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**SOCIETY OF ACTUARIES**  
**Strategic Decision Making Exam**

**Exam CFESDM**

**AFTERNOON SESSION**

**Date:** Thursday, October 30, 2014

**Time:** 1:30 p.m. – 3:45 p.m.

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**INSTRUCTIONS TO CANDIDATES**

**General Instructions**

1. This afternoon session consists of 5 questions numbered 8 through 12 for a total of 40 points. The points for each question are indicated at the beginning of the question. Questions 8 – 12 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 CFESDM.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

Tournez le cahier d'examen pour la version française.



## **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 plan design 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.**

**\*\*BEGINNING OF EXAMINATION\*\***  
**Afternoon Session**  
***Beginning with Question 8***

***Question 8 pertains to the Case Study.***  
***Each question should be answered independently.***

- 8.** (6 points) Information on Darwin is in Section 7 of the Case Study. Darwin Financials are in the Exhibit 7 of Section 7.

The Senior Accountant has proposed a new allocation methodology for indirect costs using number of policy contracts. He pointed out that the current method is expensive and takes several accountants and information technology staff to track the supporting information. He believes this proposal will result in a simpler process requiring less time and staff support.

You are reviewing the Senior Accountant's proposal. You note that total overhead in 2013 was \$40 million and it was allocated in the following way:

<b>Line of Business</b>	<b>2013 Overhead (in 000's)</b>
Variable Annuity	6,500
Universal Life	20,000
Traditional Life	10,000
Term	2,300
Other	1,200
<b>Total</b>	<b>40,000</b>

- (a) (3 points)
- (i) Quantify the impact of the new proposal on the profitability of the Term, Traditional Life and Universal Life lines of business in 2013 calendar year.
  - (ii) Assess the Senior Accountant's proposal with regard to performance measurement.
  - (iii) Recommend whether to adopt the Senior Accountant's proposal. Justify your answer.

## 8. Continued

Darwin uses a portfolio approach to allocate investment income from its Life Division portfolio to each of the Lines of Business. They allocate investment income pro-rata based on assets at the end of the period. Darwin targets setting policyholder interest credited rates on both new and existing business at the portfolio rate less a 200 basis points spread.

In mid-2015, Darwin begins distributing life products through a bank distribution channel and launches a new Universal Life product, ULBankIt, for banks.

Interest rates have been going up steadily since 2013:

	<b>2013</b>	<b>2014</b>	<b>2015</b>
New Money Rate	4.00%	6.50%	7.50%
Portfolio Rate	4.00%	5.50%	6.00%

(b) (3 points)

- (i) Assess the impact of the rising interest rates on ULBankIt and non-ULBankIt products from both the policyholders' and Darwin's perspectives.

Darwin's management decided to segment the asset pool backing its ULBankIt product. Darwin sets ULBankIt credited rates by referencing the investments yields associated with assets purchased with new deposits from 2015.

- (ii) Assess the impact of this decision on the competitiveness of the ULBankIt product.

**Question 9 pertains to the Case Study.**  
**Each question should be answered independently.**

**9.** (9 points) Information on Blue Jay Air is in Section 2 of the Case Study.

John Feather, CEO of Blue Jay Air, was discussing the volatility of the 3-month Libor rate with Jim Peters, the head of the risk management committee.

John made the following statement:

*“Last month, the maximum daily movement of the 3-month Libor rate was only 5 basis points and its daily standard deviation was almost 0. I don’t think we need to worry about it.”*

Consider the following behavioral finance concepts:

- Forecasting Errors
- Conservatism
- Overconfidence
- Sample Size Neglect and Representativeness
- Mental Accounting
- Framing

(a) (1 point) Identify two behavioral finance concepts exhibited in John’s statement. Justify your answer.

(b)  
(i) (1 point) Describe right way risk and its impact on counterparty risk and Credit Value Adjustment.

Blue Jay Air trades interest rate swaps with investment banks for hedging purposes. Currently Blue Jay Air only enters into the swaps as receiver (pays floating).

(ii) (1 point) Analyze the wrong way and/or right way risk from the investment banks’ perspective.

In addition, Blue Jay Air is considering payer interest rate swaps (pay fixed).

(iii) (2 points) Analyze the wrong way and/or right way risk from the investment banks’ perspective.

## 9. Continued

The *Barron's* Confidence Index uses the following data from the bond market:

Year	<i>Barron's</i> Confidence Index	Average yield on 10-Year Corporate Bonds	
		Intermediate-Rated	Top-Rated
2014	0.729	6.0%	4.38%
2013	0.652	5.6%	3.65%

In October 2013, the investment banks entered into receiver (pay floating) interest rate swaps which were traded with Blue Jay Air. The interest rate term structure was flat. The investment banks used a Credit Default Swap (CDS) index to hedge their counterparty risk.

