CURATED PAST EXAM ITEMS
- Questions -

CFE 201 – Corporate Finance

Important Information:

- These curated past exam items are intended to allow candidates to focus on past SOA fellowship assessments. These items are organized by topic and learning objective with relevant learning outcomes, source materials, and candidate commentary identified. We have included items that are relevant in the new course structure, and where feasible we have made updates to questions to make them relevant.
- Where an item applies to multiple learning objectives, it has been placed under each applicable learning objective.
- Candidate solutions other than those presented in this material, if appropriate for the context, could receive full marks. For interpretation items, solutions presented in these documents are not necessarily the only valid solutions.
- Learning Outcome Statements and supporting syllabus materials may have changed since each exam was administered. New assessment items are developed from the current Learning Outcome Statements and syllabus materials. The inclusion in these curated past exam questions of material that is no longer current does not bring such material into scope for current assessments.
- Thus, while we have made our best effort and conducted multiple reviews, alignment with the current system or choice of classification may not be perfect. Candidates with questions or ideas for improvement may reach out to education@soa.org. We expect to make updates annually.
    - **September 2026**: Spring 2025 exam questions have been added and mapped to the 2026-2027 curriculum. The questions and solutions for the Spring 2025 questions can be found at: Past Exam Questions and Solutions.

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Course CFE 201

Curated Past Exam Questions

All Learning Objectives

Learning Objective 1: Corporate Finance

Learning Objective 2: Financial Statement Analysis

Learning Objective 3: Managerial Accounting and Operational Excellence

Learning Objective 4: Evolving Quantitative Methods and Technologies

The following questions are taken from the Foundations of CFE Exams from 2020 – 2024. They have been mapped to the learning objectives and syllabus materials for the CFE 201 2025-2026 course and in some cases modified to fit the 2025-2026 curriculum.

The related solutions and Excel spreadsheets are provided in separate files.

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1. Fall 2024 CFE FD Exam (LOs 1b, 1c)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions.

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

Sources:

CFE201-102-25: Why private equity sees life and annuities as an enticing form of permanent capital

CFE201-100-23: Hurdle Rate Definition

(*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) **(LO 1b)** (*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) **(LO1b)** (*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.

1. Fall 2024 Continued

(ii) IRR

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

(c) **(LO 1b)** (*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) **(LO 1c)** (*1 point*) Describe two specific benefits that draw private equity companies to life and annuity business.

ANSWER:

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

(e) **(LO 1c, 1b)** (*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.
https://www.soa.org/4a27ab/globalassets/assets/files/edu/2024/fall/case-study/cfefd.pdf

2. Fall 2024 CFE FD Exam (LOs 3a, 3b, 4a, 4b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation.

(3b) Assess and recommend methods used to allocate costs and how these methods can distort perceived performance

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 5: Responsibility Accounting and Transfer Pricing

~~CFEFD-S3-23-21 Lam, Implementing Enterprise Risk Management from Methods to Applications, Ch 17: Integration of KPIs and KRIs~~

~~CFEFD-S3-30-21 Operational Risk Management, 2nd Ed, Ch. 18 Case Studies (JP Morgan Whale and Credit Suisse Archegos Scandal sections only)~~

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 12 Case Study: Customer Churn

SOA: Peer-to-Peer Insurance: Blockchain Implications

SOA Research Institute: Decentralized Insurance Alternatives: Market Landscape, Opportunities and Challenges

Case Study – Star InsurTech (SIT)

2. Fall 2024 Continued

(~~9~~ *5 points*) You are assisting Karen Stat, an actuary at Star InsurTech (SIT), with risk and performance analyses (Case Study section 9).

(a) **(LO 3a, 3b)** (*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. Fall 2024 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) **(LO 4a, 4b)** (*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) **(LO 4a, 4b)** (*1 point*) Recommend actions SIT could take to mitigate the potential risks discussed in part (d). Justify your recommendation.

ANSWER:

Questions 2 through 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4a27ab/globalassets/assets/files/edu/2024/fall/case-study/cfefd.pdf

4. Fall 2024 CFE FD Exam (LOs 2a, 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 15 Multiinternational Operations, Pages 3 – 9, and 18 – 24.

Case study – Frenz

(*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 31st, 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.

4. Fall 2024 Continued

(a) **(LO 2a, 2c)** (*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.

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) **(LO 2a, 2c)** (*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:

4. Fall 2024 Continued

(c) **(LO 2a, 2c)** (*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:

Questions 2 through 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4a27ab/globalassets/assets/files/edu/2024/fall/case-study/cfefd.pdf

6. Fall 2024 CFE FD Exam (LOs 2a, 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 9 Income Taxes

Case Study – Darwin

(*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) **(LO 2a)** (*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.

6. Fall 2024 Continued

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

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

(i) Operations

ANSWER:

(ii) Improving the balance sheet.

ANSWER:

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

ANSWER:

Questions 2 through 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4a27ab/globalassets/assets/files/edu/2024/fall/case-study/cfefd.pdf

7. Fall 2024 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 12 Case Study: Customer Churn

SOA Research Institute: Decentralized Finance for Actuaries

SOA: Peer-to-Peer Insurance: Blockchain Implications

SOA Research Institute: Decentralized Insurance Alternatives: Market Landscape, Opportunities and Challenges

Case Study – Star InsurTech

(*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) **(LO 4a, 4b)** (*3 points*)

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

ANSWER:

7. Fall 2024 Continued

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

ANSWER:

(b) **(LO 4a, 4b)** (*2 points*) Describe how SIT could effectively use:

(i) Tokens

ANSWER:

(ii) Oracles

ANSWER:

SIT is looking into offering insurance on decentralized exchanges.

(c) **(LO 4a, 4b)** (*3 points*) Describe how this approach would help SIT achieve each of its strategic initiatives (Case Study section 9.4).

ANSWER:

Questions 2 through 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4a27ab/globalassets/assets/files/edu/2024/fall/case-study/cfefd.pdf

8. Fall 2024 CFE FD Exam (LOs 1a, 1b, 1c)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial on capital budgeting and allocation decisions

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

Sources:

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 31: Mergers and Acquisitions

~~CFO Forum: Market Consistent Embedded Value Basis for Conclusions~~

Case Study - Darwin

8. Fall 2024 Continued

(~~6~~ *3 points*) Darwin Life Insurance Company (Case Study section 6) is evaluating the acquisition of Star InsurTech (SIT) (Case Study section 9).

(a) **(LO 1a, 1b, 1c)** (*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:~~

Questions 1, 4 and 6 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49a9cc/globalassets/assets/files/edu/2024/spring/case-study/spring-2024-cfefd-case-study.pdf

1. Spring 2024 CFE FD Exam (LOs 2b, 2a)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality

Case Study - Frenz

(*7 points*) You are an analyst preparing financial reports for Frenz (Case Study section 4.5).

(a) **(LO 2b, 2a)** (*1 point*) Explain how inventory accounting choices impact the income statement.

ANSWER:

When you reviewed the 2021 year-end income statement, you noticed that the unit costs for coffee beans, supplies, and non-coffee products increased roughly 80% that year. However, the retail price for most of the products remained relatively stable, increasing by about 15%.

1. Spring 2024 Continued

There are two inventory accounting choices being considered by Frenz:

- First in first out basis
- Weighted average cost basis

(b) **(LO 2b, 2a)** (*1 point*) Describe how earnings for 2021 and future years would differ based on the two inventory accounting methods.

ANSWER:

(c) **(LO 2b, 2a)** (*3 points*)

(i) Determine the reporting quality of Frenz according to the Quality Spectrum of Financial Reporting. Justify your answer.

ANSWER:

(ii) Recommend two ways to improve Frenz's reporting quality. Justify your recommendations.

ANSWER:

Frenz plans to sell its household coffee business in 2025 as its market share remains relatively small, and the business is not very profitable. In addition, Frenz would like to free up the capital for its expansion plan. It is planning to include this sale in its revenue in the 2025 year-end financial statements. Frenz plans to exclude any expenses related to this business in its income statement given the fact that the household coffee business will be gone soon.

(d) **(LO 2b, 2a)** (*2 points*) Evaluate the impact of the planned reporting changes on the quality of Frenz's financial statements.

ANSWER:

2. Spring 2024 CFE FD Exam (LO 1b)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

Sources:

~~CFEFD-S1-03-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 22: Real Options~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 40: Flexibility

(*9 points*) Company XYZ has a team of sales professionals who travel to various customers. XYZ is considering the following two business travel options for its sales professionals:

I. Purchase cars for $35,000 each
II. Reimburse the sales professionals $0.85 per mile for use of their personal vehicles

The company has made the following assumptions:

- The annual interest rate is fixed at 5%.
- Gasoline costs are $0.10 per mile.
- A car is expected to last 100,000 miles or 5 years, whichever comes first. Assume that this car has no salvage value.
- Cars are purchased at the beginning of the year. Reimbursements and gasoline costs are paid at the end of the year.

2. Spring 2024 Continued

(a) **(LO 1b)** (*2 points*) Calculate the cost of business travel for one sales professional using ~~the equivalent annual benefit~~ discounted cash flow method under each of options I and II, assuming a sales professional averages 20,000 miles annually. Show your work.

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

At the end of 1 year:

- If XYZ has purchased the cars, it can sell the cars for an unknown price.
- If XYZ has provided mileage reimbursements, it can choose to purchase a fleet of cars.

(b) **(LO 1b)** (*1 point*) Describe the types of real options that XYZ owns if they initially purchase the cars.

ANSWER:

XYZ has an option to wait by reimbursing mileage for the first year. Assume the following:

- There is a 50% chance the sales professional drives 5,000 miles per year, and a 50% chance the sales professional drives 25,000 miles per year.
- At the end of the first year, you will know with certainty whether the sales professional will drive 5,000 or 25,000 miles per year each subsequent year. It will match the number of miles driven in the first year.
- At the end of the first year, a new car will cost $38,000.

(c) **(LO 1b)** (*5 points*) Calculate the value of the real option to wait by reimbursing mileage for the first year, assuming a time horizon of 5 years from today (i.e., 4 years from the potential future purchase date). Show your work.

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

(d) **(LO 1b)** (*1 point*) Describe two shortcomings associated with the calculations you performed in part (c).

ANSWER:

3. Spring 2024 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

~~CFEFD-S4-33-21 Dowd, Measuring Market Risk 2nd ed, Ch 15 Back Testing Market Risk Models~~

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 14 The Art of Machine Learning for Predictive Data Analytics

(~~*8 2 points*~~) Hibiscus Insurance Company is evaluating a newly issued stock to add to the equity portfolio. John, an ALM manager, is developing a risk prediction model for the stock. He has obtained two sets of data with a 1-year horizon of that stock, one from the accounting department and another from the investment department.

Emily, an analyst, suggests that John should use the investment department data.

Emily also observes that intraday movement will affect data accuracy.

(a) **(LO 4a, 4b)** (*1 point*)

(i) Assess Emily's suggestion to use the investment department data.

ANSWER:

3. Spring 2024 Continued

(ii) Recommend two methods to address the issue with data accuracy.

ANSWER:

The purpose of back testing is to validate the risk prediction model before the model is being used to predict return in the future. This involves applying a quantitative method to judge whether the actual investment P/L data are consistent with the proposed model assumption.

(b) **(LO 4a, 4b)** (~~*2* *1 points*~~)

~~(i) Describe the purpose of back-testing in this context.~~

~~ANSWER:~~

Explain which CRISP-DM stage the back testing procedure belongs to.

ANSWER:

~~John proposes a standard normal model with Rosenblatt Transformation for back testing.~~

~~(c) (*5 points*)~~

~~(i) Perform the Rosenblatt Transformation on the data provided in Excel tab Q3_c. Show your work.~~

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

~~(ii) Determine if the null hypothesis can be accepted. Justify your answer.~~

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

Questions 1, 4 and 6 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49a9cc/globalassets/assets/files/edu/2024/spring/case-study/spring-2024-cfefd-case-study.pdf

4. Spring 2024 CFE FD Exam (LO 3c)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3c) Recommend best practices in business processes to achieve operational excellence

Sources:

Managing Business Process Flows, Ch 1: Products, Processes, and Performance

Managing Business Process Flows, Ch 2: Operations Strategy and Management

CFE201-106-25: Procurement, early warning systems, and the next disruption

Case Study - Frenz

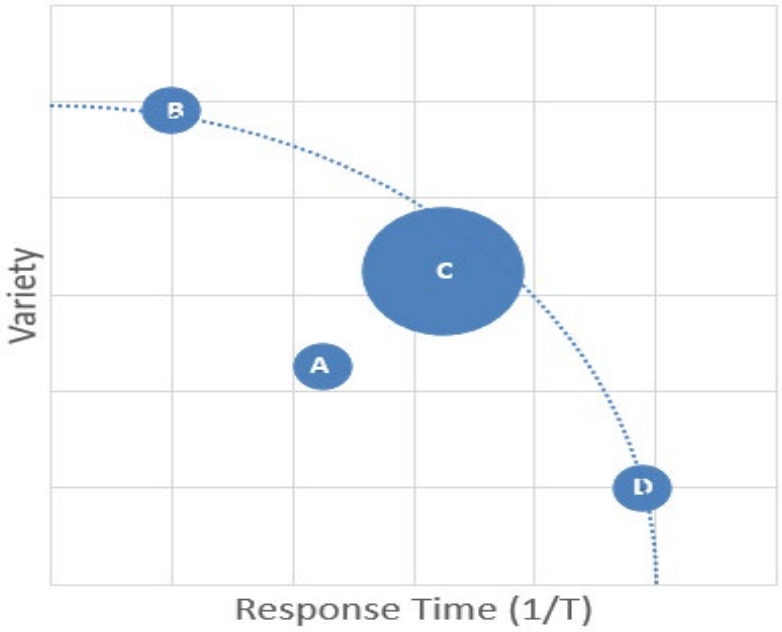
(*11 points*) Frenz is considering the strategic position of its coffee shops (Case Study section 4).

(a) **(LO 3c)** (*2 points*) Explain two ways Frenz is attempting to achieve a sustained competitive advantage.

ANSWER:

4. Spring 2024 Continued

Frenz is working with a consultant who prepares a competitive product space and associated operational frontier relative to two product attributes (variety (V) and response time (1/T)):



Point A represents Frenz's current competitive position. Point B represents a chain of gourmet food shops with industry leading variety but long wait times. Point D represents a gas station chain that offers no wait time but extremely limited variety.

The consultant makes the following statements:

I. Frenz's current offerings give flexibility in determining the company's strategic positioning. There is room for Frenz to position itself in area C, offering customers a moderate variety of products with only a short wait time.
II. Moving to area C would require Frenz to make strategic tradeoffs.
III. The operational frontier is fixed, making it easier for Frenz to achieve area C.

(b) **(LO 3c)** (*3 points*) Evaluate each of the consultant's statements, I-III, based on the operational frontier above.

ANSWER:

4. Spring 2024 Continued

Frenz's procurement department wants to develop a comprehensive view of the supply chain vulnerabilities, focusing on the following two risks:

A. Risk of absolute shortage
B. Risk of supplier defaults

The procurement department wants to conduct an analysis of Frenz's primary suppliers for five key ingredients (coffee, tea, cups, straws, and dairy products). The analysis will prioritize the risks by assigning a number from 1 to 3, where 1 is the highest risk and requires immediate action, 2 is moderate risk requiring a mitigation strategy in the medium term, and 3 is the lowest risk.

(c) **(LO 3c)** (*3.5 points*) For each supplier:

(i) Assign a risk priority from 1 to 3 for each risk A and B in the Excel chart in tab Q4_c.

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

(ii) Justify your prioritizations in (i) using information from Section 4.3 from the Case Study.

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

(d) **(LO 3c)** (*2.5 points*) Recommend an appropriate mitigation strategy for Frenz to consider for each supplier.

ANSWER:

5. Spring 2024 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 Evaluations

(*9 points*) Company KNO back-tested a revised accelerated underwriting (AUW) platform against the 5,000 applications scored by its original platform. The AUW platform classifies applicants into one of six categories below for Non Tobacco (NT), Tobacco (Tob), and full underwriting (Full UW). Relative mortality shows the mortality of each risk class relative to the NT Risk Class 3. Performance results are in the matrix below:

			Prediction using revised AUW platform							
		Relative Mortality	NT Risk Class 1	NT Risk Class 2	NT Risk Class 3	Tob Risk Class 1	Tob Risk Class 2	Full UW	total	
Target= Original AUW Platform	NT Risk Class 1	58%	1800	288	96	0	0	216	2400	82.4%
	NT Risk Class 2	78%	240	1120	112	0	0	128	1600	76.1%
	NT Risk Class 3	100%	0	10	450	0	0	40	500	97.8%
	Tob Risk Class 1	156%	0	0	0	273	0	27	300	100.0%
	Tob Risk Class 2	200%	0	0	0	0	90	10	100	100.0%
	Rated	300%	0	1	2	2	5	40	50	80.0%
	Decline	400%	0	0	1	2	2	45	50	90.0%
			88.2%	78.9%	68.1%	98.6%	92.8%		5000	
	ROC Index		79%							

5. Spring 2024 Continued

(a) **(LO 4a, 4b)** (*2 points*)

(i) Explain the false negatives and true positives in the confusion matrix above.

ANSWER:

(ii) Explain how recall and precision have been calculated above.

