

Exam CFED

Date: Friday, October 25, 2024

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has 8 questions numbered 1 through 8 with a total of 70 points.

The points for each question are indicated at the beginning of the question. Questions 2-8 pertain to the Case Study.

2. 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 provided in this document.

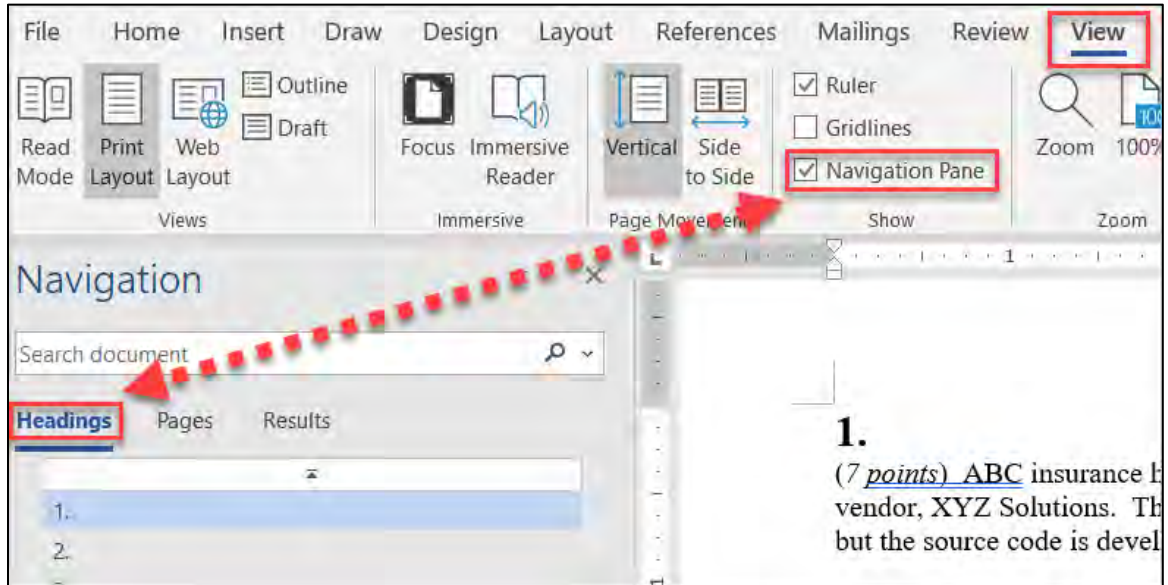
Written-Answer Instructions

1. Each question part or subpart should be answered either in the Word document or the Excel file as directed. Graders will only look at work in the indicated file.
 - a) In the Word document, answers should be entered in the box marked ANSWER. The box will expand as lines of text are added. There is no need to use special characters or subscripts (though they may be used). For example, β_1 can be typed as beta_1 (and ^ used to indicate a superscript).
 - b) In the Excel document formulas should be entered. Performing calculations on scratch paper or with a calculator and then entering the answer in the cell will not earn full credit. Formatting of cells or rounding is not required for credit.
 - c) For each question part requiring an answer in Excel, (1) clearly identify the inputs to the calculations, (2) show the necessary interim calculations, adding rows and / or columns, if necessary, and (3) enter the final answer in some or all of the cells highlighted in yellow, as applicable in each circumstance. These cells should contain formulas with links to other calculations in the worksheet. Minimize the use of hard-coded figures and maximize the number of interim steps in the calculations that would demonstrate your line of thinking.
2. The answer should be confined to the question as set.
3. Prior to uploading your Word and Excel files, each file should be saved and renamed with your unique candidate number in the filename. To maintain anonymity, please refrain from using your name and instead use your candidate number.
4. The Word and Excel files that contain your answers must be uploaded before time expires.

Navigation Instructions

Open the Navigation Pane to jump to questions.

Press Ctrl+F, or click View > Navigation Pane:



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.

