance customers from an insurance company's use of credit-based scores.

(b) (*1 point*) Explain how two of the risks identified in part (a) can be mitigated by insurance companies.

(c) (*1 point*) Explain how laws and regulations (in the U.S. or Canada) have mitigated some risks to insurance customers from the use of credit-based scores.

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

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