ANSWER:

(b) **(LO 4a, 4b)** (*3 points*)

(i) Calculate the accuracy and average class accuracy. Show your work.

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

(ii) Evaluate each of the performance measures in (i) vs a 79% ROC index.

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

KNO uses mortality slippage to measure the cost of misclassification.

(c) **(LO 4a, 4b)** (*4 points*) Using the mortality slippage cost table provided in the Excel tab Q5_c:

(i) Construct the gain/loss matrix of the misclassifications. Show your work.

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

(ii) Analyze the components of the gain/loss.

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

(iii) Evaluate the overall performance of the revised AUW platform.

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

Questions 1, 4 and 6 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49a9cc/globalassets/assets/files/edu/2024/spring/case-study/spring-2024-cfefd-case-study.pdf

6. Spring 2024 CFE FD Exam (LOs 2a, 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 9 Income Taxes

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Case Study – Blue Jay Air (BJA)

(*10 points*) Blue Jay Air (BJA) completed an initial estimate of its 2023 forecast in June 2023, including the deferred tax assets and liabilities per Note 7 of the BJA financial statements (Case Study section 2.7). The initial estimates are shown in Excel tabs Q6_Statement of Operations, Q6_Stmt. of Financial Position, and Q6_a.

(a) **(LO 2c)** (*2 points*)

(i) Explain why the amounts of the deferred tax assets and liabilities displayed in the balance sheet are different from Note 7.

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

(ii) Calculate the TBD elements in the table in Excel. Show your work.

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

6. Spring 2024 Continued

There are some tax-related items that are not yet reflected in the forecast:

I. The Tax team advises it is possible that $22 million of deferred tax assets may not be recovered.
II. New equipment is purchased in 2023 with a depreciation amount of $2 million. The Tax team advises that, per IRS rules, the depreciation amount for tax purposes is $10 million.
III. There is a decrease in the fair value of assets of $14 million.
IV. Due to a change in accounting policy, income has increased by $15 million.
V. BJA may need to write down goodwill by $8 million.

(b) **(LO 2c)** (*3 points*) Analyze the impact to the deferred taxes/liabilities for each of these items.

ANSWER:

Based on the 2023 forecast, you are asked to follow the financial analysis framework and BJA's risk management Guiding Principles and Specific Risk Tolerances (Case Study Section 2.4) to examine:

I. Activity (Q6_c_Activity tab)
II. Liquidity (Q6_c_Liquidity tab)

(c) **(LO 2a)** (*3.5 points*)

(i) Recommend a quantifiable financial ratio for each of I-II above. Justify your recommendation.

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

(ii) Calculate each ratio you recommended in (i) for each of 2021, 2022 and 2023. Show your work.

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

(iii) Interpret the results in (ii).

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

6. Spring 2024 Continued

(d) **(LO 2a)** (*1.5 points*) Describe two potential follow-up items for the 2023 forecast that should be examined further based on your recommendations in part (c).

ANSWER:

7. Spring 2024 CFE FD Exam (LOs 1a, 1b, 1c)

Learning Objectives:

1. The candidate will understand how a company optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial on capital budgeting and allocation decisions

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

Sources:

CFE201-100-23: CFI: Hurdle Rate – Definition and Example

CFE201-102-25: Why private equity sees life and annuities as an enticing form of permanent capital

~~Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 28: Mergers and Acquisitions~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 31: Mergers and Acquisitions

(8 points) The Big Guys Private Equity Firm (BGPEF), a private equity firm with no insurance presence, has approached Epoch Life Insurance Company (Epoch), a medium sized privately held individual life and variable annuity business, about a potential acquisition.

(a) **(LO 1a, 1b, 1c)** (*2 points*) Describe how BGPEF would view an acquisition of Epoch with regards to each of the following:

(i) Capital

ANSWER:

7. Spring 2024 Continued

(ii) Economies of scale

ANSWER:

(iii) Vertical integration

ANSWER:

Relevant financial information for the acquisition is shown below:

- Epoch Assets = $1.35 Billion
- Epoch Liabilities = $1.11 Billion
- Acquisition Synergies Per Year (first 3 years) = $9.5 million
- Assume all cash flows happen at the beginning of the year.
- BGPEF has offered 110% of book value to acquire Epoch.
- BGPEF uses a weighted-average cost of capital (WACC) of 5%.

(b) **(LO 1a, 1b, 1c)** (*2 points*) Assess the proposed acquisition price. Show your work.

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

7. Spring 2024 Continued

BGPEF's head of operations, Hugo Grande, has proposed 3 opportunities to undertake after acquiring Epoch. He has summarized the projected metric for each of the opportunities in the table below.

	Break Even Year	NPV @ BGPEF WACC = 5%	NPV @ 15%	5yr IRR	10yr IRR	30yr IRR
1. Operational/ IT Improvement	7	$43,444.55	$7,003.32	-15%	13%	23%
2. Capital Efficiency	6	$10,097.73	$2,078.61	-21%	23%	33%
3. Investment Performance	3	$244.77	$102.33	35%	49%	50%

BGPEF uses a hurdle rate of 15% IRR over 10 years as its criteria to rank all potential investments.

(c) **(LO 1a, 1b, 1c)** (*2.5 points*)

(i) Explain which opportunities BGPEF would pursue given its criteria.

ANSWER:

(ii) Critique BGPEF's criteria.

ANSWER:

(d) **(LO 1a, 1b, 1c)** (*1.5 points*) Rank each opportunity, ignoring BGPEF's specific criteria and considering the application to Epoch. Justify your ranking.

ANSWER:

Questions 2 through 4 and question 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ac521/globalassets/assets/files/edu/2023/fall/exams/fall-2023-cfefd-exam-case-study.pdf

2. Fall 2023 CFE FD Exam (LOs 1a, 1b)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment.

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions.

Sources:

~~CFEFD-S1-02-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 18: Capital Budgeting and Valuation with Leverage~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 10: Framework for Valuation (excluding "Problematic Modifications to Discounted Cash Flow" and "Alternatives to Discounted Cash Flow" sections)

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 35: Capital Structure, Dividends, and Share Repurchases, "Setting a Target Capital Structure only (pp 679-688)

Case Study – Blue Jay Air (BJA)

(*8 points*) You are a consultant engaged by Blue Jay Air (BJA) to advise on its international expansion strategy. Since the separation of BJA from RPPC, BJA has pursued ambitious growth opportunities. (Case Study section 2.7)

Based on the research from your team, the median debt-to-equity ratio in the airline industry is 5.5x.

2. Fall 2023 Continued

(a) **(LO 1a, 1b)** (*3 points*)

(i) Calculate BJA's net debt-to-value ratio over the last three years. Show your work.

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

(ii) Describe the evolution of BJA's capital structure over the last three years. Support your answer by referring to the financial statements.

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

BJA's Finance Team has updated their previous analysis for the two alternatives to support the international expansion project:

- Purchase the international plane fleet
- Upgrade the existing plane fleet for international travel

BJA needs an independent review of its capital budgeting model in order to secure a fixed debt financing agreement to support the international expansion project. The model calculates a net present value using the companywide cost of capital and the expected free cash flows of each alternative. Refer to tab Q2_b in the Excel spreadsheet for BJA's capital budgeting model.

(b) **(LO 1a, 1b)** (*1.5 points*) Critique the Finance Team's capital budgeting model, assuming that the expected free cash flows are accurately forecasted.

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

2. Fall 2023 Continued

In a recent meeting with the Finance team, Elmer Saunders, the Corporate Treasurer, argued:

> *"I don't think it's worth exploring other capital budgeting methods. We have worked hard to develop a state-of-the-art model to forecast projected free cash flow… anyway, any capital budgeting method should ultimately produce the same estimate of the project's value… there's no point in spending more time with other methods just to get back to the same results, purchasing a new fleet for international flights has the highest NPV, it is the way to go!"*

(c) **(LO 1a, 1b)** (*3.5 points*)

(i) Evaluate Elmer's argument.

ANSWER:

(ii) Recommend a capital budgeting method for the international expansion strategy. Justify your recommendation.

ANSWER:

Questions 2 through 4 and question 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ac521/globalassets/assets/files/edu/2023/fall/exams/fall-2023-cfefd-exam-case-study.pdf

3. Fall 2023 CFE FD Exam (LO 2a)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance.

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

CFE201-103-25: Bank Profitability

Case Study – Big Ben Bank

(*7 points*) You are asked to analyze Big Ben Bank's financial statements. (Case Study section 5)

(a) **(LO 2a)** (*1 point*) List four insights financial ratio analysis can provide about a company.

ANSWER:

(b) **(LO 2a)** (*2 points*) Calculate the following financial ratios for Big Ben Bank for the years 2021 and 2022. Show your work.

(i) ROA

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

(ii) Leverage Ratio

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

3. Fall 2023 Continued

(iii) ROE

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

Big Ben Bank is considering making changes to its use of leverage in the future.

(c) **(LO 2a)** (*4 points*) Recommend a leverage ratio range for Big Ben Bank to target in the future, assuming no change in the current economic environment. Justify your recommendation.

ANSWER:

Questions 2 through 4 and question 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ac521/globalassets/assets/files/edu/2023/fall/exams/fall-2023-cfefd-exam-case-study.pdf

4. Fall 2023 CFE FD Exam (LOs 3a, 3b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate costs and how these methods can distort perceived performance

Sources:

CFE201-104-25: Activity-Based Costing (ABC) and the Life Insurance Industry

~~Lam, Implementing Enterprise Risk Management from Methods to Applications, Ch 17: Integration of KPIs and KRIs~~

~~Lam, Implementing Enterprise Risk Management from Methods to Applications, Ch 18: ERM Dashboard Reporting~~

Case Study – Star InsurTech (SIT)

(*~~12~~ 6 points*) Star InsurTech (SIT) is reviewing the interaction and risks of its Life and P&C business units. (Case Study section 9.3)

Karen Stat, the actuary for SIT, has put together an ERM dashboard to monitor the risk exposures.

4. Fall 2023 Continued

~~(a) (*6 points*)~~

~~(i) Describe three key questions applicable to SIT that the ERM dashboard should address. Justify your response using the Case Study.~~

~~ANSWER:~~

~~(ii) Recommend three Key Risk Indicators (KRIs) that are specific to SIT. Justify your answer.~~

~~ANSWER:~~

Based on information from the ERM dashboard, Karen is concerned about costs. She considers implementing an Activity Based Cost (ABC) system at SIT.

(b) **(LO 3a, 3b)** (*3 points*)

(i) Describe the three key stages in the implementation of an ABC system.

ANSWER:

(ii) Explain, using two specific examples from the Case Study, how ABC implementation considerations for the Life Insurance partner differ from those for the P&C partner.

ANSWER:

4. Fall 2023 Continued

Advancing digital innovations is important to SIT's new business sales. SIT has implemented three improvements to the IT systems in its Life business and one improvement to the IT systems in its P&C business, for a total overhead cost of $100,000. SIT needs to allocate the overhead to each business unit using the following information provided.

	# Policies Sold	Labor Hours per Policy	Number of IT improvements
Life	100	6	3
P&C	500	3	1

(c) **(LO 3a, 3b)** (*3 points*)

(i) Calculate the overhead allocation to each business unit (Life and P&C) using the traditional costing method. Show your work.

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

(ii) Calculate the overhead allocation to each business unit (Life and P&C)) using the ABC method. Show your work.

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

(iii) Recommend which overhead allocation method SIT should use. Justify your answer using the results from (i) and (ii) above.

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

5. Fall 2023 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

~~CFEFD-S4-43-21 St. Louis Fed: Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets~~

~~CFEFD-S4-44-21 Runhuan Feng, Decentralized Insurance~~

~~CFEFD-S4-34-21 Dowd, Measuring Market Risk 2nd ed, Ch 16 Model Risk~~

SOA: Peer-to-Peer Insurance: Blockchain Implications

SOA Research Institute: Decentralized Finance for Actuaries

SOA Research Institute: Decentralized Insurance Alternatives: Market Landscape, Opportunities and Challenges

(*7 points*) Company XYZ Life has formed a task force to explore key success and risk factors for implementing blockchain technology in operational areas. A member of the task force proposes that XYZ purchase Dai stablecoins on a centralized exchange to gain a working knowledge of blockchain technology.

(a) **(LO 4a, 4b)** (*2 points*) Critique the following statements that the member of the task force makes.

(i) A Dai stablecoin is a safe investment because it is "stable."

ANSWER:

5. Fall 2023 Continued

(ii) A centralized exchange is more user-friendly than a decentralized exchange.

ANSWER:

(iii) A centralized exchange does not use custodial trading, and, therefore, there is less trust required.

ANSWER:

The task force is trying to more broadly understand decentralized insurance.

(b) **(LO 4a, 4b)** (*2 points*) Describe two ways a smart contract supports the ideals of decentralized insurance.

ANSWER:

The task force is considering implementing blockchain technology in two operational areas, underwriting and claims processing. It develops a proposal for doing so, as follows:

- Term insurance policies are written as smart contracts.
- The smart contract instruction set determines underwriting and pricing for a potential policyholder.
- Once approved, the smart contract creates an unchangeable policyholder record that can immediately pay out legitimate claims based on a death certificate verification.
- If a claim is deemed false, the smart contract dissolves.

(c) **(LO 4a, 4b)** (*3 points*) Describe two benefits and two risks of the proposal.

ANSWER:

6. Fall 2023 CFE FD Exam (LO 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 15 Multinational Operations

(*8 points*) Conglomerate Holdings, a US multinational organization has a wholly owned subsidiary, Sunshine Sprockets, established Jan 1, 2022, in the Sunshine Islands, a tax-free zone. The Sunshine Islands currency is the Shinee, Š.

Sunshine Sprockets had considered taking out long-term debt of Š20M to purchase the plant and equipment needed for manufacturing, but to minimize initial capital outlays and avoid debt, Conglomerate Holdings and Sunshine Sprockets decided to lease the plant and equipment.

While the Sunshine Islands had been financially stable until recently, inflationary pressures have become substantial in 2022, and the country is experiencing hyperinflation.

6. Fall 2023 Continued

All components of Sunshine Sprockets' assets and liabilities at year-end 2022 are in Š (shown in 000's below).

	2022
Assets	
Cash / Short Term Investments	3,000
Inventory	3,000
Accounts Receivable	4,000
Total Assets	**10,000**
Liabilities & equity	
Accounts Payable	2,000
Total Liabilities	**2,000**
Capital Stock	7,000
Retained Earnings	1,000
Total Equity	**8,000**
Total Liabilities & Equity	**10,000**

Date	**$US per Š**
Jan 1, 2022	0.90
Average 2022	0.65
Weighted avg when non-monetary assets/liabilities were acquired	0.50
December 15, 2022 when dividends were declared	0.45
December 31,2022	0.45

6. Fall 2023 Continued

(a) **(LO 2c)** (*2 points*)

(i) Describe the method Conglomerate Holdings should adopt to translate the company's financial statements into $US.

ANSWER:

(ii) Prepare the 2022 balance sheet under US GAAP according to the method described in (i). Show your work.

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

(b) **(LO 2c)** (*1.5 points*)

(i) Describe Sunshine Sprockets' net monetary exposure.

ANSWER:

(ii) Explain the impact of the net monetary exposure during this period of hyperinflation to Sunshine Sprockets.

ANSWER:

(c) **(LO 2c)** (*2.5 points*) Analyze how using Shinee-denominated long-term debt to fund the purchase of Sunshine Sprockets' plant and equipment would have impacted the translation of the company's equity at the end of the year, assuming no depreciation. Show your work.

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

(d) **(LO 2c)** (*2 points*) Recommend two actions, in addition to having borrowed to purchase plant and equipment, that Sunshine Sprockets could have taken to reduce the negative impact of hyperinflation on Sunshine Sprockets' value to Conglomerate Holdings. Justify your recommendation.

ANSWER:

7. Fall 2023 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 Evaluations

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 12 Case Study: Customer Churn

~~CFEFD-S4-40-21 Heavy Models, Light Models, and Proxy Models, sections 1-5, 7 (excl appendices)~~

(*5 points*) Company XYZ has recently implemented a new predictive model, which is designed to better predict lapse behavior of policyholders.

(a) **(LO 4a 4b)** (*1 point*) Define the following terms:

I. Descriptive features

II. Prediction subject

ANSWER:

7. Fall 2023 Continued

You are asked to review the new model's performance. A table containing the predicted results in the last month is provided below.

		Prediction	
		Lapse	Do not lapse
Target	Lapse	5,445	433
	Do not lapse	907	17,899

(b) **(LO 4a, 4b)** (*2 points*)

(i) Calculate the precision and recall based on the table provided. Show your work.

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

(ii) Evaluate the model performance. Justify your answers.

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

Senior management is concerned about how stable this model would be over a long period of time.

(c) **(LO 4a, 4b)** (*2 points*)

(i) Assess the reliability of a predictive model over time.

ANSWER:

(ii) Propose two ways to address the concern from senior management.

ANSWER:

Questions 2 through 4 and question 8 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ac521/globalassets/assets/files/edu/2023/fall/exams/fall-2023-cfefd-exam-case-study.pdf

8. Fall 2023 CFE FD Exam (LOs 1a, 1c)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment.

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

Sources:

CFE201-101-25: A Brief Primer on Financial Reinsurance

SOA Reinsurance News: Return on Capital Enhancement Opportunities for the Life Insurance Industry

Case Study: Darwin

(*8 points*) Julia Reich, RPPC's new Chief Risk Officer, is learning more about Darwin (Case Study section 6). She has no background in insurance accounting or reserving methodologies.

