

# Exam CFESDM

## AFTERNOON SESSION

**Date:** Wednesday, April 29, 2020

**Time:** 1:30 p.m. – 3:45 p.m.

### INSTRUCTIONS TO CANDIDATES

#### General Instructions

1. This afternoon session consists of 2 questions numbered 5 and 6 for a total of 40 points. The points for each question are indicated at the beginning of the question. Questions 5 and 6 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.

***Recognized by the Canadian Institute of Actuaries.***

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 5***

***Question 5 pertains to the Case Study.***  
***Each question should be answered independently.***

**5.** (24 points)

- (a) (1.5 points) Compare and contrast first-mover benefits versus second-mover benefits.

Information on Darwin Life Insurance Company (Darwin) and Snappy Life Insurance Company (Snappy) can be found in Sections 7 and 8 of the Case Study, respectively.

Frank Veltro, Snappy's CEO, recently approached Brandon Kaladin, Darwin's CEO, with an M&A opportunity. Veltro indicated he was open to either Darwin acquiring majority control of Snappy with a 51% investment, or simply making a 49% minority investment in Snappy. Under either scenario Veltro envisions keeping the same culture so they can continue to "make the sale, every time!"

- (b) (1.5 points) Evaluate the proposed partial acquisition of Snappy by Darwin based on the following reasons for acquisition:
- (i) Cost of new product development and increased speed to market.
  - (ii) Increased diversification.
- (c) (3 points) Evaluate the proposed partial acquisition of Snappy by Darwin based on the following problems in achieving success:
- (i) Integration difficulties.
  - (ii) Inability to achieve synergy.

Currently, it is believed that the entire small-cap life insurance sector is overvalued. To avoid over-paying, Brandon asked you to put together a valuation report on Snappy. You have valued the company using two different methodologies, which produce materially different results:

- I. Discounted Cash Flow
- II. Relative Valuation

## 5. Continued

(d) (3 points)

- (i) (2 points) Compare and contrast the assumptions on market efficiency of each methodology (I and II).
- (ii) (1 point) Explain how the assumption differences identified in (i) could result in Snappy being perceived as overvalued using one methodology and undervalued using the other.

Relative to its industry peers, you determine an appropriate price-to-book ratio for Snappy to be 1.2x; however, if Darwin is able to replace Snappy's management, you believe Snappy's valuation multiple could improve to 1.5x.

(e) (2.5 points) Calculate the minority discount between the two options (51% majority / 49% minority). Show your work.

Brandon makes the following comment. "A control premium is not applicable for publicly traded companies with widely distributed ownership."

(f) (1.5 points)

- (i) (0.5 points) Define "control premium".
- (ii) (1 point) Critique Brandon's statement.

You consider whether to make additional adjustments in your valuation analysis for Snappy.

(g) (3 points)

- (i) (1 point) Explain how to account for illiquidity premiums in valuations using Discounted Cash Flow.
- (ii) (2 points) Explain why an illiquidity premium is needed for the valuation of Snappy.

***Question 5 continued on the next page.***

## 5. Continued

Your colleague has insisted you should consider Market Consistent Embedded Value for valuation because “it is easier to track changes over time and easier to compare across companies”.

- (h) (2 points) Critique your colleague’s statement with respect to the valuation of Snappy.

Darwin is considering the following three options.

- A. Acquire 51% of Snappy.
- B. Acquire 49% of Snappy.
- C. No investment in Snappy.

- (i) (6 points)

- (i) Recommend the best of the three options (A to C) for Darwin. Justify your answer.
- (ii) Sketch a top-down three-level pyramid structure to communicate your recommendation to Brandon with the following criteria:
  - Limit the second-level of the pyramid to three key-line arguments
  - Limit the third-level of the pyramid to three support points

**THIS PAGE INTENTIONALLY LEFT BLANK**

**Question 6 pertains to the Case Study.**  
***Each question should be answered independently.***

- 6.** (16 points) Information on Frenz can be found in section 4 of the case study.

GranBaristo is a new, premium home coffee machine being sold in a town with an adult population of 10,000 coffee drinkers.

The first GranBaristo has just been purchased by a resident in town. Each resident who owns and currently uses a GranBaristo will brew coffee each week for ten people. 10% of those people will decide to purchase and use a GranBaristo if they don't already have one. The rest will continue to sample coffee from other owners in town.

After exactly 6 weeks of ownership, each resident will grow tired of using the machine and will never use it again. No resident buys two machines. Each resident lives independently.

- (a) (3 points) Sketch this system with an SIR epidemic model diagram. Label all stocks, flows, balancing and reinforcing loops, and causal variable inputs with polarities labelled.
- (b) (2 points) Determine how many people will have purchased a machine before the number of people using the machine begins to decline. Show your work.

Frenz is the only coffee shop in town. Because of the rise in popularity of the GranBaristo, sales have declined significantly.

Frenz will not be able to meet sales targets at this location if 8,000 people in town purchase a machine and the store will be forced to close.

Corporate office gives the location \$10,000 to try and remedy the situation.

There are two possible actions for the location:

- I. Spend \$10,000 on a campaign that will decrease the chance that someone purchases a machine after sampling a cup of coffee to 8%.
  - II. Spend \$10,000 on a campaign that will decrease the duration of ownership from 6 weeks to 5.5 weeks.
- (c) (2 points) Determine the best option for Frenz. Show your work.

## 6. Continued

Through market research Frenz concludes the system represented by the 10,000-person sample extends to Frenz's entire market and not just the town. Frenz enters a strategic alliance with the makers of GranBaristo where Frenz sells its coffee to brew in the machine. Through this alliance, when a customer stops using the machine, there is a chance that the customer begins using the machine again.

- (d) (3 points) Describe the impacts this would have on the system illustrated in part (a).
- (e) (3 points) Critique how a strategic alliance with GranBaristo affects Frenz's differentiation strategy.
- (f) (3 points) Propose three ways that Frenz can trigger system 1 thinking to increase sales of the "machine coffee packs" to the machine owners, at the store.

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

**USE THIS PAGE FOR YOUR SCRATCH WORK**