- (c) (2 points) Determine if the CDS index hedge position experienced a loss or gain based on movements of *Barron's* Confidence Index between October 2013 and October 2014. Justify your answer.
- (d) (2 points) Identify the wrong way risk that exists in this CDS index hedging position based on interest rates movements and change in Credit Adjustment Value of Blue Jay Air. Justify your answer.

**Question 10 pertains to the Case Study.**  
**Each question should be answered independently.**

**10.** (8 points) A risk appetite statement should contain sections derived from the following five key components:

1. Principles
2. Tolerance Limits
3. Criteria & Attributes
4. Key Applications
5. Governance & Control

(a) (2 points) Describe each of these five components.

Information on Darwin Life Insurance Company is found in Section 7 of the Case Study. Information on RPPC's Risk Management Framework is found in Section 1.2 of the Case Study.

John Smith, VP of Risk Management, is reviewing a proposal for a new product. Specifically, he wishes to evaluate the product's impact on earnings to determine if it is aligned with Darwin's risk appetite.

(b) (4 points) When evaluating risks, ASOP 46 calls for the actuary to consider information about an organization's own risk management system as appropriate for the assignment. Assess four considerations within Darwin's risk management framework that align with ASOP 46 for new products.

John Smith performs interest rate sensitivity tests using the existing enterprise model and stochastic interest rate scenarios. John performs his analysis using 12/31/2012 data. He assesses the baseline results before and after the inclusion of the new product. He also creates a third set of results using a shocked interest rate parameter, with all other assumptions held constant.



## 10. Continued

Results derived from the model runs are provided in Table 1.

**Table 1**

Runs	Darwin Life: GAAP Earnings in Fiscal Year 2013 (in 000's)						
	CTE 75	CTE 80	CTE 85	CTE 90	CTE 95	CTE 97.5	CTE 99
<b>Enterprise Baseline</b>	145,000	130,000	118,000	98,000	68,000	15,000	(1,000)
<b>Enterprise Baseline with New Product</b>	151,525	135,590	122,838	101,822	70,108	14,850	(1,350)
<b>Shocked Model with New Product</b>	151,677	135,454	122,654	101,567	69,793	14,664	(1,890)

- (c) (1 point) Assess the results at CTE 95, CTE 97.5 and CTE 99.
- (d) (1 point) List two relevant ASOP 46 requirements for stress and scenario testing.

**Question 11 pertains to the Case Study.**  
**Each question should be answered independently.**

- 11.** (9 points) Pixel Animation Studio recently released a CGI-animated feature film – *Finding Molly*. The animated film turned out not only to be a big success to the company but also revived the whole animation industry in the Country Q.

RPPC is thinking of acquiring Pixel Animation Studio to further diversify its revenue stream and increase its total revenue. RPPC’s senior executives would like to capitalize on the revival of the animation industry as they believe this trend will continue for many years to come.

During the due-diligence process, RPPC discovered that Pixel had a plan to release a sequel of *Finding Molly* in the next 5 years. RPPC’s senior executives were excited by this plan and have identified that synergy between the operations and marketing are crucial for the success of the sequel.

- (a) (6 points) Identify *X*, *Y* and *Z* in table below. Justify your answer.

<b>RPPC Subsidiaries</b>	<b>Core Competency</b>	<b>Competitive Advantage</b>
Blue Jay Air	Effective cost control	Labour relationship
Blue Jay Tire Co.	Specializes in specialty tires products	Manufacturing of quality tires products
Frenz Corporation		<i>X</i>
Blue Ocean P&C Co.		<i>Y</i>
Darwin Life Ins. Co.		<i>Z</i>

- (b) (2 points) Explain how Disney used the competitive advantages of strategic partners to synergize the success of *Lion King*.
- (c) (1 point) Identify one subsidiary within the RPPC group that can emulate a synergy strategy similar to Disney’s experience on the release of *Lion King*. Justify your answer by using the competitive advantages identified in part (b) to illustrate how RPPC can synergize the release of *Finding Molly* sequel.

**Question 12 pertains to the Case Study.  
Each question should be answered independently.**

**12.** (8 points) Information on a discussion between Dunn and Bemowski with regard to overhead allocation can be found in Section 4 of the Case Study.

- (a) (3 points) For both Dunn and Bemowski:
- (i) Characterize the decision style exhibited by each person based on the way information is presented to the other person. Justify your answer.
  - (ii) Identify one cognitive bias for each person that is exhibited during the discussion. Justify your answer by providing an example from the discussion.

Four considerations for group decision making are:

- I. Time
- II. Cost
- III. Nature of the problem
- IV. Satisfaction and commitment

- (b) (4 points) Rank each consideration for its importance on the group decision to change the overhead allocation for the Frenz non-coffee business. Justify your answer.

Dunn asks you for your advice on how she should proceed to respond to Bemowski. Dunn agrees with your ranking of the key considerations in part (b).

- (c) (1 point) Recommend a possible course of action with respect to your key considerations.

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

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