(a) **(LO 1a, 1c)** (*1.5 points*)

(i) Define redundant reserves.

ANSWER:

(ii) Explain why some of Darwin's products may have redundant reserves.

ANSWER:

8. Fall 2023 Continued

Julia is particularly interested in the term portfolio and wants to understand more about captive reinsurers.

(b) **(LO 1a, 1c)** (*2 points*) Explain two pros and two cons associated with using a captive reinsurer.

ANSWER:

In reviewing Darwin's term portfolio Alexis Marino, Darwin's Chief Financial Officer, forwarded you the following email draft:

> "In my review of the term product portfolio, I have estimated that economic reserves are approximately 50% of statutory reserves. Based on recent transactions from our competitors, a reinsurer might be prepared to pay 15% in excess of the statutory reserves to assume the block. As I've observed for years, Darwin is very secure, its businesses are very stable, and there are opportunities for growth in other areas of the company.

As a result, I recommend the following:

- Darwin should use reinsurance to support its future growth.
- Darwin should consider exploring traditional or financial reinsurance for the inforce term block."

(c) **(LO 1a, 1c)** (*3 points*)

(i) Describe how you would calculate the value of each capital tranche of Darwin's term business.

ANSWER:

(ii) Describe two different ways that a reinsurer might be willing to provide capital support.

ANSWER:

8. Fall 2023 Continued

(d) **(LO 1a, 1c)** (*1.5 points*)

(i) Compare and contrast the following two approaches from Alexis's message:

I. Traditional reinsurance

II. Financial reinsurance

ANSWER:

(ii) Recommend the best approach given Alexis's view of the company. Justify your recommendation.

ANSWER:

Question 1 pertains to the Case Study.
https://www.soa.org/49ac19/globalassets/assets/files/edu/2023/spring/exams/spring-2023-exam-cfefd-case-study.pdf

1. Spring 2023 CFE FD Exam (LOs 1a, 1b, 1c)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment.

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions.

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

Sources:

~~CFEFD-S1-02-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 18: Capital Budgeting and Valuation with Leverage~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 10: Framework for Valuation (excluding "Problematic Modifications to Discounted Cash Flow" and "Alternatives to Discounted Cash Flow" sections)

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 40: Flexibility

~~CFEFD-S1-03-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 22: Real Options~~

Case study - Darwin

(*6 points*) You have been hired as a consultant for Darwin Life Insurance Company (Case Study section 6). Darwin's CEO, Gabriela Martinez, would like to diversify Darwin's sales channels and has identified two alternatives to sell online, direct to consumer.

1. Spring 2023 Continued

Alternative I. Buying an existing online sales company by acquiring "TP Life Company"

TP Life is a privately owned online life insurance sales company that specializes in marketing and acquiring customers. It provides quotes from various insurance carriers and collects a commission when a policy is sold. It offers products from several insurance companies, but the only product offered is term insurance. Darwin believes it can acquire TP Life for $80 million.

Alternative II. Building the capability internally by implementing Project Amplify

Project Amplify is a potential project to develop Darwin's own website to drive sales. It has strong backing from the VP Life, Anne Kofsky. Anne believes that Darwin can develop the website in a cost-effective way, for only $20 million, that also gives Darwin more control.

Gabriela has asked you to compare these two alternatives using the following assumptions:

If Darwin purchases TP Life (Alternative I), Darwin will offer only its own products on the platform and not products from other insurance carriers. Darwin expects the following profit stream:

End of Year	1	2	3	4	5	6+
After Tax Profits($millions)	2	4	6	8	10	10

Project Amplify (Alternative II) is expected to have the same profit stream as TP Life 30% of the time, and a profit stream of zeroes 70% of the time.

RPPC's Weighted Average Cost of Capital (WACC) should be used for the comparison.

(a) **(LO 1a, 1b, 1c)** (*1 point*) Critique the use of RPPC's WACC for both alternatives.

ANSWER:

(b) **(LO 1a, 1b, 1c)** (*1 point*)

(i) Calculate the NPV for each of the two alternatives using RPPC's WACC. Show your work.

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

1. Spring 2023 Continued

(ii) Recommend which alternative Darwin should choose based on NPV. Justify your recommendation.

ANSWER:

After seeing your NPV calculation, Anne argues that the timing to deploy capital was not accurately reflected in the initial analysis:

- The organization has an option to only invest $10 million now to get a pilot started.
- The success rate is still only 30%, and success or failure will be known after one year.
- If successful:
  - Alternative II will have earned $2 million at the end of year 1.
  - The additional $10 million investment will be made at the start of year 2.
  - The projected profit stream in years 2+ remains the same as originally projected.
- If unsuccessful, Alternative II will have earned $0 at the end of year 1 and will be abandoned.

(c) **(LO 1a, 1b)** (*2 points*)

(i) Calculate the value of the option, using a decision tree. Show your work.

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

(ii) Describe two factors that could affect the value of the option you have calculated in (i).

ANSWER:

In addition to NPV, you are considering other aspects of Darwin's business profile and operation practice for the comparison of the two alternatives.

(d) **(LO 1a, 1b, 1c)** (*2 points*) Explain four important factors (other than NPV) that could influence Darwin's decision to move forward with either TP Life or Project Amplify, or neither.

ANSWER:

Question 2 pertains to the Case Study.
https://www.soa.org/49ac19/globalassets/assets/files/edu/2023/spring/exams/spring-2023-exam-cfefd-case-study.pdf

2. Spring 2023 CFE FD Exam (LOs 2a, 2b)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality.

Case Study - SEA

(*9 points*)

(a) **(LO 2a, 2b)** (*2 points*)

(i) Contrast high-quality financial reporting and high-quality earnings.

ANSWER:

(ii) Explain how financial reporting quality and earnings quality are related.

ANSWER:

2. Spring 2023 Continued

SEA is found in Case Study section 8.

In its 2021 financial statements, SEA presents a new additional exhibit labeled "Normal Net Operating Statement", as shown below.

Normal Net Operating Statement (in CAD 000s)			
	2021	**2020**	**2019**
Passenger revenues	7,235	7,024	6,820
Freight, charters, aircraft sales, and other	3,685	3,722	3,760
Total normal operating revenues	**10,920**	**10,746**	**10,580**
Operating expenses:			
Salaries, wages and benefits	3,058	3,009	2,962
Aircraft fuel	2,099	2,063	2,021
Aircraft maintenance, material, repairs, and other	3,362	3,336	3,312
Depreciation and amortization	393	387	381
Other operating expense	1,103	1,114	1,125
Total normal operating expenses	**10,014**	**9,909**	**9,801**
Normal operating income	**906**	**838**	**778**
Interest expense, net	(123)	(126)	(129)
Income (loss) before incomes taxes	783	712	649
Income tax benefit (expense)	(117)	(211)	(227)
Normal net income (loss)	**666**	**501**	**422**

Disclosure note: Normal net income reflects the profitability of our business after normalizing certain expenses. These values better reflect SEA's past performance and allow for more accurate future projections.

2. Spring 2023 Continued

(b) **(LO 2a, 2b)** (*3 points*)

(i) Determine where on the quality spectrum SEA's financial reports fall, based only on the financial statements in the case study. Justify your response.

ANSWER:

(ii) Determine where on the quality spectrum SEA's financial reports fall, using the new exhibit and disclosure. Justify your response.

ANSWER:

(iii) Critique management's decision to include this new exhibit.

ANSWER:

(c) **(LO 2a, 2b)** (*3 points*)

(i) Explain four possible motivations that might lead SEA management to issue low-quality financial reports.

ANSWER:

(ii) Propose, for each motivation in (i), additional disclosures that would help the user of financial statements to assess whether SEA's management acted on that motivation.

ANSWER:

(d) **(LO 2a, 2b)** (*1 point*) Describe the two conditions in addition to motivation that typically exist when companies issue low-quality financial reports.

ANSWER:

Question 3 pertains to the Case Study.

https://www.soa.org/49ac19/globalassets/assets/files/edu/2023/spring/exams/spring-2023-exam-cfefd-case-study.pdf

3. Spring 2023 CFE FD Exam (LO 3c)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3c) Recommend best practices in business processes to achieve operational excellence

Sources:

Anupindi and Deshmukh, Managing Business Process Flows, Ch 2: Operations Strategy and Management

Case Study – Blue Jay Tire (BJT)

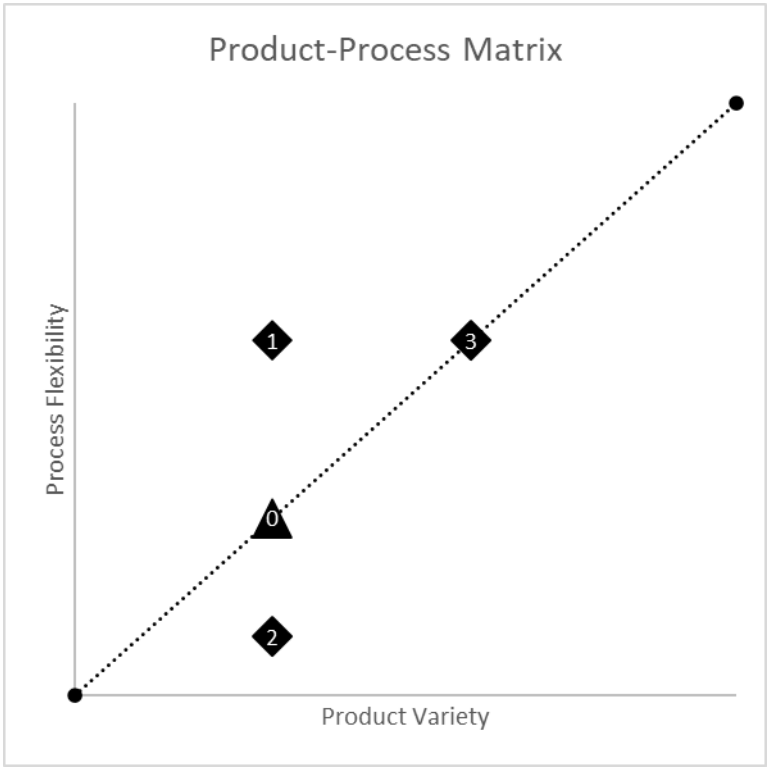
(*7 points*) Blue Jay Tire Co. (BJT) is looking to expand its operations into non-road tires (Case Study section 3.4). The firm needs to evaluate its business processes and operations strategy.

(a) **(LO 3c)** (*1 point*) Identify the type of strategic fit approach BJT is pursuing with its expansion into non-road tires. Justify your response.

ANSWER:

3. Spring 2023 Continued

The COO's team developed the following product-process matrix to evaluate BJT's current position as well as the potential positions following the product expansion. The current position is represented by a triangle (labeled 0), the potential positions are represented by diamonds (labeled 1-3), and the diagonal is represented by a dotted line.



3. Spring 2023 Continued

(b) **(LO 3c)** (*2.5 points*)

(i) Explain what the current position 0 and all three potential positions 1-3 represent on the product-process matrix.

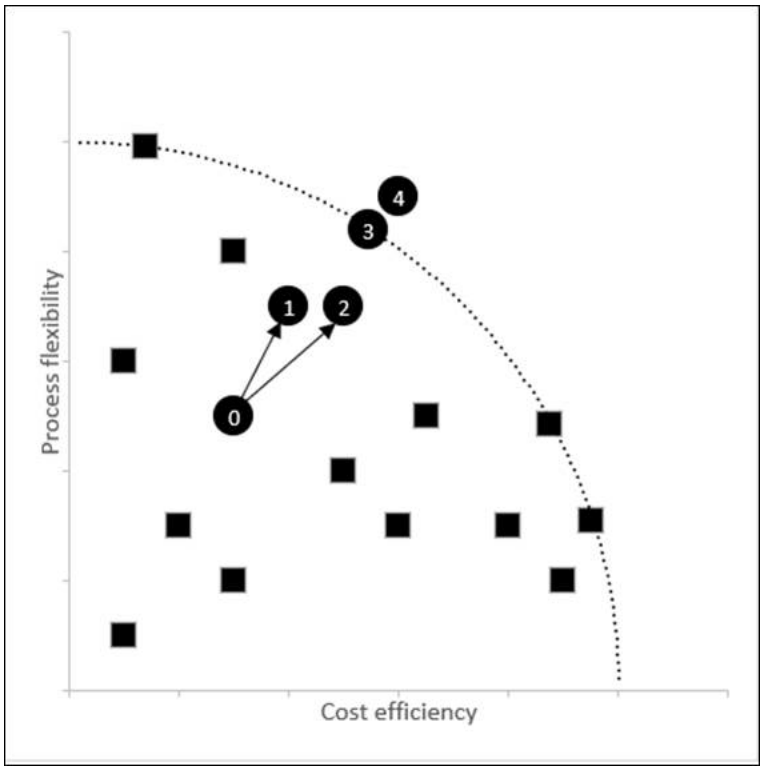
ANSWER:

(ii) Recommend which position(s) on the product-process matrix would be best for BJT. Justify your recommendation.

ANSWER:

3. Spring 2023 Continued

The COO's team developed the following graph to evaluate BJT's position relative to other firms in the industry. Competitors' positions, represented by squares, are either on or within the dotted line.



BJT's current position is position 0. Following the product expansion, BJT will be in position 1 or 2, depending on which of the two possible expansion approaches (acquiring TNT or building its own specialty tire plant) is taken.

(c) **(LO 3c)** (*1.5 points*) Describe the information that this graph provides for the following in relationship to the two possible approaches to expansion:

(i) Positions 1 and 2.

ANSWER:

(ii) The dotted line.

ANSWER:

3. Spring 2023 Continued

(iii) The arrows between positions 0 and 1, and 0 and 2

ANSWER:

The COO wants BJT to be considered a top contender in the market for road and non-road tires. To reach this goal, the COO has identified two possible ideal positions to be in, represented by positions 3 and 4 on the graph.

(d) **(LO 3c)** (*2 points*)

(i) Evaluate BJT's capacity to become more operationally efficient by reaching position 3.

ANSWER:

(ii) Explain BJT's ability to reach position 4.

ANSWER:

Question 4 pertains to the Case Study.

https://www.soa.org/49ac19/globalassets/assets/files/edu/2023/spring/exams/spring-2023-exam-cfefd-case-study.pdf

4. Spring 2023 CFE FD Exam (LOs 3a, 3b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact performance evaluation and decision making.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate its costs and how these methods can distort perceived performance

Sources:

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 7: Cost Allocation: Theory

CFE201-104-25: Activity-Based Costing (ABC) and Life Insurance Industry

Case Study – Snappy Life

(*10 points*) Snappy Life (Case Study section 7) is currently evaluating the profitability of its products. As part of this exercise, Snappy is reconsidering its approach to allocating certain expenses to individual lines of business.

(a) **(LO 3a, 3b)** (*1 point*)

(i) Describe the three primary reasons companies allocate fixed costs to individual cost centers.

ANSWER:

(ii) Explain which reason is most relevant to Snappy.

ANSWER:

4. Spring 2023 Continued

The CFO, Corrie Caille, has identified the following fixed costs to be allocated to Snappy's product lines:

- Cloud Computing Costs = $500,000
- Aggregate Sales Performance Bonuses = $1,625,000
- IT Salary Overhead = $935,000
- Software Licensing = $62,500

Snappy is considering four approaches to allocate its fixed costs above:

I. Evenly allocated across line of business
II. Allocation by employee count
III. Allocation by policy count
IV. Allocation by face amount

(b) **(LO 3a, 3b)** (*2 points*)

(i) Assess if each of the approaches, I-IV, is an insulating or noninsulating allocation method. Justify your response.

ANSWER:

(ii) Describe one advantage and one disadvantage of noninsulating allocation systems with regards to management behavior and performance.

ANSWER:

Snappy's CEO, Frank Veltro, would like to see the profitability percentage KPI evaluated by line of business under the various approaches, I-IV, as of January 1, 2022, using a discount rate of 5%.

(c) **(LO 3a, 3b)** (*4 points*)

(i) Determine the profitability percentage for each line of business before allocation of fixed costs. Show your work.

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

(ii) Determine which line of business benefits most from each of the four proposed allocation approaches, I-IV. Justify your response.

4. Spring 2023 Continued

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

(iii) Determine which allocation Veltro would prefer. Justify your response.

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

(d) **(LO 3a, 3b)** (*1 point*) Identify a shared cost from Snappy that Corrie has not identified for cost allocation. Justify your response.

ANSWER:

Corrie is considering an activity-based costing (ABC) approach for Snappy's product lines, as she believes it will most equitably distribute costs among the products.

After reviewing the ABC alternatives proposed by Corrie, Veltro states "ABC is all too complicated for just allocating costs. Use face amount to allocate the fixed costs instead! At the end of the year, the product line with the highest profitability percentage will receive an additional year-end bonus, which will be excluded from the profitability percentage calculation."

(e) **(LO 3a, 3b)** (*2 points*) Critique Veltro's statement.