1.

(9 points) ABC Life is currently in the process of bidding on purchasing a new annuity carrier, ANC. Management wants to understand the profitability of the ANC annuity product.

- (a) (1 point) Describe how a hurdle rate is used to evaluate an investment.

ANSWER:

The ABC team has put together a simplified projection to analyze the product's profitability, as shown in the Excel tab 1_b. You decide to use a hurdle rate of 8%.

- (b) (2 points) Calculate the following metrics, using the assumptions given in the Excel file. Include time zero cash flows. Show your work.

- (i) NPV

The response for this part is to be provided in the Excel spreadsheet.

- (ii) IRR

The response for this part is to be provided in the Excel spreadsheet.

- (c) (1 point) Explain whether ANC's product offering is a good addition to ABC, using the results of your calculation in (b).

ANSWER:

Another company also rumored to be bidding on ANC is Private Equity Inc. ("PEI").

- (d) (1 point) Describe two specific benefits that draw private equity companies to life and annuity business.

ANSWER:

1. Continued

ABC's management wants to understand better how PEI's view of the business may differ from its own.

(e) (4 points)

- (i) Explain how two of the assumptions provided in the Excel spreadsheet might be different for a private equity firm.

ANSWER:

- (ii) Analyze the impact to the IRR (Excel tab 1_e-ii) after adjusting the two assumptions in part (i) to reflect what the private equity firm might reasonably assume. Show your work.

The response for this part is to be provided in the Excel spreadsheet.

**Questions 2 through 8 pertain to the Case Study.
Each question should be answered independently.**

2.

(9 points) You are assisting Karen Stat, an actuary at Star InsurTech (SIT), with risk and performance analyses (Case Study section 9).

- (a) (2 points) Explain why Karen may want to consider Economic-Value-Added as a performance measure using two reasons specific to SIT.

ANSWER:

- (b) (2 points) Recommend two key risk indicators to monitor SIT's operational risk. Justify your recommendations.

ANSWER:

Karen is evaluating the risks of a new product proposal in which premiums and benefits are denominated in a cryptocurrency, Insuracoin. Steven Chau, the Technology Chief, is confident that SIT's digital platform can be modified easily to accommodate trading in the cryptocurrency to support the product. Insuracoin, an established cryptocurrency with a large trading volume, is volatile and largely unregulated.

Karen is concerned about the additional operational risks after reading recent case studies involving huge trading losses experienced by large financial institutions.

- (c) (2 points) Describe two lessons learned from the Credit Suisse Archegos Scandal that SIT should consider.

ANSWER:

2. Continued

SIT decides to launch the Insuracoin product. SIT is approached by Faslite (Case Study section 9.4), a peer-to-peer (p2p) insurance platform, to act as a reinsurer for Faslite's excess losses.

(d) (2 points) Describe potential risks to SIT from the proposed Faslite arrangement in regards to:

(i) A p2p platform claim process.

ANSWER:

(ii) Financial considerations.

ANSWER:

(e) (1 point) Recommend actions SIT could take to mitigate the potential risks discussed in part (d). Justify your recommendation.

ANSWER:

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3.

(11 points) Darwin Life (Case study section 6) has suffered net losses in its Variable Annuity (VA) product in the second half of 2023 due to the major movements in equities and interest rates shown below.

Actual macro environment	3Q 2023	4Q 2023
interest rates	up 75 bps	down 115 bps
equity markets	down 9%	up 16%

The CRO, Aaliyah Jackson, has asked for an analysis of the risk models Darwin has been using.

(a) (2 points)

- (i) Describe the two bases for statistical backtests that can be used to assess the adequacy of the risk models.

ANSWER:

- (ii) Identify an advantage, in addition to ease of application, and a disadvantage for each basis in part (i).

ANSWER:

To respond to the CRO, data on Profit and Loss (P/L) observations and statistics from the models are analyzed over the 2nd half of 2023, which had 125 trading days. The current risk models assume P/L is normally distributed. Data is provided in the Excel tab 3_b.