ANSWER:

7. Spring 2023 CFE FD Exam (LO 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 15 Multinational Operations

(*8 points*) Conglomerate Holdings, a US multinational organization has a wholly owned subsidiary, Sunshine Spot Insurance, established Jan 1, 2020, in the Sunshine Islands, a tax free zone. The Sunshine Islands currency is the Sunshine Islands Shinee, Š.

(a) **(LO 2c)** (*2 points*)

i. Describe three appropriate disclosures related to statement translation.

ANSWER:

ii. Identify three considerations for Conglomerate Holdings as it prepares Sunshine Spot Insurance's translated statements.

ANSWER:

The relevant income and balance sheet tables are included in Excel tab Q7_b for this exam.

7. Spring 2023 Continued

For the year 2020, the exchange rates between the Š and $US strengthened as follows:

Date	$US per Š
Jan 1, 2020	0.75
Average 2020	0.79
Weighted avg when non-monetary assets/liabilities acquired	0.78
December 15, 2020 when dividends were declared	0.83
December 31, 2020	0.85

Sunshine Spot Insurance is required to provide a dividend to its parent equal to 40% of Net Income. This needs to be reflected in the balance sheet and income statement. Retained earnings at the end of 2019 were Š 0. Assume statutory reserves are a non-monetary asset.

(b) **(LO 2c)** (*5 points*) Provide the income statement and balance sheet (including dividend impact) for Sunshine Spot Insurance for 2020, ignoring taxes, as it will appear in the parent's consolidated financial statements under:

i. The current rate method.

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

ii. The temporal method.

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

Your manager wants to choose the current rate method to reduce volatility.

(c) **(LO 2c)** (*1 point*) Critique your manager's suggestion.

ANSWER:

8. Spring 2023 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

~~CFEFD-S5-46-21 Dowd, Measuring Market Risk 2nd ed, Ch 9 Applications of Stochastic Risk Measurement Methods~~

CFEFD-S5-53-21 Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 12 Case Study: Customer Churn

~~CFEFD-S5-47-21 Dowd, Measuring Market Risk 2nd ed, Ch 13 Stress Testing~~

~~CFEFD-S5-48-21 Dowd, Measuring Market Risk 2nd ed, Ch 15 Back Testing Market Risk Models~~

~~CFEFD-S5-57-21 Bolle-Reddat, Bernard (et al.), Modeling in Life Insurance - A Management Perspective, Chapter 11~~

(~~*8 2 points*~~) Your company is interested in purchasing a competitor's existing block of fixed deferred annuities. ~~with minimum interest rate guarantees ranging from 1% to 4%. When interest rates increase rapidly, the product experiences higher than normal lapses because the product's portfolio crediting rate cannot keep up with new money crediting rates.~~

~~(a) (*1 point*) Identify two distinctive features that need to be considered in selecting a suitable stochastic process to model interest rates.~~

~~ANSWER:~~

8. Spring 2023 Continued

You are interested in understanding projected lapses under different market conditions, and possibly applying machine learning techniques. The seller has provided historical monthly data on a set of 100,000 policies for a period of ten years. A data summary report is provided in Excel tab Q8_b.

(b) **(LO 4a, 4b)** (*1 point*) Identify two data quality issues indicated by the data summary report provided in Excel.

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

~~As part of evaluating the purchase of the block, the company is considering a hedge program to protect against interest rate risk. You have been asked to determine the appropriate strike prices for both interest rate caps and floors.~~

- ~~The risk tolerance level is 90% VaR of net losses, including hedge costs.~~
- ~~The distribution of net losses generated under a set of stochastic scenarios is provided in Excel tab Q8_c.~~

~~(c) (*2 points*) Describe two pros and two cons of using stress testing for this model.~~

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

~~You are looking at the backtesting results of two models,~~

- ~~In your current model, you observed 93 instances where the net losses exceeded your risk tolerance.~~
- ~~In an industry model (based on 500 observations generated under a different distribution, but that uses the same risk tolerance metric), you observed 62 instances where the net losses exceeded your risk tolerance.~~

~~(d) (*3 points*)~~

~~(i) Compare the two models based on backtesting results.~~

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

~~(ii) Recommend the best model to use. Justify your recommendation.~~

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

8. Spring 2023 Continued

You have been asked to present the results of this analysis for decision making to the Risk Committee. You know that the Risk Committee has often taken the view that the decision should be whatever the model says.

(e) **(LO 4a, 4b)** (*1 point*) Summarize the key points that you should highlight to the Risk Committee to help them think more broadly about using model results to make decisions.

ANSWER:

Question 1 pertains to the Case Study.
https://www.soa.org/4ac732/globalassets/assets/files/edu/2022/spring/exams/fall-2022-exam-cfefd-case-study.pdf

1. Fall 2022 CFE FD Exam (LOs 2a, 2b)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality

Case Study – Blue Jay Tire (BJT)

(*8 points*) You are an analyst working for the independent auditing firm hired to review Blue Jay Tire's (BJT) financial statements (Case Study section 3.5). You are aware of the reputational damage done by the BJT tire recall and understand this could be a motivation to issue poor quality financial reports.

(a) **(LO 2a, 2b)** (*1 point*) List three accounting techniques companies can use to improve their financial position in the current reporting period.

ANSWER:

1. Fall 2022 Continued

You decide to investigate possible financial warning signs by analyzing a time series of three metrics:

- Net income versus cash flow from operations
- Inventory turnover ratio
- Receivables turnover ratio

(b) **(LO 2a, 2b)** (*3 points*)

(i) Calculate each metric from 2017-2021. Show your work.

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

(ii) Assess what the results may mean as they pertain to financial warning signs.

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

(c) **(LO 2a, 2b)** (*2 points*) Recommend three appropriate questions to ask BJT as part of the audit based on your observations in part (b). Justify your recommendations.

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

Your manager states that BJT is likely utilizing a units-of production method for depreciating long-lived assets, which is increasing the firms profit margin in 2020 and 2021, relative to prior years.

(d) **(LO 2a, 2b)** (*2 points*)

(i) Describe the three methods that can be used for depreciating long-lived assets.

ANSWER:

(ii) Evaluate your manager's statement based on BJT's financial statements.

ANSWER:

Question 2 pertains to the Case Study.
https://www.soa.org/4ac732/globalassets/assets/files/edu/2022/spring/exams/fall-2022-exam-cfefd-case-study.pdf

2. Fall 2022 CFE FD Exam (LOs 2a, 3a, 3b)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

3. The candidate will understand how managerial accounting and operational processes impact performance evaluation and decision making.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate its costs and how these methods can distort perceived performance

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 7: Cost Allocation: Theory

Case Study - Frenz

(*11 points*) You are an analyst working at Frenz (Case Study section 4). You are asked to assess Frenz's performance, relative to its own past performance and relative to the industry.

(a) **(LO 2a)** (*4 points*)

(i) Calculate the Days of inventory On Hand (DOH), Days of Sales Outstanding (DSO), and Total Asset Turnover for the past 5 years. Show your work.

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

2. Fall 2022 Continued

(ii) Evaluate Frenz's operational performance based solely on your calculations in part (i).

ANSWER:

You are provided with the following data about the coffee roaster industry.

	2021	2020	2019	2018	2017
DOH	65.7	63.7	67.5	66.4	66.5
DSO	5.4	5.9	5.5	5.6	5.6

(b) **(LO 2a)** (*2 points*) Explain the implications of Frenz's operating efficiency based on the industry ratios above.

ANSWER:

(c) **(LO 3a, 3b)** (*1 point*) Explain how a change in overhead expense allocation may impact a company's current and future operational results.

ANSWER:

2. Fall 2022 Continued

(d) **(LO 2a)** (*2 points*) Recommend two actions that Frenz should take regarding operating efficiency. Justify your recommendations.

ANSWER:

(e) **(LO 2a)** (*2 points*)

(i) Calculate Frenz's debt-to-equity ratio over the last 5 years. Show your work.

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

(ii) Evaluate Frenz's debt-to-equity ratio in part (i) considering the company's expansion plan.

ANSWER:

(iii) Propose two approaches to reduce the company's internal debt burden.

ANSWER:

3. Fall 2022 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 and Ch. 12

(*13 points*) You are a risk officer for ABC Company, tasked with predicting the likelihood of default on one-year small business loans. You are evaluating two potential models and are given the following:

- The loans total $100,000.
- The loans have an annual effective interest rate of 10%.
- You assume that ABC is able to recover 40% of the loan value when default occurs.
- You assume that the chance of default (target) is 25%.

The models produce the following results:

	Samples	Precision	Recall
Model 1	100	0.933	0.933
Model 2	100	0.970	0.867

(a) **(LO 4a, 4b)** (*1 point*) List two key data considerations when designing features of an Analytics Base Table (ABT).

ANSWER:

3. Fall 2022 Continued

(b) **(LO 4a, 4b)** (*3 points*) Create a confusion matrix for Model 1 and for Model 2. Show your work.

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

Management has indicated that they would prefer to evaluate models as follows:

- Models with categorical target features to be based on expected value
- Models without categorical target features to be based on a harmonic mean average class accuracy

Your coworker recommends that you use profit and loss as a performance measure for evaluating the models.

(c) **(LO 4a, 4b)** (*4 points*)

(i) Evaluate your coworker's recommendation.

ANSWER:

(ii) Calculate the profit and loss for Model 1 and for Model 2 using the confusion matrices created in part (b). Show your work.

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

(d) **(LO 4a, 4b)** (*2 points*) Recommend whether Model 1 or Model 2 should be adopted by ABC Company. Justify your response, using results from parts (b) and (c).

ANSWER:

(e) **(LO 4a, 4b)** (*2 points*) Determine the annual effective loan interest rate at which the models would produce the same expected profit and loss. Show your work.

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

3. Fall 2022 Continued

(f) **(LO 4a, 4b)** (*1 point*) Recommend one additional performance measure for evaluating the performance of models with categorical target features that management may not have considered. Justify your recommendation.

ANSWER:

Question 4 pertains to the Case Study.
https://www.soa.org/4ac732/globalassets/assets/files/edu/2022/spring/exams/fall-2022-exam-cfefd-case-study.pdf

4. Fall 2022 CFE FD Exam (LOs 3a, 3b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate costs and how these methods can distort perceived performance

Sources:

Zimmerman, Accounting for Decision Making and Control 10th Ed

- ~~Chapter 4: Organizational Architecture~~
- Chapter 5: Responsibility Accounting and Transfer Pricing
- Chapter 7: Cost Allocation: Theory
- Chapter 9: Absorption Cost Systems
- ~~Chapter 10: Criticisms of Absorption Cost Systems: Incentive to Overproduce~~
- ~~Chapter 11: Criticisms of Absorption Cost Systems: Inaccurate Product Costs~~

CFE201-105-25: Product Costing In Service Organizations

CFE201-104-25: Activity-Based Costing (ABC) and the Life Insurance Industry

Case study - Frenz

(~~*14*~~ *13 points*) Kitty Dunn is reviewing her recent email correspondence with Jeff Bemoski (Case Study section 4.5, Exhibit B).

(a) **(LO 3a, 3b)** (~~*2*~~ *1 points*)

(i) Describe the agency problem at Frenz, as observed in the email exchange.

ANSWER:

4. Fall 2022 Continued

~~(ii) Describe how Frenz's organizational architecture may reduce agency problems.~~

~~ANSWER:~~

Kitty refines the overhead cost analysis. She establishes the following four cost codes based on product and distribution.

Products	Distribution	Cost Code
Coffee	Frenz Stores	CS
	Other Than Frenz's Stores	COTS
Non-Coffee	Frenz Stores	NCS
	Other Than Frenz's Stores	NCOTS

Kitty reviews the current practice of accumulating all overhead costs in a single pool.

(b) **(LO 3a, 3b)** (*1.5 points*) Describe how each of the four types of overhead costs listed in Kitty's email may be allocated to each of the four cost codes to more accurately reflect how the cost codes consume the overhead resources.

ANSWER:

Kitty has prepared a spreadsheet containing accounting information for the year 2020, as shown in tabs Q4_c-i and Q4_c-ii in the accompanying Excel workbook.

(c) **(LO 3a, 3b)** (*2 points*)

(i) Calculate Operating Income using an overhead allocation to the four cost codes based on 'Sales'. Show your work.

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

(ii) Calculate Operating Income using an overhead allocation to the four cost codes based on 'Cost of Sales'. Show your work.

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

4. Fall 2022 Continued

In 2021, Kitty prepares the table below to compare Operating Income for the four cost codes under the two overhead allocation bases: 'Sales' and 'Cost of Sales'.

Operating Income by Cost Code

Overhead Allocation Driver	CS	COTS	NCS	NCOTS
Sales	76,632	12,428	10,965	(356)
Cost of Sales	159,461	(52,375)	20,109	(27,527)

(d) **(LO 3a, 3b)** (*4 points*)

(i) Describe how Jeff's bonus will change if the overhead allocation base is changed from 'Sales' to 'Cost of Sales'.

ANSWER:

(ii) Critique Jeff's statement regarding the true profitability of the non-coffee items.

ANSWER:

(iii) Recommend a change to Frenz's product mix based on Kitty's overhead allocation analysis. Justify your recommendation.

ANSWER:

Robert Kaplan, Frenz CRO, recommends that Kitty refine her analysis by considering other cost approaches such as Activity-Based Costing (ABC) or Value Chain Analysis (VCA).

(e) **(LO 3a, 3b)** (*4.5 points*)

(i) Contrast ABC and VCA.

ANSWER:

(ii) Explain why VCA would be suitable for Frenz.

ANSWER:

8. Fall 2022 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

~~CFEFD-S5-47-21 Dowd, Measuring Market Risk 2nd ed, Ch 13 Stress Testing~~

~~CFEFD-S5-56-21 Gerst and Seidler, How to Improve the Quality of Stress Tests through Backtesting (excl appendices)~~

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 Evaluations

(~~*12* 2.5 *points*~~) You recently joined ABC Bank as a risk analyst, and your first project is to assist your manager with stress testing.

~~(a) (*1 point*) Describe two benefits and two challenges of performing stress testing.~~

~~ANSWER:~~

~~You are preparing the scenarios for the stress testing. Your manager suggests the following approach:~~

> ~~"All the stress scenarios should be based on actual historical events. When things have truly happened in the past it gives us more confidence that they will happen again. Also, do not stress more than one risk factor in these scenarios, as it will increase the complexity but not add much value."~~

~~(b) (*1 point*) Propose a better method for developing stress scenarios than was suggested by your manager. Justify your answer.~~

8. Fall 2022 Continued

ANSWER:

After running all the stress scenarios, your manager wants to know what the portfolio would look like under the worst-case scenario. He gives you the following information and asks you to determine the potential maximum loss of the portfolio.

- Current portfolio value: $1.7 Million
- Delta of portfolio: $0.5 Million
- Gamma of Portfolio: $4.4 Million

(c) (*2 points*)

(i) Estimate the worst-case scenario result using the information provided. Show your work.

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

(ii) Explain the estimation method you used in part (i) in the context of scenario analysis.

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

8. Fall 2022 Continued

After one year, your manager wants to evaluate the stress testing results you had previously completed. He creates the following table that compares the prior work with the actual results over the year.

Scenario	Description	Interest Rate	Market Index	Gain/Loss ($ Millions)
Expected – 1 year ago	Baseline	5%	5,000	$14
Stress test – 1 year ago	Interest Rates -200 bps	3%	5,000	$4
	Market Index -10%	5%	4,500	$9
	Credit Downgrade	5%	4,700	$10
	Operational Risk Event	5%	5,000	$7
Actual Result		4%	4,800	$6

(d) (*1.5 points*) Evaluate the stress testing results using the information provided.

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

Senior management thinks that actual results this year were heavily influenced by the following:

- Customers bringing a class action lawsuit against the company, and
- Unfavorable hedge cash flows

(e) (*2 points*) Design an approach to help validate the hypothesis of senior management. Justify your recommendation.

ANSWER:

8. Fall 2022 Continued

~~Senior management wants to be able to understand the attribution of risks based on their stress testing results.~~

~~(f) (*2 points*) Recommend one improvement to each of the following that accomplishes this goal going forward:~~

~~(i) the current stress testing approach~~

~~(ii) the current scenario set~~

~~Justify your recommendations.~~

~~ANSWER:~~

Currently, some of the stress testing process takes too long because of using the median result from a large set of stochastic scenarios.

(g) **(LO 4a, 4b)** (*2.5 points*)

(i) Describe how predictive modeling could be used to address this challenge.

ANSWER:

(ii) Explain why the predictive model could go stale over time.

ANSWER:

(iii) Describe three ways to extract a signal indicating that the model might go stale.

ANSWER:

Question 2 pertains to the Case Study.
https://www.soa.org/49af5b/globalassets/assets/files/edu/2022/fall/exams/spring-2022-exam-cfefd-case-study.pdf

2. Spring 2022 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

CFEFD-S5-52-21 Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 Evaluations

~~CFEFD-S5-60-21 Bohme et al., A Fundamental Approach to Cyber Risk Analysis~~

Case Study - Snappy

(~~8~~ *7 points*)

(a) **(LO 4a, 4b)** (*1 point*) Describe the steps of hold-out sampling.

ANSWER:

You are asked to evaluate the performance of Snappy's artificial intelligence (AI) software used for underwriting (Case Study section 7.1.2). You are given the following information:

- The sample size is 10,000 applications.
- The misclassification rate is 45%.
- 20% of applicants are rejected.
- 60% of rejected applicants should have been rejected.

2. Spring 2022 Continued

(b) **(LO 4a, 4b)** (*2 points*)

(i) Describe the four outcomes of the confusion matrix for the AI software.

ANSWER:

(ii) Construct the confusion matrix. Show your work.

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

(c) **(LO 4a, 4b)** (*2 points*)

(i) Calculate precision and recall rates based on the confusion matrix from (b)(ii). Show your work.

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

(ii) Evaluate the performance of the AI software as a simplified underwriting software, using the precision and recall rates calculated in (c)(i). Justify your answers.

ANSWER:

2. Spring 2022 Continued

A commercial underwriting software has a precision rate of 90% and recall rate of 35%.

(d) **(LO 4a, 4b)** (*2 points*) Assess whether Snappy should buy the commercial underwriting software or keep using their current artificial intelligent software.

ANSWER:

~~(e) (*1 point*) Evaluate Snappy's symptomatic and systemic cyber risk vulnerabilities for each of the underwriting software that Snappy is considering:~~

~~(i) Snappy's current artificial intelligence software~~

~~ANSWER:~~

~~(ii) The commercial underwriting software~~

~~ANSWER:~~

Question 3 pertains to the Case Study.
https://www.soa.org/49af5b/globalassets/assets/files/edu/2022/fall/exams/spring-2022-exam-cfefd-case-study.pdf

3. Spring 2022 CFE FD Exam (LOs 1a, 1b)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

Sources:

~~Corporate Finance, Fifth Edition, Chapter 25 Leasing – Jonathan Berk and Peter Demarzo~~

~~Corporate Finance, Fifth Edition, Chapter 27 Short-term Financial Planning – Jonathan Berk and Peter Demarzo~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 22: Leases

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 40: Flexibility

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 27: Cross Border Valuation (excluding "Using Translated Foreign-Currency Financial Statements" section)

Case Study – Frenz

(~~12~~ 6 points) Frenz is planning to expand into the fast-growing Asian market (Case Study Section 4.4). It is considering the options of leasing vs. buying storefronts to reach new customers.

3. Spring 2022 Continued

Financial information for the two options is given below. Assume that all costs and expenses are paid at the beginning of the year and all tax-related items are paid at the end of the year. All numbers are in Euros.

1. Lease Proposal

Lease term:	10 years
Annual Lease Payment (includes rent, equipment, etc.):	12M
Additional Annual Expenses:	9M
Annual Expected Revenue from New Stores (First 10 Years):	50M

2. Purchase Proposal

Initial Purchase Price:	150M
Additional Annual Expenses:	9M
Annual Expected Revenue from New Stores (First 10 Years):	50M
Annual Depreciation for Stores:	5M

You are given the following assumptions:

- Frenz's current tax rate is 20%.
- Frenz's borrowing interest rate is 6%.
- Frenz's weighted average cost of capital (WACC) is 8%.

(a) **(LO 1a, 1b)** (*4 points*)

(i) Explain the steps to compare the leasing option to the buying option.

ANSWER:

(ii) Recommend which option Frenz should select for the new storefronts based solely on the above proposals. Justify your answer.

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

3. Spring 2022 Continued

(iii) Assess the appropriateness of the recommendation in ii) given Frenz's overall financial situation.

ANSWER:

Recently a few Frenz Board members raised concerns that were not considered in the above analysis. They are worried about the effects of:

- Real estate value fluctuation
- Foreign currency risk

(b) **(LO 1a, 1b)** (*2 points*) Evaluate how each concern will affect the decision between leasing and buying. Justify your answer.

ANSWER:

~~Frenz has decided to proceed with the lease proposal.~~

~~(c) (*2 points*)~~

~~(i) Describe the two financing policy choices.~~

~~ANSWER:~~

~~(ii) Recommend which financing policy choice in (i) is more appropriate for Frenz when financing the lease payment and operating expenses. Justify your recommendation.~~

~~ANSWER:~~

3. Spring 2022 Continued

Frenz is also planning for other possible short-term financing needs across its organization.

(d) (*4 points*)

(i) Identify two potential short-term financing needs based on Frenz's risk profile and strategy. Justify your response.

ANSWER:

(ii) Describe three financing methods that Frenz can use for its short-term financing needs.

ANSWER:

(iii) Recommend an appropriate financing method for Frenz from (ii) for each need identified in (i). Justify your answer.

ANSWER:

Question 4 pertains to the Case Study.
https://www.soa.org/49af5b/globalassets/assets/files/edu/2022/fall/exams/spring-2022-exam-cfefd-case-study.pdf

4. Spring 2022 CFE FD Exam (LOs 2a, 2b)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality

~~Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 17 Evaluating Quality of Financial Reports (Section 1-6 Only)~~

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

~~CFEFD-S1-04-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 25: Leasing~~

Case Study – Blue Jay Air (BJA)

(*~~13~~ 10 points*) You are an analyst at Blue Jay Air (Case Study Section 2). Management has asked you for support in evaluating BJA's financial statements.

4. Spring 2022 Continued

(a) **(LO 2a)** (*2 points*)

(i) Describe what classification is with respect to financial statements.

ANSWER:

(ii) Identify three specific examples of classification choices that BJA could make.

ANSWER:

(iii) Describe the impact to BJA's financial statements of each choice in (ii).

ANSWER:

Elmer Saunders, BJA Treasurer, says, "The way BJA classifies its revenue is sustainable. The way BJA classifies its expenses between operating and non-operating income is fair and sustainable."

(b) **(LO 2a)** (*2 points*)

(i) Critique Elmer's statement on revenue.

ANSWER:

(ii) Critique Elmer's statement on expense classification.

ANSWER:

4. Spring 2022 Continued

~~BJA is considering the lease proposal for the international fleet upgrade (Case Study Section 2.7 Exhibit E). The lease can be constructed as a capital lease or an operating lease.~~

~~(c) (*3 points*)~~

~~(i) Assess qualitatively the impact on the following financial ratios for each type of lease classification before the 2019 lease accounting rule change:~~

~~I. Debt to equity ratio~~
~~II. Current ratio~~

~~ANSWER:~~

~~(ii) Recommend what type of lease is more suitable based on BJA's risk profile and your assessment in (i). Justify your recommendation.~~

~~ANSWER:~~

~~(iii) Analyze how the recommendation in (ii) may be affected after 2019 by the new lease accounting rules.~~

~~ANSWER:~~

BJA management is also debating if its current financial reporting is too conservative and asks for your assessment.

(d) **(LO 2a, 2b)** (*1 point*) Describe the problem caused by bias in financial reporting.

ANSWER:

4. Spring 2022 Continued

(e) **(LO 2a, 2b)** (*5 points*)

(i) Explain the implications of taking a more aggressive financial reporting approach.

ANSWER:

(ii) Explain three changes specific to BJA's current financial reporting that would make its accounting approach more aggressive.

ANSWER:

(iii) Assess whether BJA management should favor a conservative bias or an aggressive bias.

ANSWER:

(iv) Propose financial reporting changes, if any, to the approach you supported in (iii) that might be appropriate in a pandemic scenario. Justify your response.

ANSWER:

Question 5 pertains to the Case Study.
https://www.soa.org/49af5b/globalassets/assets/files/edu/2022/fall/exams/spring-2022-exam-cfefd-case-study.pdf

5. Spring 2022 CFE FD Exam (LOs 2a, 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 15 Multinational Operations

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 9 Income Taxes

Case Study - Frenz

(*11 points*) You are an analyst working for Kitty Dunn, Chief Accounting Officer at Frenz. Frenz created Ishmael Roasters at the beginning of 2019, a coffee house chain in the country of Mobia with a local currency of Mobucks, with the plan to allow local operations to develop without interference.

(a) **(LO 2c)** (*1 point*) Explain why there are special translation procedures for countries with high inflation.

ANSWER:

5. Spring 2022 Continued

You are provided the following data about Ishmael and Mobia. The income statement for Frenz can be found in Case Study section 4.5.

	Mobia General Price Index	**Euros per Mobuck**
12/31/2019	100	1.0
Average	150	0.7
12/31/2020	225	0.5

Ishmael Income Statement Information *Mobucks in thousands*	**2020**	**2019**
Cost of Sales	5,000	1,500
Gross Profit	23,800	12,200
Operating Income	5,000	1,800
Interest Expense	500	300
Income Tax Expense	900	300
Taxes Paid	1,000	100
Net Income	3,600	1,200

You gathered the following information:

1. The average Mobia General Price Index in 2019 was 60.
2. Ishmael's current income tax rate is 20%.
3. There are no purchasing power gains or losses.
4. All differences in Accounting Profit and Taxable Income are temporary.
5. Frenz and Ishmael depreciate equipment on a straight-line basis over 10 years.
6. Mobia's tax authorities permit depreciation on a straight-line basis over 7 years.

After reviewing the financial information, Kitty says to you, "based on these reports, I do not see any risks or downside potential. Ishmael's margins for Gross Profit, Operating Income, and Net Income are up, indicating a growing profit center for Frenz."

(b) **(LO 2c)** (*4 points*)

(i) Translate Ishmael's income statement for use by Frenz.

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

(ii) Critique Kitty's response regarding Ishmael's recent performance.

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

5. Spring 2022 Continued

Kitty informs you that Ishmael's income statement includes a deferred tax liability related to the use of coffee bean roasting equipment that was purchased for 250,000 Mobucks in the beginning of 2019, and it does not have any salvage value.

(c) **(LO 2c)** (*2 points*)

(i) Calculate the associated deferred tax asset/liability as of December 31, 2020. Show your work.

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

(ii) Explain the implications of a change in the deferred tax asset/liability for a company.

ANSWER:

Assume Mobia's Fiscal Year 2020 corporate tax rate increased to 35% on December 31, 2020.

(d) **(LO 2a, 2c)** (*3 points*)

(i) Calculate Ishmael's profitability. Show your work.

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

(ii) Assess the implications on Ishmael's financial condition and cash flow.

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

(e) **(LO 2a, 2c)** (*1 point*) Evaluate whether any of the information provided in part b, item 1 through 6, seems unlikely to be accurate.

ANSWER:

Question 9 pertains to the Case Study.
https://www.soa.org/49af5b/globalassets/assets/files/edu/2022/fall/exams/spring-2022-exam-cfefd-case-study.pdf

9. Spring 2022 CFE FD Exam (LOs 3a, 3b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate costs and how these methods can distort perceived performance

Sources:

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 7: Cost Allocation: Theory

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 9: Absorption Cost Systems

~~S3-23 Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 10: Criticisms of Absorption Cost Systems: Incentive to Overproduce~~

~~S3-24 Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 11: Criticisms of Absorption Cost Systems: Inaccurate Product Costs~~

~~S3-25 Zimmerman, Accounting for Decision Making and Control 10th Ed Ch 12: Standard Costs: Direct Labor and Materials~~

Case Study - Frenz

(*~~8~~ 7 points*)

~~(a) (*1 point*) Describe the two major criticisms of traditional absorption costing systems.~~

~~ANSWER:~~

9. Spring 2022 Continued

Kitty Dunn is reviewing Frenz's overhead allocation method in response to the email from Jeff Bemowski in which he suggests allocating overhead equally to all stores. (Case Study Section 4.5, Exhibit B)

(b) **(LO 3a, 3b)** (*2 points*)

(i) Critique Kitty's cost allocation method.

ANSWER:

(ii) Critique Jeff's cost allocation method.

ANSWER:

Larry, an intern in the accounting department, proposes an approach that assigns overhead to the different stores based on the amount of goods a store sells relative to the total amount of goods produced for all stores.

$$\text{Overhead Allocated to Each Store} = \frac{\text{Store's Cost of Goods Sold}}{\text{Total Goods Produced for All Stores}} \times \text{Total Overhead}$$

(c) **(LO 3a, 3b)** (*3 points*)

(i) Critique Larry's proposed method.

ANSWER:

(ii) Explain whether Larry's proposed method addresses a shortcoming of Kitty's method.

ANSWER:

(iii) Explain whether Larry's proposed method addresses a shortcoming of Jeff's method.

ANSWER:

9. Spring 2022 Continued

(d) **(LO 3a, 3b)** (*2 points*) Recommend two changes to the current allocation method to better reflect cost drivers for the individual stores. Justify your recommendation.

ANSWER:

Question 10 pertains to the Case Study.
https://www.soa.org/49af5b/globalassets/assets/files/edu/2022/fall/exams/spring-2022-exam-cfefd-case-study.pdf

10. Spring 2022 CFE FD Exam (LOs 3a, 3b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate costs and how these methods can distort perceived performance

Sources:

Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 5: Responsibility Accounting and Transfer Pricing

~~S1-09: CFEFD-S1-09-21 Aswath Damodaran, Damodaran on Valuation, Ch 15: The Value of Synergy~~

Case Study – Blue Jay Tire (BJT)

(~~8~~ *4 points*) You are an analyst at Blue Jay Tire (BJT) assessing the possible product expansion. (Case Study Section 3.4). BJT management has asked about the Growth and Cost Synergies that might be realized if BJT acquires True North Tire Company (TNT).

~~(a) (*4 points*)~~

~~(i) Compare and contrast Growth Synergies and Cost Synergies.~~

~~ANSWER:~~

~~(ii) Describe the three types of Growth Synergies.~~

~~ANSWER:~~

10. Spring 2022 Continued

~~(iii) Provide an example for each type of Growth Synergy in (ii) that BJT might realize.~~

~~ANSWER:~~

(b) **(LO3a, 3b)** (*2 points*)

(i) Describe the two main reasons for transfer pricing within firms.

ANSWER:

(ii) Explain how each of the reasons in (i) may apply if BJT acquires TNT.

ANSWER:

Projected profitability will impact BJT's decision to acquire TNT. After reviewing TNT's projected tire production costs, the BJT CEO states: "BJT can make easy profits if TNT increases production. BJT can pay TNT the cost of increased production and sell the additional tires at a premium in the market."

(c) **(LO 3a, 3b)** (*2 points*) Critique the CEO's statement.

ANSWER:

1. Fall 2021 CFE FD Exam (LOs 1a, 1b)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

Sources:

~~CFEFD-S1-02-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 18: Capital Budgeting and Valuation with Leverage~~

~~CFEFD-S1-07-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 31 International Corporate Finance~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 10: Framework for Valuation (excluding "Problematic Modifications to Discounted Cash Flow" and "Alternatives to Discounted Cash Flow" sections)

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch . 27: Cross Border Valuation (excluding "Using Translated Foreign-Currency Financial Statements" section)

~~CFEFD-S5-44-21 Hubbard, How to Measure Anything 3rd Ed, Ch 9: Sampling Reality: How Observing Some Things Tells Us About All Things~~

~~CFEFD-S5-46-21 Dowd, Measuring Market Risk 2nd ed, Ch 9 Applications of Stochastic Risk Measurement Methods~~

(~~9~~ *5 points*) You work for Company X, a major U.S. medical device manufacturing company. Company X is considering entering a new market in Country Y, a developing country with a large population. Country Y has had fast but unstable economic growth and overall costs have been increasing in recent years. Country Y's local currency is Tatl. There are two possibilities you have been asked to consider:

1. Fall 2021 Continued

A. Manufacture devices in the home country (U.S.) and ship to Country Y for distribution and sales
B. Manufacture devices in Country Y and distribute in Country Y

Company X has never utilized before the type of strategy in proposal B. You are given the following information about the two proposals and relevant financials. These are considered the most accurate estimates by the finance department, but because Country Y is a new market some of these assumptions are based on limited information.

	Proposal A	**Proposal B**
Sales	$200 M Tatl in Year 1, grows at 5% each year	
Cost of goods sold (% of sales)	50%	30%
Operating Expenses (% of sales)	20%	10%
Initial Investment	$20M USD	$120 M Tatl
Equipment	$16M USD	$100 M Tatl
Depreciation	Straight line over 10 years	
Tax Rate	21%	34%

Company X expects the project will last 10 years after which a new generation of devices will replace it. There will be no salvage value.

You are also given following financial information:

Risk Free Rate (U.S.)	**Risk Free Rate (Country Y)**	**Current Spot Exchange Rate**
2.50%	7.50%	$5 Tatl to $1 USD

Company X Current Financials:

Assets	**USD($M)**	**Liabilities**	**USD($M)**	**Cost of Capital**	
Cash	$100,000	Debt	$300,000	Debt	5%
Other Assets	$500,000	Equity	$300,000	Equity	12%

(a) **(LO 1a, 1b)** (*3 points*)

(i) Calculate Company X's Weighted Average Cost of Capital (WACC). Show your work.

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

1. Fall 2021 Continued

(ii) Recommend which proposal Company X should accept using the projection information above, Company X's WACC and the current Spot exchange rate. Show your work and justify your recommendation.

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

(b) **(LO 1a, 1b)** (*2 points*) Assess the appropriateness of the decision made in part (a)(ii). Justify your answer.

ANSWER:

~~Company X wants to evaluate the risks of fluctuating exchange rates and costs of goods sold (COGS) in Country Y. It chooses to model scenarios within the 95th percentile of each risk, and believes this can be achieved by modeling the following:~~

- ~~5 exchange rate scenarios;~~
- ~~3 COGS scenarios.~~

~~You assume:~~

- ~~Each scenario (x) has the following probability of occurring:~~
  ~~$P(x) = 2^{-m} \frac{m!}{x!(m-x)!}$~~
  ~~where m is the number of possible states;~~
- ~~Exchange rate and COGS scenarios are independent.~~

~~(c) (*1 point*) Explain how the 95th percentile for exchange rates will change as Company X learns more information about the Country Y exchange rate.~~

~~ANSWER:~~

1. Fall 2021 Continued

(d) (*2 points*) Explain two shortfalls of your modeling approach.