(b) (4 points)

- (i) Construct a backtesting chart based on the Excel data.

The response for this part is to be provided in the Excel spreadsheet.

- (ii) Interpret the results in the context of Darwin's VA hedging program.

The response for this part is to be provided in the Excel spreadsheet.

3. Continued

You are considering using the Rosenblatt and Berkowitz Transformations.

(c) (5 points)

(i) Explain the Transformations, their purpose, and application.

ANSWER:

(ii) Transform the data to populate the two charts provided in the Excel tab 3_c.

The response for this part is to be provided in the Excel spreadsheet.

(iii) Interpret the results of the Transformations for Darwin Life.

The response for this part is to be provided in the Excel spreadsheet.

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4.

(9 points) You are an analyst working for Frenz (Case Study section 4). Kitty Dunn, the Chief Accounting Officer at Frenz, has asked you to consult on the foreign currency implications of the company's expansion strategies.

You are provided the following information to assist with your analysis:

- Frenz' presentation currency is the Euro.
- The following table contains relevant conversion rates between the Japanese Yen (¥) and the Euro (€):

Date	¥/€
December 31 st , 2023	165.0
Average Full Year 2023	160.0
Average Historical	140.0

Frenz decides to establish a Japanese subsidiary to expand its operations into the fast-growing Asian market. This Japanese subsidiary will keep its accounting records in the Japanese Yen.

(a) (4 points)

- (i) Recommend the appropriate foreign exchange translation method for the parent company, Frenz, to use when translating the financial statements of its new Japanese subsidiary into its presentation currency, Euros. Justify your recommendation.

ANSWER:

- (ii) Translate the 2023 year-end income statement and balance sheet of the Japanese subsidiary in terms of Euros using the appropriate translation method. (Excel tab 4_a-ii). Show your work.

The response for this part is to be provided in the Excel spreadsheet.

4. Continued

- (iii) Assess the following statement from Kitty Dunn regarding the foreign currency risk of establishing the Japanese subsidiary whose functional currency is the Japanese yen:

“The establishment of a Japanese subsidiary will result in a net liability balance sheet exposure. This means that if the Japanese yen weakens relative to the euro, the value of stockholders’ equity on the parent company’s balance sheet will increase due to an increase of the foreign currency translation adjustment.”

ANSWER:

Frenz makes the decision to expand its super premium coffee product line. To do so, it decides to import coffee beans from Costa Rica. Frenz finds a Costa Rican coffee bean supplier and agrees to purchase coffee beans under the following terms:

- The Costa Rican Colón(₡) will be the currency used for the transaction.
 - The transaction is made on November 15, 2023 with credit terms that allow for payment within 60 days.
 - The transaction is settled on January 15, 2024.
- (b) (2.5 points) Describe how this foreign currency transaction will be reflected on the quarterly balance sheet and income statement at both December 31, 2023 and March 31, 2024.

ANSWER:

- (c) (2.5 points)
- (i) Recommend a method which Frenz can use to reduce any potential volatility on the balance sheets and income statements related to the transaction in part (b). Justify your recommendation.

ANSWER:

- (ii) Describe one drawback of the method recommended in part (i).

ANSWER:

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5.

(9 points) The Big Ben operations team tracks customer satisfaction data using the company’s risk appetite dashboard (Case Study section 5.3). The metric has fallen from 89% to 87% over the last two months.

Big Ben takes action to address customer complaints. The operations team agrees to monitor the impact using a feedback loop measuring three indicators of customer satisfaction. The feedback will be reviewed every three months.

After three months, customer satisfaction is remeasured, and the results are summarized in the table below.