ANSWER:

Management is concerned with how risky operating in Country Y is and would like options to decrease these risks. You think a stop-loss strategy might be appropriate.

(e) (*1 point*)

(i) Explain how Company X could use its model to establish a stop-loss strategy for operating in Country Y.

ANSWER:

(ii) Explain how the size of the loss limit impacts the modeled VaR.

ANSWER:

Question 4 pertains to the Case Study.
https://www.soa.org/4ae40b/globalassets/assets/files/edu/2021/fall/exams/fall-2021-exam-cfefd-case-study.pdf

4. Fall 2021 CFE FD Exam (LOs 1b, 1c, 2a, 2c)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

CFEFD-S2-17-21 Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 15 Multinational Operations

~~CFEFD-S1-07-21 Jonathan Berk and Peter Demarzo, Corporate Finance, Fifth Edition, Ch 31 International Corporate Finance~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch . 27: Cross Border Valuation (excluding "Using Translated Foreign-Currency Financial Statements" section)

CFEFD-S2-14-21 Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 6 Financial Analysis Techniques

Case Study – Frenz

4. Fall 2021 Continued

(*10 points*) You are an analyst working for Kitty Dunn, Chief Accounting Officer at Frenz (Case Study section 4). Frenz created a subsidiary called Ishmael Roasters at the end of 2019, a coffee house chain in the country of Mobia, with the plan to allow local operations to develop without interference. You have been tasked with incorporating and translating Ishmael's financials into the Frenz financial statements.

(a) **(LO 2c)** (*1 point*) State four reasons why Mobia's local currency, Mobucks, should be the functional currency for Ishmael instead of Euros.

ANSWER:

(b) **(LO 2c)** (*2 points*)

(i) Identify the appropriate currency translation method.

ANSWER:

(ii) Explain how to translate each of assets, liabilities, equity, revenue and expenses.

ANSWER:

You are then provided the following data about Ishmael and Mobia. Assume changes in these financial statement items happened evenly throughout the year.

Ishmael Financial Information *Mobucks in thousands*	**Dec. 31, 2020**	**Dec. 31, 2019**
Cash	1,000	1,000
Inventory	500	0
Property	5,000	5,000
Accounts Payable	800	0

	Mobia General Price Index	**Euros per Mobuck**
12/31/2019	100	1.0
Average	150	0.7
12/31/2020	225	0.5

4. Fall 2021 Continued

(c) **(LO 1b, 1c)** (*1 point*) Explain the advantage that being a subsidiary of Frenz brings Ishmael from a funding perspective.

ANSWER:

(d) **(LO 2c)** (*2 points*)

(i) Describe the implications of the prior year's price index change on the translation of Ishmael's financial statements.

ANSWER:

(ii) Explain how the translation of the financial statements will differ from part (b)(ii).

ANSWER:

(e) **(LO 2c)** (*1 point*) Assess if Ishmael had a purchasing power gain or loss in 2020 from the price index change. Justify your response.

ANSWER:

Given fluctuations in the Mobia general price index over the past several years, Ishmael is considering locking in supplier contracts in Euro denominated prices.

(f) **(LO 1b, 1c)** (*1 point*) Explain how the above action would impact the methodology of calculating the NPV of Ishmael distributable earnings.

ANSWER:

(g) **(LO 2a, 1b, 1c)** (*2 points*) Calculate the impact to Frenz's 2020 current ratio and debt-to-assets ratio from incorporating Ishmael into its financials. Show your work.

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

Question 5 pertains to the Case Study.
https://www.soa.org/4ae40b/globalassets/assets/files/edu/2021/fall/exams/fall-2021-exam-cfefd-case-study.pdf

5. Fall 2021 CFE FD Exam (LOs 2a, 2b, 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 9 Income Taxes

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality

Case Study – Blue Jay Air (BJA)

(*10 points*) You work in the financial department of Blue Jay Air (BJA). (Case Study section 2)

(a) **(LO 2c)** (*1 point*) Define the following tax related concepts:

(i) Deferred Tax Asset (DTA)

(ii) Income Tax Payable

(iii) Tax Expense

(iv) Tax Base

ANSWER:

5. Fall 2021 Continued

BJA proceeded with the "Purchase Proposal for International Plane Fleet" (Case Study Section 2.7, Exh. E.2) and received the new aircraft on 1/1/2021. The tax authority specified the fleet should be depreciated on a straight-line basis over a 25 year-period with no salvage value.

An outside consultant says, "The different depreciation schedule creates a permanent difference between tax and financial reporting of revenue. Additional deferred tax liability (DTL) should be booked to capture the difference. The slower tax depreciation schedule will also lower the effective tax rate."

(b) **(LO 2c)** (*3 points*)

(i) Critique the consultant's comment.

ANSWER:

(ii) Calculate the change in DTA/DTL related to this project from 12/31/2021 to 12/31/2022 assuming the tax rate will change from 21% to 28% on 1/1/2022. Show your work.

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

Management finances the purchase with a 25 year secured loan that has a $65m financing cost every year by setting up a subsidiary. BJA estimates the revenue of the new international route for the next 5 years in the table below.

	Revenue (Next 5 Years)	Probability
Scenario 1	$305m	30%
Scenario 2	$270m	40%
Scenario 3	$235m	30%

(c) **(LO 2c)** (*2 points*) Determine how this estimation will impact the DTA/DTL under both IFRS and USGAAP. Show your work.

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

Three months before BJA's annual report, analysts estimate the Earnings Per Share (Basic) of BJA will increase by $0.73 from operating in the new international routes. However, BJA management expects the earnings in this year will be $35m higher than analysts' expectation.

Since earnings are expected to be higher than the analysts' estimate, management would like to achieve the following objectives:

5. Fall 2021 Continued

Objective A: Bring expected earnings in line with analysts' estimate
Objective B: Avoid poor reporting quality
Objective C: Increase future earnings potential

(d) **(LO 2a, 2b)** (*3 points*) Evaluate if the following options will achieve managements' objectives. Explain your answer.

(i) Adopt an accelerating depreciation method so that the aircraft depreciation will be $35m more for the year of 2021

ANSWER:

(ii) Invest $35m in the Luxury Lounges

ANSWER:

(iii) Purchase $35m of additional fuel

ANSWER:

(iv) Invest $35m to enhance data analytic capabilities

ANSWER:

(v) Pay out $35m in restricted stock units (RSU) with 1/4 vesting each year starting on 12/31/2022

ANSWER:

(e) **(LO 2a, 2b)** (*1 point*) Recommend which option from part (d) BJA should choose. Justify your recommendation.

ANSWER:

7. Fall 2021 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics 2nd Ed, Ch. 9 Evaluations

(*11 points*) The data science team at Bank XYZ is building a machine learning model (FDM v1.0) to predict and classify the legitimacy of online credit card transactions. Transactions the model predicts as fraudulent are flagged for further investigation by the fraud analysis team, whereas transactions predicted as legitimate will be automatically approved by the system. The data science team is given a dataset of 10,000 past transactions for this project.

The team is considering the following three approaches to train and test the model:

I. Hold-out sampling
II. k-Fold cross validation
III. Bootstrapping

(a) **(LO 4a, 4b)** (*3 points*)

(i) Describe each approach I - III.

ANSWER:

7. Fall 2021 Continued

(ii) Evaluate whether each of I - III is appropriate for the data science team to use. Justify your response.

ANSWER:

(b) **(LO 4a, 4b)** (*3 points*) Based on the model results of 100 data samples provided in the Excel spreadsheet:

(i) Create a confusion matrix. Show your work.

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

(ii) Calculate the model's precision and recall. Show your work.

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

(iii) Evaluate the model based on your results.

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

After testing FDM v1.0 for a few months, the data science team realizes that not all claims can be clearly identified as fraudulent or legitimate. It has decided to replace the old categorizations with three new categories based on the score assigned by the model. The new categories are "High", "Medium", and "Low" probability of being fraudulent. The prediction is based on the position of the score in relation to the thresholds. Your team only has enough employees to investigate 25% of transactions, so only the "Medium" transactions will be investigated.

(c) **(LO 4a, 4b)** (*2 points*)

(i) Describe how the confusion matrix from part b) would change under these new categorizations.

ANSWER:

(ii) Assess the thresholds given in the new sample dataset provided in the Excel spreadsheet. Justify your assessment.

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

7. Fall 2021 Continued

You reevaluate this new model three months later with 100 new data points.

(d) **(LO 4a, 4b)** (*3 points*)

(i) Define concept drift.

ANSWER:

(ii) Recommend one ongoing model validation scheme that could prevent concept drift.

ANSWER:

(iii) Assess whether you observe concept drift in the 100 new data points (provided in the Excel spreadsheet). Justify your assessment.

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

Question 8 pertains to the Case Study.
https://www.soa.org/4ae40b/globalassets/assets/files/edu/2021/fall/exams/fall-2021-exam-cfefd-case-study.pdf

8. Fall 2021 CFE FD Exam (LOs 2a, 2b)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

Sources:

~~Zimmerman, Accounting for Decision Making and Control 10th Ed, Ch 10: Criticisms of Absorption Cost Systems: Incentive to Overproduce~~

~~Zimmerman, Accounting for Decision Making and Control 10th Ed Ch 12: Standard Costs: Direct Labor and Materials~~

Robinson et al., International Financial Statement Analysis 4th Ed, Ch. 11 Financial Reporting Quality

Case Study – Blue Jay Tire (BJT)

(~~7~~ *1 point~~s~~*) You are reviewing Blue Jay Tire's (BJT)financials for 2020 (Case Study Section 3.5, Exhibit A).

(a) **(LO 2a, 2b)** (*2 points*)

(i) Explain why one would question BJT's 2020 financials.

ANSWER:

8. Fall 2021 Continued

(ii) Describe how a dysfunctional incentive created by absorption cost systems may lead to the problem discussed in i).

ANSWER:

To investigate further, you request an analysis of BJT's budgeted costs for materials and labor. BJT provides the following comparison of actual and standard amounts.

	Materials	
	Price	Quantity
Standard	$25	2,300
Actual	$23	2,826

	Labor	
	Wage	Hours
Standard	$20	3,000
Actual	$15	3,500

(b) (*1 point*) Describe how a company may use Standard Costs for:

(i) Decision making.

ANSWER:

(ii) Control.

ANSWER:

8. Fall 2021 Continued

(c) (*2 points*)

(i) Calculate the total materials variance in terms of price variance and quantity variance. Show your work.

ANSWER:

(ii) Calculate the total labor variance in terms of wage variance and efficiency variance. Show your work.

ANSWER:

(iii) Interpret the results in (i) and (ii).

ANSWER:

(d) (*2 points*) Explain why BJT should be concerned about favorable variances, providing two reasons based on its risk profile.

ANSWER:

Question 9 pertains to the Case Study.
https://www.soa.org/4ae40b/globalassets/assets/files/edu/2021/fall/exams/fall-2021-exam-cfefd-case-study.pdf

9. Fall 2021 CFE FD Exam (LOs 3a, 3b)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3a) Assess how managerial accounting can drive decision making and impact behavior and performance evaluation

(3b) Assess and recommend methods used to allocate costs and how these methods can distort perceived performance

Sources:

Zimmerman, Accounting for Decision Making and Control, 10th Edition, Chapter 7: Cost Allocation: Theory

CFE201-105-25 Product Costing in Service Organizations

Case Study - Frenz

(*10 points*) Information on Frenz Corporation can be found in Section 4 of the Case Study.

Jeff Bemowski and Kitty Dunn have asked you to investigate Frenz's overhead allocation methods.

(a) **(LO 3a, 3b)** (*2 points*)

(i) Calculate the overhead rate for Frenz from 2016 through 2020. Show your work.

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

(ii) Critique Kitty's statement to Jeff (Case Study Section 4.5, Exhibit B) regarding the success of the current allocation method.

ANSWER:

9. Fall 2021-Continued

(b) **(LO 3a, 3b)** (*2 points*) Explain why Jeff believes that Frenz is allocating overhead in a way that punishes the most successful store managers.

ANSWER:

(c) **(LO 3a, 3b)** (*2 points*) Explain how Jeff benefits from:

(i) The existing allocation method.

ANSWER:

(ii) His suggested allocation method.

ANSWER:

(d) **(LO 3a, 3b)** (*1 point*) Explain one reason why Frenz should not use allocated costs to price its products.

ANSWER:

The overhead allocation conversation has been escalated to Jade Phan, Marketing Vice President of Frenz. Jade says "Frenz's marketing strategy is a holistic, global strategy. I believe our allocation strategy should reflect that".

(e) **(LO 3a, 3b)** (*3 points*)

(i) Describe three considerations that Jade needs to address in the strategy to allocate marketing costs.

ANSWER:

(ii) Recommend an allocation strategy that would meet Jade's marketing strategy goals. Justify your answer using each of the considerations in (i).

ANSWER:

Questions 1 through 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

1. Spring 2021 CFE FD Exam (LOs 1a, 1b)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

Sources:

~~Corporate Finance, Fourth Edition, Chapters 18, 22 and 27;~~

~~Hurdle Rates, Cost of Capital Structure: CFO Spotlight;~~

~~Damodaran on Valuation, Chapter 15;~~

~~Creating Value Through Best-In-Class Capital Allocation; International Financial Statement Analysis, Chapters. 7 and 16;~~

~~Handbook of Corporate Finance, Ch 10;~~

~~Cost and Benefit of Reinsurance; Securitization, Insurance, and Reinsurance; and Corporate Restructuring and Value Creation~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 10: Framework for Valuation (excluding "Problematic Modifications to Discounted Cash Flow" and "Alternatives to Discounted Cash Flow" sections)

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 40: Flexibility

CFE201-100-23: CFI: Hurdle Rate – Definition

Case Study – Blue Ocean

1. Spring 2021 Continued

(~~*H 6 points*~~) You have been assigned to assist Blue Ocean with its expansion project to grow its pet and travel insurance divisions (Case Study Section 5.3).

(a) **(LO 1a, 1b)** (*1 point*) Recommend a cost of capital rate to use for the pet and travel expansion project. Justify your recommendation.

ANSWER:

(b) **(LO 1a, 1b)** (*2 points*) Explain four reasons that the cost of capital rate of Blue Ocean's competitors might be different than what you recommended in (a).

ANSWER:

(c) **(LO 1a, 1b)** (*1 point*) Explain two non-financial factors that could have an impact on the cost of capital rate Blue Ocean ultimately uses for the expansion project.

ANSWER:

(d) **(LO 1a, 1b)** (*2 points*) Recommend how Blue Ocean should finance its pet and travel expansion project. Justify your recommendation.

ANSWER:

1. Spring 2021 Continued

Blue Ocean is considering reinsurance for the pet insurance and travel insurance expansion.

(e) (*3 points*)

(i) Explain how Blue Ocean can use reinsurance to mitigate agency conflict between policyholders and shareholders.

(ii) Explain how Blue Ocean would view reinsurance if it were a mutual company.

(iii) Evaluate the effectiveness of securitization compared to reinsurance for pet insurance and travel insurance.

ANSWER:

(f) (*2 points*) Critique the capital Blue Ocean is holding with respect to its minimum regulatory capital requirement.

ANSWER:

Questions 1 - 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

3. Spring 2021 CFE FD Exam (LO 3c)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3c) Recommend best practices in business processes to achieve operational excellence

Sources:

Managing Business Process Flows, Anupindi, R., Chopra, S. and Deshmukh, S., 3rd Edition, 2012

- Chapter 1: Products, Processes and Performance
- Chapter 2: Operations Strategy and Management

~~Enterprise Risk Management Models, Olsen and Wu, Chapter 1~~

Case study – Snappy Life, Darwin Life

(~~*13*~~ *11 points*) Snappy Life (Case Study Section 8) wants to increase market share by offering more complex products. However, Snappy is aware that it does not have sufficient capital and lacks underwriting expertise on complex products.

Darwin Life (Case Study Section 7) wants to create an online distribution channel for life insurance products but it lacks expertise.

Snappy and Darwin enter into a partnership and are in the process of forming a new Insurtech company, DEF. Snappy and Darwin plan to start with simple, low premium products, such as Term, before adding Whole Life and, ultimately, Universal Life in the future.

3. Spring 2021 Continued

(a) **(LO 3c)** (*3 points*)

(i) Identify the four dimensions of key product attributes.

(ii) Describe an example for each dimension in (i) that Darwin should consider in its venture with Snappy.

ANSWER:

Within the strategy hierarchy, the third level deals with functional strategies.

(b) **(LO 3c)** (*3 points*)

(i) Identify three primary functions for most organizations.

(ii) Explain what DEF needs to consider as it develops a functional strategy for each function in (i).

ANSWER:

(c) **(LO 3c)** (*3 points*)

(i) Identify the five elements of the process of transforming input into output for DEF.

(ii) Recommend how Darwin should apply the five elements in (i) to work with Snappy on product development. Justify your recommendation.

ANSWER:

(d) (*2 points*) **(LO 3c)** Propose two examples each of appropriate financial, internal, and external measures for DEF. Justify your answers.

ANSWER:

~~(e) (*2 points*) Apply the supply chain risk management process to the risk of an IT breakdown within DEF.~~

~~ANSWER:~~

Questions 1 through 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

4. Spring 2021 CFE FD Exam (LOs 1a, 1b)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

Sources:

~~CFEFD-S1-02-19 Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 18: Capital Budgeting and Valuation with Leverage~~

~~CFEFD-S1-03-19 Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 22: Real Options~~

~~CFEFD-S1-06-19 Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 28: M&A (pages 962-978)~~

~~CFEFD-S1-09-19 Aswath Damodaran, Damodaran on Valuation, Ch 15: The Value of Synergy~~

~~CFEFD-S4-35-19 Dowd, Measuring Market Risk 2nd ed, Ch 9 Applications of Stochastic Risk Measurement~~ --------

~~CFEFD-S4-36-19 Dowd, Measuring Market Risk 2nd ed, Ch 13 Stress Testing Risk~~

~~CFEFD-S4-38-19 Dowd, Measuring Market Risk 2nd ed, Ch 16 Model Risk~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 10: Framework for Valuation (excluding "Problematic Modifications to Discounted Cash Flow" and "Alternatives to Discounted Cash Flow" sections)

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 40: Flexibility

Case Study – Blue Jay Tire (BJT)

4. Spring 2021 Continued

(~~*13*~~ *5 points*) Blue Jay Tire (BJT) is considering the two options for its product expansion project (Case Study Section 3.4). You are an analyst at BJT.

(a) **(LO 1a, 1b)** (*2 points*)

(i) Calculate the Net Present Value (NPV) for each of the two alternatives of the product expansion project. Show your work.

(ii) Recommend which alternative BJT should select based on your calculation in (i). Justify your recommendation.

ANSWER:

"That's too simplistic," argues the COO. "There is a 1/3rd chance that we will be unsuccessful. That $10 million average profit is really $15 million if we succeed and $0 if we fail. We need some relief if we are not successful."

To address the COO's concern, labor union leaders of TNT have agreed to negotiate future employment levels. If profits prove disappointing after year 2, the labor union will allow BJT to lower its expenses by reducing staff in exchange for a one-time $6 million buy-out. Whitewall Consulting (WC) estimates that the reduced labor costs would allow BJT's profit to be $3 million per year.

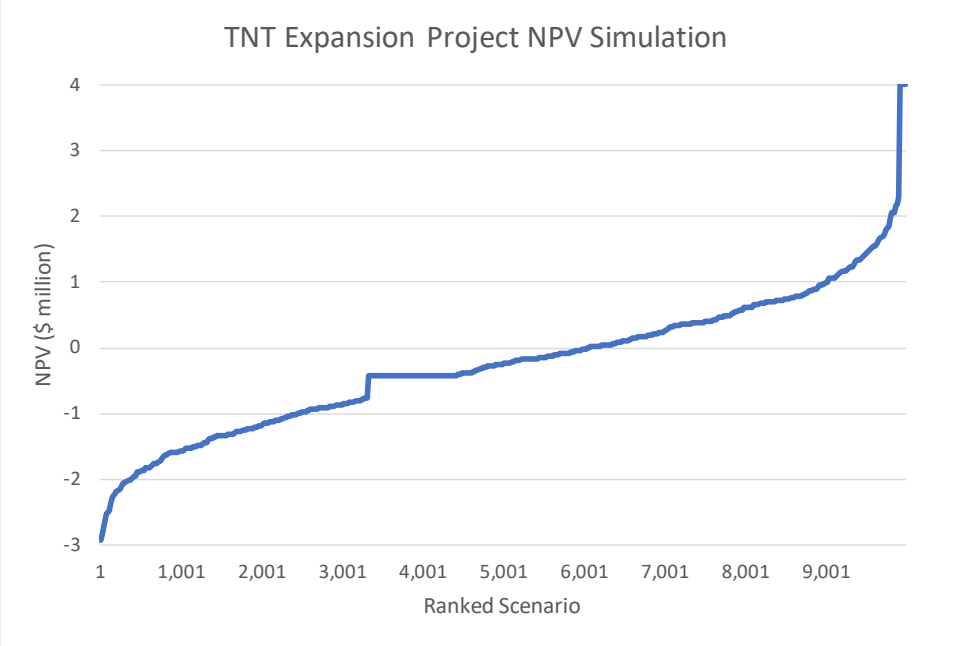
(b) **(LO 1a, 1b)** (*2 points*) Calculate the value of the option for BJT to reduce staff. Show your work.

ANSWER:

4. Spring 2021 Continued

WC has also built a multi-variate stochastic model to calculate the NPV of acquiring TNT. This model allows for the state of the economy, and therefore BJT's sales and other measures, to vary over the projection. A summary of the results and a graphical representation of 10,000 simulations run on this model is shown below.

NPV ($ millions)				
Average	0.2711		VaR(35)	0.1078
Median	0.2432		VaR(50)	-0.2432
Minimum	-3.0464		VaR(65)	-0.4210
Maximum	2.9268		VaR(95)	-1.8833
CTE(65)	-0.8034		VaR(99)	-2.5309



(c) (*3 points*) Analyze the results of WC's stochastic model.

ANSWER:

(d) (*1 point*) Describe three shortfalls of using a stochastic model for decision making.

ANSWER:

4. Spring 2021 Continued

~~"This is all too complicated," states BJT's Head of Sales. "There are so many factors and assumptions that we are just fooling ourselves. We should use a simple rule-of-thumb to compare our alternatives," he suggests.~~

(e) **(LO 1a, 1b)** (~~*2 1points*~~) Using your information from part (a)

(i) Calculate the highest hurdle rate that would allow BJT to accept the expansion project under the alternative to buy TNT. Show your work.

~~(ii) Calculate the profitability index value for BJT's expansion project under the alternative to build its own plant. Show your work.~~

~~(iii) Recommend which alternative Blue Jay Tire should select based on the above rules of thumb. Justify your recommendation.~~

ANSWER:

~~You summarize results from (a), (b), (c), and (e) and formulate a recommendation to the COO.~~

~~(f) (*3 points*) Recommend a course of action for BJT including your summary of results. Justify your recommendation.~~

~~ANSWER:~~

Questions 1 through 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

5. Spring 2021 CFE FD Exam (LO 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

Robinson et al., International Financial Statement Analysis, Ch. 16 Multinational Operations

Case Study – RPPC, Big Ben Bank

(*12 points*) RPPC, a company that reports in euro (EUR), has hired you to make sure that Big Ben Bank (Big Ben) is reflected appropriately in its consolidated financial statements (Case Study Section 6.4 Exhibit A).

(a) **(LO 2c)** (*2 points*) Explain four considerations relevant to Big Ben when determining its functional currency.

ANSWER:

5. Spring 2021 Continued

Big Ben declared a dividend of 22 million pounds sterling (GBP) on 10/01/2019 to be paid on 12/31/2019. GBP and EUR exchange rates for select dates and time periods are provided below.

Date	EUR per GBP
1/1/2019	1.20
4/1/2019	1.22
7/1/2019	1.15
10/1/2019	1.13
12/31/2019	1.10
Avg. 1955-2018	1.30
Avg. 2019	1.18

You have been provided:

- The average exchange rate when Big Ben acquired inventory, plant, property, and equipment was 1.18 EUR per GBP.
- The average exchange rate when Big Ben received capital contributions from equity and long-term debt was 1.25 EUR per GBP.
- Big Ben's pre-2019 retained earnings were realized at an average exchange rate of 1.21 EUR per GBP.
- Big Ben's "Other Assets" are not measured at Current Value, but "Other Liabilities" are.

(b) **(LO 2c)** (*4 points*) Calculate Big Ben's 2019 foreign currency Cumulative Translation Adjustment that should be included on RPPC's 2019 financial statements, including AOCI and Retained Earnings. Show your work.

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

5. Spring 2021 Continued

(c) **(LO 2c)** (*2 points*) Assess the directional impact of 2019 currency movements on the following if management were to determine that Big Ben's functional currency is EUR:

- Big Ben's translated assets
- Big Ben's translated revenues
- Big Ben's translated net income
- Big Ben's income statement and/or balance sheet foreign currency translations

Show your work.

ANSWER:

(d) **(LO 2c)** (*3 points*) Recommend three specific actions to decrease foreign exchange volatility on RPPC's financial statements assuming Big Ben's functional currency is EUR. Justify your recommendation.

ANSWER:

(e) **(LO 2c)** (*1 point*) Explain how investors can objectively compare RPPC's financial results to its competitors despite foreign exchange volatility.

ANSWER:

Questions 1 - 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

6. Spring 2021 CFE FD Exam (LO 3c)

Learning Objectives:

3. The candidate will understand how managerial accounting and operational processes impact an organization's performance evaluation and decision making.

Learning Outcomes:

(3c) Apply Recommend best practices in business processes to achieve operational excellence

Sources:

~~CFEFD-S3-30-19 Caldwell, A Framework for Board Oversight of Enterprise Risk, CPA Canada~~

~~CFEFD-S5-55-19 Vakharia and Yenipazarli, Managing Supply Chain Disruptions, sections 2-5~~

~~CFEFD-S3-21-19 Olsen and Wu, Enterprise Risk Management Models, Ch. 4~~

CFE201-106-25: Procurement, Early Warning Systems, and the Next Disruption

Case Study Blue Jay Tire (BJT)

(~~9~~ *7 points*) A global pandemic has caused many countries to declare a temporary state of emergency, forcing employees to work from home, some businesses to shut down while people practice physical distancing, and major delays of global imports at borders. No country is considered safe from the impacts of the pandemic.

(a) **(LO 3c)** (*1 point*) Define supply chain disruption.

ANSWER:

Blue Jay Tire (BJT) wants to analyze its supply chain disruption (Case Study Section 3.2) ~~by using the Flow and Process Method. It will examine the series of nodes of the supply chain (representing transformation processes) with connecting arcs (representing flows of information and products).~~

6. Spring 2021 Continued

(b) **(LO 3c)** (*2 points*) Describe two disruptions that the global pandemic may cause to BJT's supply chain.

ANSWER:

(c) **(LO 3c)** (*~~4~~ 2 points*)

(i) Recommend two risk management strategies that could help BJT mitigate future global pandemic supply chain disruptions. Justify your answer.

~~(ii) Evaluate the tradeoffs to the recommendations in (i) with respect to BJT's supply chain.~~

ANSWER:

~~The Board of~~ BJT management would like to reduce the damage caused by a similar supply chain disruption event in the future.

(d) **(LO 3c)** (*2 points*) Describe two tools ~~the~~ BJT ~~Board~~ management could use to oversee the operational risk from future global pandemic supply chain disruptions.

ANSWER:

Questions 1 - 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

7. Spring 2021 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

~~companies.~~

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

~~CFEFD-S5-54-19 Brown, Demystifying the Risk Margin Theory Practice and Regulation, (exclude section 3)~~

~~CFEFD-S5-53-19 Hubbard, How to Measure Anything, Ch 14~~

~~CFEFD-S3-22-19 Olsen and Wu, Enterprise Risk Management Models, Ch. 5~~

~~CFEFD-S3-24-19 Olsen and Wu, Enterprise Risk Management Models, Ch. 7~~

~~CFEFD-S4-35-19 Dowd, Measuring Market Risk 2nd ed, Ch 9 Applications of Stochastic Risk Measurement~~

~~CFEFD-S4-36-19 Dowd, Measuring Market Risk 2nd ed, Ch 13 Stress Testing Risk~~

~~CFEFD-S4-38-19 Dowd, Measuring Market Risk 2nd ed, Ch 16 Model Risk~~

~~CFEFD-S4-39-19 ASB, Proposed ASOP on Modeling, pages 1-10~~

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics, Ch. ~~8~~ 9 Evaluations

Case Study – Big Ben Bank

7. Spring 2021 Continued

(~~*13* 3 *points*~~) Big Ben is exploring the Solar Energy Financing Business opportunity (Case Study Section 6.4, Section 6.5 Exhibit B, C and D) in three different cities. Big Ben will allocate at least 20% of its planned loan amount of $10M to each city. Big Ben is building a model to maximize projected total cash payments received from the investment over the loan period based on different allocations to each city.

~~(a) (*2 points*)~~

~~(i) Design a mathematical programming model to optimize Big Ben's allocation to each city.~~

~~ANSWER:~~

~~(ii) Explain each component of (i).~~

~~ANSWER:~~

~~(b) (*1 point*) Recommend two additional metrics Big Ben can use to evaluate the Solar Energy Financing opportunity other than the total cash payments received and IRR. Justify your recommendation.~~

~~ANSWER:~~

~~Analyst X suggests using the model that created deterministic results under Exhibit B and using the assumptions in Exhibit D to project the total cash payments received.~~

~~(c) (*2 points*) Critique Analyst X's suggestion on building the model.~~

~~ANSWER:~~

~~Due to model runtime concerns, Big Ben will have to limit the number of variables modelled stochastically. Given the risk factors listed in Case Study Section 6.4 and assumptions listed in Exhibit D:~~

~~(d) (*2 points*) Recommend which two risk factors should be modelled stochastically. Justify your recommendation.~~

~~ANSWER:~~

7. Spring 2021 Continued

(e) (*1 point*) Explain which risk factors listed in Case Study Section 6.4 may be hedgeable.

ANSWER:

Analyst Y develops a set of stress tests to estimate the impact on total cash payments received if conditions deviate from model assumptions (Exhibit D). Analyst Y presents to Patel the following stress test proposal with preliminary results, based on the model used for Exhibit B.

Assumption	**Stress**	**Impact**
Loan term	-5 years	-2M
Loan interest rate	+1%	-2M
Energy retail sales rate	-25% (multiplicative)	-1M
Personal energy consumption	-25% (multiplicative)	+2M
Utility company participation	-10% (additive)	-20M

Patel says: "These stress tests are excellent! Not only do they cover all identified risks, they illustrate the adverse direction and correct magnitude of impacts. Now we know the events we need to worry about!"

(f) (*2 points*) Critique Patel's statement regarding the stress test proposal and results.

ANSWER:

Patel wants to know at the beginning of each month the amount that Big Ben can expect to receive at the end of the month for each of the three cities. Since weather has a significant impact on results, the analysts gather weather data for each city.

Analyst X uses 10 years of daily data to calibrate a model to replicate the incidence of sunny days. Analyst Y uses 5 years of daily data to train and 2 years of daily data to test a model to predict sunny days.

Metric	Results	
	Analyst X's Model	Analyst Y's Model
Mean Squared Error	0.01	4.25
R^2	99.7%	85.5%

7. Spring 2021 Continued

(g) **(LO 4a, 4b)** (*2 points*)

(i) Contrast the two models.

ANSWER:

(ii) Interpret the results of the two models.

ANSWER:

(iii) Recommend which model Big Ben should pursue. Justify your recommendation.

ANSWER:

Big Ben has limited resources for improving data and assumption quality to enhance the model accuracy.

(h) **(LO 4a, 4b)** (*1 point*) Explain which assumption or data source Big Ben should invest in for quality improvement.

ANSWER:

Questions 1 - 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/49c095/globalassets/assets/files/edu/2021/spring/exams/spring-2021-exam-cfefd-case-study.pdf

8. Spring 2021 CFE FD Exam (LOs 2a, 2c)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2c) Analyze the impact of accounting policies related to taxes and foreign exchange rates on financial statements

Sources:

CFEFD-S2-14-19 Robinson et al., International Financial Statement Analysis, Ch. ~~7~~ 6 Financial Analysis Techniques

CFEFD-S2-16-19 Robinson et al., International Financial Statement Analysis, Ch. ~~13~~ 9 Income Taxes

Case Study - Darwin

(*11 points*) Darwin has recently set up an offshore subsidiary in Happy Tax Island. The tax rate for Happy Tax Island is 30%.

You work for Brandon Kaladin and are tasked to investigate whether it is beneficial to cede Darwin's existing business to the subsidiary in Happy Tax Island via 100% coinsurance. You are given the following:

- Increase in tax reserves of Darwin is equal to its increase in GAAP reserves and separate account transfers
- Increase in tax reserve of the subsidiary is equal to 90% of its increase in GAAP reserves and separate account transfers
- Tax base of assets is the market value of assets before and after reinsurance
- The only tax implications for Darwin to cede its existing business to its offshore subsidiaries are the difference in tax reserves and tax rate

8. Spring 2021 Continued

(a) **(LO 2c)** (*4 points*) Calculate 2021-2024 cash tax payable, deferred tax payable, and post-tax net income for each line of business if the business is ceded to the subsidiary in Happy Tax Island. Show your work.

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

Darwin wants to improve its short term cash flow by reducing tax payments. To start off, Kaladin wants to cede only one line of business.

(b) **(LO 2c)** (*1 point*) Recommend which line of business to cede to the subsidiary in Happy Tax Island based on the results in (a). Justify your recommendation.

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

There are many innovative financial activities on Happy Tax Island. The investment department of Darwin believes having assets on Happy Tax Island could provide an additional 50 basis point yield over current investment return. Assume the following:

- Net investment income is calculated as earned rate multiplied by the market value of assets supporting statutory reserves
- Asset is marked-to-market at the point of transfer
- Market value of asset is 105% of its book value
- There is no tax implication on asset mark-to-market
- Change in earned rate would not cause changes in GAAP or statutory reserves

(c) **(LO 2a, 2c)** (*3 points*) Construct the 2021-2024 income statement for Darwin if all lines of business are ceded to the subsidiary in Happy Tax Island.