Customer Satisfaction (CS) Measure	Current Level (average from prior period)	Goal in 3 months	Expected Impact on %CS	Actual in 3 months	Actual impact on %CS
Complaints by phone	50 per month	20 per month	1.5%	30 per month	1.0%
Cumulative website downtime	2 hours	1 hour	0.5%	Not accurately tracked, but survey of website users is favorable	0.5% based on website user feedback
Customer rating of service received from CS staff	3.8 out of 5	4.0	1.0%	4.1	0.5%
% Customer Satisfaction (%CS)	87%	90%	3.0%	88%	2.0%

5. Continued

(a) (4 points) Analyze the effectiveness of the feedback loop implemented by the operations team in explaining changes in customer satisfaction with regards to:

- I. Complaints by phone
- II. Cumulative website downtime
- III. Customer rating of service received
- IV. Overall % customer satisfaction

Justify your answer.

ANSWER:

The operations team decides to expand the feedback loop.

(b) (2 points) Recommend two improvements to the feedback loop based on the analysis in part (a). Justify your answer.

ANSWER:

(c) (3 points) Recommend two additions to the feedback loop based on other important elements of Big Ben's business model, such as products and services. Justify your answer.

ANSWER:

*Questions 2 through 8 pertain to the Case Study.
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6.

(9 points) You are a consultant and have been asked to perform a five-components of the Dupont analysis (Excel tab 6_a) on Darwin Life's Return on Equity from 2022 - 2026 using the financial statements provided in the case study (Case Study section 6).

(a) (5 points)

(i) Calculate the components of the Dupont analysis. Show your work.

The response for this part is to be provided in the Excel spreadsheet.

(ii) Analyze the drivers of Darwin Life's ROE (Excel tab 6_a) for three of the Dupont components in part (i).

The response for this part is to be provided in the Excel spreadsheet.

Darwin Life's CEO, Gabriela Martinez, then tells you that she would like to increase ROE without taking excessive additional risk.

(b) (2 points) Recommend how to improve Darwin's ROE using the following. Justify your recommendations.

(i) Operations

ANSWER:

(ii) Improving the balance sheet.

ANSWER:

6. Continued

Darwin has also just purchased new office furniture for the whole company. Darwin's regular accounting method depreciates the furniture over 10 years while the taxing authority depreciates the furniture over 20 years, both using the straight-line method.

- (c) (2 points) Analyze qualitatively Darwin's deferred taxes related to this purchase.

ANSWER:

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7.

(8 points) Star InsurTech (SIT) (Case Study section 9) is looking into using more modern technology such as blockchain to administer its term insurance business.

(a) (3 points)

(i) Compare and contrast the public blockchain and private blockchain.

ANSWER:

(ii) Recommend which blockchain, public or private, SIT should use, based on SIT's strategic initiative to increase sales. Justify your recommendation.

ANSWER:

(b) (2 points) Describe how SIT could effectively use:

(i) Tokens

ANSWER:

(ii) Oracles

ANSWER:

SIT is looking into offering insurance on decentralized exchanges.

(c) (3 points) Describe how this approach would help SIT achieve each of its strategic initiatives (Case Study section 9.4).

ANSWER:

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8.

(6 points) Darwin Life Insurance Company (Case Study section 6) is evaluating the acquisition of Star InsurTech (SIT) (Case Study section 9).

- (a) (3 points) Explain how each of the following value-creating opportunities would apply to the acquisition of SIT.
- I. Improve the performance of the target company.
 - II. Create market access for SIT's products.
 - III. Acquire skills or technologies more quickly or at a lower cost than building in-house expertise at Darwin.

ANSWER:

As part of its acquisition decision-making, the management of Darwin is considering estimating the Market Consistent Embedded Value (MCEV) of SIT following CFO Forum guidance.

- (b) (1 point) Describe what reference interest rates should be used for this MCEV analysis.

ANSWER:

- (c) (2 points) Describe how the MCEV valuation methodology could be used in Darwin's evaluation of the SIT acquisition.

ANSWER:

****END OF EXAMINATION****