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

Kaladin is curious why cash tax has increased after ceding to a lower tax jurisdiction. He asks you to prepare a summary on 2021 cash tax payable for him to understand the impact.

Step	Net Change	Total Cash Tax
Start: cash tax payable		67,000
Plus impact due to change in tax reserves	xxx	xxx
Plus impact due to change in tax rate	xxx	xxx
Plus impact due to change in asset base	xxx	xxx
Plus impact due to change in investment yield	xxx	xxx
Unexplained	xxx	xxx

8. Spring 2021 Continued

(d) **(LO 2a, 2c)** (*3 points*) Complete the summary Kaladin requested. Show your work.

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

Questions 1 through 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ad260/globalassets/assets/files/edu/2020/fall/exams/edu-2020-fall-cfefd-exam-case-study.pdf

1. Fall 2020 CFE FD Exam (LOs 1a, 1b, 1c)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

Learning Outcomes:

(1a) Recommend an optimal capital structure for given business objectives and the competitive environment

(1b) Evaluate and apply the methods to determine the value of a business or project, including the impact of financial and non-financial factors on capital budgeting and allocation decisions

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

Sources:

~~Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 18: Capital Budgeting and Valuation with Leverage~~

~~Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 25: Leasing~~

~~Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 27: Short Term Financing~~

~~Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 28: M&A~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 10: Framework for Valuation (excluding "Problematic Modifications to Discounted Cash Flow" and "Alternatives to Discounted Cash Flow" sections)

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 22: Leases

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 31: Mergers and Acquisitions

~~Aswath Damodaran, Damodaran on Valuation, Ch 15: The Value of Synergy~~

1. Fall 2020 Continued

~~Dean LeBaron and Lawrence S. Speidell, Why Are the Parts Worth More than the Sum? "Chop Shop", A Corporate Valuation Model~~

~~Vyas, Krishna Kant, Corporate Restructuring and Value Creation~~

~~Caldwell, A Framework for Board Oversight of Enterprise Risk, CPA Canada~~

Case Study – Blue Jay Air (BJA)

(~~*12* 8 *points*~~) You work in the CFO's department of Blue Jay Air (BJA). You talk to Jane Doe, an outside director of BJA, about the possible acquisition of Seaplane Expeditions and Aviation Company (SEA).

Refer to Case Study Sections 2 and 9.

~~"Diversification is not a sufficient reason to justify the acquisition of SEA," says Doe.~~

~~(a) (*1 point*) Critique Doe's statement.~~

~~ANSWER:~~

(b) **(LO 1c)** (*2 points*) Explain the synergy and economies of scale that BJA would gain if it were to acquire SEA.

ANSWER:

"I see that Bill Otterwien controls 60% of SEA but that his sister and the Otterwien Foundation each control 20%," Doe notes. "What happens if only Bill Otterwien cooperates with us on the acquisition?"

(c) **(LO 1c)** (*2 points*) Explain Doe's concerns with respect to the following.

~~(i) Probability of completing the acquisition of SEA~~

~~(ii) Control of SEA~~

(iii) Cost to purchase SEA

(iv) Ability of BJA to unlock value in SEA

ANSWER:

1. Fall 2020 Continued

(d) **(LO 1c)** (*2 points*) Recommend if BJA should retain SEA management upon acquisition. Justify your recommendation.

ANSWER:

Doe also comments on leasing planes for any expansion. She says, "I don't believe that leasing planes would be any cheaper than buying the planes outright."

(e) **(LO 1a, 1b)** (*1 point*) Critique Doe's statement.

ANSWER:

(f) **(LO 1a, 1b)** (*2 points*) Explain four benefits to BJA of leasing the additional planes.

ANSWER:

~~(g) (*2 points*) Recommend a financing option to support leasing more planes to fulfill BJA's expansion plans. Justify your recommendation.~~

~~ANSWER:~~

Questions 1 - 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ad260/globalassets/assets/files/edu/2020/fall/exams/edu-2020-fall-cfefd-exam-case-study.pdf

2. Fall 2020 CFE FD Exam (LOs 2a, 2b)

Learning Objectives:

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

(2b) Identify unusual or questionable accounting practices and analyze their impact on the quality of key financial metrics

Sources:

Robinson et al., International Financial Statement Analysis, Ch. 6 Financial Analysis Techniques

Robinson et al., International Financial Statement Analysis, Ch. ~~17~~ 11 Financial Reporting Quality ~~(Section 1-6 Only)~~

Case Study – Blue Jay Tire (BJT)

(~~*10*~~ *7 points*) You are performing due diligence for a potential investment opportunity of Blue Jay Tire (BJT) (Case Study Section 3.4). You have questions about the quality of the financial reports. You are aware of the following actions that BJT has taken:

- BJT encouraged customers to order more goods through discount offers with extensive rights to return their purchases.
- BJT classified some payments due to suppliers for the next 6 months as non-current liabilities.
- BJT reclassified interest paid as operating cashflows in 2018 as opposed to financing cashflows.

(a) **(LO 2a, 2b)** (*3 points*) Evaluate how each action individually impacts BJT's financial statements.

ANSWER:

2. Fall 2020 Continued

In addition, as part of your analysis of BJT, you decided to compare some of its activity metrics to the industry averages:

Metric	Industry Average
Day's Sales Outstanding	85.5
Accounts Receivable Turnover	82.1

(b) **(LO 2a)** (*2 points*)

(i) Analyze Day's Sales Outstanding and Accounts Receivable Turnover for BJT for financial reporting year 2018 and 2019. Show your work.

ANSWER:

(ii) Evaluate BJT's sales and receivables as compared to industry norms.

ANSWER:

You investigate whether there might be any leading indicators to suggest significant future financial troubles for BJT. You plan to use the Altman's Z-score and the Beneish Model:

Altman's Z-score = 1.2 (Net working capital/Total assets) + 1.4 (Retained earnings/Total assets) + 3.3 (EBIT/Total assets) + 0.6 (Market value of equity/Book value of liabilities) + 1.0 (Sales/Total assets)

(c) **(LO 2a)** (*2 points*)

(i) Assess the likelihood of bankruptcy using Altman's Z-score on BJT's 2019 financials, replacing Market Value of Equity with the Book Value. Show your work.

(ii) Recommend four ways for BJT to improve its current Altman's Z-score. Justify your recommendation.

ANSWER:

2. Fall 2020 Continued

(d) (*2 points*)

i. Explain specific implications for BJT based on the components of the Beneish Model below. Show your work.

I. Gross Margin Index (GMI)
II. Sales Growth Index (SGI)

ii. Assess the likelihood of misreporting for BJT if M-score is -1.47. Show your work.

ANSWER:

(e) (*1 point*) Explain two specific areas of concern for any investment decision in BJT.

ANSWER:

Questions 1 - 9 pertain to the Case Study.
Each question should be answered independently.
https://www.soa.org/4ad260/globalassets/assets/files/edu/2020/fall/exams/edu-2020-fall-cfefd-exam-case-study.pdf

7. Fall 2020 CFE FD Exam (LOs 1c, 2a)

Learning Objectives:

1. The candidate will understand how an organization optimizes its corporate finance decisions based on its business objectives.

2. The candidate will understand how to gauge an organization's performance through an evaluation of its financial reports.

Learning Outcomes:

(1c) Assess the impact on value creation from business strategies such as acquisitions, divestitures, or reinsurance

(2a) Analyze the reported financial statements and the interrelationships among them, in order to measure financial performance

Sources:

Robinson et al., International Financial Statement Analysis, Ch. ~~7~~ 6 Financial Analysis Techniques

~~Jonathan Berk and Peter Demarzo, Corporate Finance, Fourth Edition, Ch 28: M&A~~

Koller, Goedhart, and Wessels, Valuation: Measuring and Managing the Value of Companies, 8th Edition, Ch 31: Mergers and Acquisitions

Case Study – RPPC, Seaplane Expeditions and Aviation Company (SEA)

7. Fall 2020 Continued

(~~14~~ *11 points*) RPPC (Case Study Section 1) is considering a potential acquisition of Seaplane Expeditions and Aviation Company (SEA) (Case Study Section 9).

(a) **(LO 2a)** (*2 points*)

(i) Explain the purpose of each of the Activity, Liquidity, Solvency, and Profitability ratios.

(ii) Recommend a specific ratio within each ratio type in (i) that will be useful to analyze the potential acquisition. Justify your recommendation.

ANSWER:

RPPC wants to compare SEA with its existing subsidiary, Blue Jay Air (BJA) (Case Study Section 2). You are asked to perform DuPont decomposition as a form of Integrated Financial Ratio Analysis.

(b) **(LO 2a)** (*4 points*)

(i) Perform a DuPont analysis using the five-way decomposition method on the 2019 financials for both BJA and SEA. Show your work.

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

(ii) Contrast three structural differences between BJA and SEA, based on the DuPont analysis.

ANSWER:

7. Fall 2020 Continued

One missing piece of information in DuPont decomposition is liquidity analysis.

(c) **(LO 2a)** (*2 points*)

(i) Perform a horizontal analysis over 2017-2019 for each of BJA and SEA using an appropriate liquidity ratio. Show your work.

(ii) Compare BJA's and SEA's ability to meet liquidity needs over the past 3 years.

ANSWER:

(d) **(LO 1c, 2a)** (*3 points*) Recommend whether SEA should be acquired as a direct subsidiary of RPPC or incorporated into BJA. Justify your response.

ANSWER:

~~(e) (*3 points*) Based on the Framework for Board Oversight of Enterprise Risk,~~

~~(i) Describe four areas the RPPC Board should focus on during the due diligence process.~~

~~(ii) Evaluate the level of involvement the RPPC Board would have with respect to each of the risks listed in SEA's Risk Profile (Case Study Section 9.3) after acquisition.~~

~~ANSWER:~~

10. Fall 2020 CFE FD Exam (LOs 4a, 4b)

Learning Objectives:

4. The candidate will understand the appropriate application of evolving quantitative methods and technologies that help to manage the business.

Learning Outcomes:

(4a) Evaluate the appropriateness of applying evolving methods and technologies to manage specific business issues

(4b) Apply evolving methods and technologies for quantifying and managing business risks and opportunities

Sources:

~~ASB, Proposed ASOP on Modeling~~

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics, Ch. ~~8~~ 9 Evaluation~~s~~

Kelleher, Mac Namee, and D'Arcy, Fundamentals of Machine Learning for Predictive Analytics, Ch. ~~10~~ 12 Case Study: ~~Galaxy Classifications~~ Customer Churn

(~~9~~ *8 points*) ABC Credit Card Company (ABC) wants to speed up its credit limit review by introducing a predictive model. Current practice is to manually review each customer's credit, which takes one business day. ABC's goals are to reduce average review time by 50% and to achieve 90% average class accuracy.

~~(a) (*1 point*) Describe two best practices recommended in Actuarial Standard of Practice No. 56 to evaluate a predictive model.~~

~~ANSWER:~~

ABC selected a portion of historical data to train a binary predictive model to categorize customers as either "Premier" or "Standard".

Below is the resulting confusion matrix when the remaining historical data are run through the predictive model as well as an estimated relative profit table based on historical data.

10. Fall 2020 Continued

2-Class Confusion Matrix

		Prediction ('000)		
		Premier	Standard	Recall
Target ('000)	Premier	120	5	0.96
	Standard	16	20	0.56
	Precision	0.88	0.8	

Profit Matrix per Customer

		Prediction ('000)	
		Premier	Standard
Target ('000)	Premier	100	-100
	Standard	-750	50

If the 2-class model is accepted, customers will receive results instantaneously.

ABC's CEO reviews the results and states: "The model results look great. Our main concern should be the accuracy of the Premier category because it is the most profitable and we have over three times as many customers in this category as in the Standard category."

(b) **(LO 4a, 4b)** (*3 points*)

(i) Interpret the Recall results.

(ii) Interpret the Precision results.

(iii) Critique the CEO's statement.

ANSWER:

10. Fall 2020 Continued

ABC decides to refine the model to reflect its customer base. ABC builds a 5-class model using the same data to train and test the model as it used for the 2-class model. The 5-class model uses separate algorithms to break down the "Premier" and "Standard" classes.

5-Class Confusion Matrix

		Prediction ('000)					
		Premier +	Premier	Standard ++	Standard +	Standard	Recall
Target ('000)	Premier +	48	2	0	0	0	0.96
	Premier	2	72	1	0	0	0.96
	Standard ++	0	3	9	5	1	0.50
	Standard +	0	1	3	7	2	0.54
	Standard	0	0	1	1	3	0.60
	Precision	0.96	0.92	0.64	0.54	0.50	

Processing time of the 5-class model is the same as the 2-class model.

(c) **(LO 4a, 4b)** (3 *points*) Recommend a credit review approach that meets ABC's goals. Justify your recommendation.

ANSWER:

10. Fall 2020 Continued

ABC implemented the 5-class model and collected the following data samples to monitor performance.

	Original	Sample at T_1		Sample at T_2	
Target	Count	Count	Stability Index	Count	Stability Index
Premier +	50	100	0.023	150	0.045
Premier	75	150	0.034	225	0.067
Standard ++	18	90	0.061	180	0.104
Standard +	13	65	0.044	130	0.075
Standard	5	25	0.017	50	0.029
Sum	**161**	**430**	**0.179**	**735**	**0.320**

(d) **(LO 4a, 4b)** (*2 points*)

(i) Explain the downside to relying on stability index results.

(ii) Recommend next steps for ABC based on the stability index results. Justify your recommendation.

ANSWER:

Spring 2025 Exam

Exam	Q	LOs	Source	New Exam	New LO	Comments
CFE-FD	1a - 1c	3c, 3d	Implementing Enterprise Risk Management from Methods to Applications, Chapter 16	CFE 201	N/A	LO 3c has been removed from Syllabus along with the "Implementing ERM" textbook. This question is no longer covered in the new Syllabus
CFE-FD	2a - 2c	3a, 3b, 3c	Dowd, Ch 13 Stress testing Zimmerman, Accounting for Decision Making & Control, Ch. 5, 7, 9 F-155-21: Product Costing in Service Organizations F-156-21: Activity-Based Costing and the Life Insurance Industry	CFE 201	3a, 3b	LO 3c has been removed from the new Syllabus along with the Dowd textbook. Even though the Dowd textbook has been deleted from the new Syllabus but this deletion has no impact to this question. This question is about product costing and not stress testing. So the Zimmerman textbook and the two costing articles still apply.
CFE-FD	3a - 3d	4a, 4b, 4c	Dowd, Ch 13 Stress testing, Nested Stochastic Modeling for Insurance Companies (excl Appendix) Dowd, Ch 9 Stochastic Risk Measurement Method Applications Dowd, Ch 15 Back Testing Market Risk Models F-139-19: How to improve the Quality of Stress Tests through Backtesting	CFE 201	N/A	The LOs for Section 4 of the new Syllabus have been changed to focus on application of evolving technologies or methods used to manage business rather than application of quantitative risk models and processes. Thus, the Dowd textbook, the "Nested Stochastic Modeling" article and the "Backtesting" article have all been removed from the new Syllabus. This question is no longer covered under the new Syllabus.
CFE-FD	4a - 4d	1a, 1b, 1c	Valuation: Measuring and Managing the Value of Companies Ch 33 F-159-F23: A Brief Primer on Financial Reinsurance SOA Reinsurance News: Return on Capital Enhancement Opportunities for the Life Insurance Industry Case Study	CFE 201	1a, 1b, 1c	Minor changes were made to the Section 1 LOs. Materials for this question are still covered by the new Syllabus. So this question still applies.

CFE-FD	5a - 5d	2a, 2b, 2c	Robinson, International Financial Statement Analysis, Ch 6, 9 & 11 Case Study	CFE 201	2a, 2b, 2c	Minor changes were made to the Section 2 LOs. Materials for this question are still covered by the new Syllabus. So this question still applies.
CFE-FD	6a - 6c	4b, 4c	F-131-16: Heavy Models, Light Models, and Proxy Models Dowd, Measuring Market Risk Ch 15 Backtesting Market Risk Models	CFE 201	N/A	The LOs for Section 4 of the new Syllabus have been changed to focus on application of evolving technologies or methods used to manage business rather than application of quantitative risk models and processes. Thus, the "Heavy Models, Light Models and Proxy Models" article and the Dowd textbook have all been removed from the new Syllabus. This question is no longer covered under the new Syllabus.
CFE-FD	7a -7d	1b, 1c	Valuation: Measuring and Managing the Value of Companies Ch 22 Leases Valuation: Measuring and Managing the Value of Companies Ch 27 Cross Border Valuation	CFE 201	1b, 1c, 2c	The section on "Using Translated Foreign Currency Financial Statements" in Chapter 27 of the Valuation textbook has been removed from new Syllabus due to deplication of concepts with Sections 3.2.4 & 3.5 of Chapter 15 of the "International Financial Statement Analysis" textbook. LO 2c should also be added as part d of this question covers the impact of different accounting translation methods on financial statements. Ch 15 of "International Financial Statement Analysis" texbook should also be added to the list of source materials for this question.