Important Exam Information:

Exam Registration	Candidates may register online or with an application.
Order Study Notes	Study notes are part of the required syllabus and are not available electronically but may be purchased through the online store.
Introductory Study Note	The Introductory Study Note has a complete listing of all study notes as well as errata and other important information.
Case Study	A copy of the case study will be provided with the examinations. Candidates will not be allowed to bring their copy of the case study into the examination room.
Past Exams	Past Exams from 2000-present are available on SOA website.
Updates	Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.

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1. **Topic: Corporate Finance – Funding (10% of Exam)**

Learning Objective

The candidate will understand how a business funds its activities with considerations for its business model, and the cost and constraints of the sources of capital.

Learning Outcomes

The Candidate will be able to:

A: Identify and critique the available sources of funding to start or grow a business entity

- Describe the steps to procuring capital funding (treasury function).
- Assess the various features and implications of various sources of capital funding and recommend the optimal approach for funding.
- Explain how much capital funding is derived from a financial reinsurance or securitization arrangement

B: Evaluate capital budgeting approaches and structure policy for insurance and non-insurance organizations

- Assess whether the risky return from a new project or ongoing business is sufficient to employ investor capital using key factors, market drivers and book drivers (including return on employed capital such as NPV, IRR and payback period).
- Design real options that allow an otherwise non-viable project to get funding.
- Compare and contrast the methods of capital allocation towards the goal of optimization for best possible value-creation.

Resources

- *Corporate Finance,* Berk, Jonathan and Demarzo, Peter, 3nd Edition

  - Ch. 8 (Fundamentals of Capital Budgeting), 18 (Capital Budgeting and Valuation with Leverage), 22(Real Options), 23 (Raising Equity Capital) & 24 (Debt Financing)

- F-113-14: Securitization, Insurance and Reinsurance

- F-119-15: Capital Management, Banking's New Imperative, McKinsey

- F-120-15: Creating Value Through Best-In-Class Capital Allocation, JP Morgan, October 2009

- F-121-15: Is the Company Using Its Capital Wisely? KPMG

- F-122-15: The Cross-Section of Hurdle Rates for Capital Budgeting: An Empirical Analysis of Survey Data, National Bureau of Economic Research

- F-123-15: How Do CFOs Make Capital Budgeting and Capital Structure Decisions?, Journal of Applied Corporate Finance , Vol 15, #1

- F-124-15: The Modigliani-Miller Theorems: A Cornerstone of Finance, Centre for Studies in Economics and Finance, May 2005

- F-125-15: Risk Management, Capital Budgeting and Capital Structure Policy for Insurers and Reinsurers, Froot, National Bureau of Economic Research

2. **Topic: Capital Management - Decision-Making (30% of Exam)**

Learning Objective

The candidate will understand how an enterprise's structure and policies allow its management to prioritize and select among projects or business activities that are competing for scarce capital resources especially when opposing factors are key decision criteria.

Learning Outcomes

The Candidate will be able to:

Corporate Governance and Capital Structure

a. Evaluate how the legal form of an organization, corporate governance and/or compensation dynamics impact decision-making on projects or business activities.
b. Explain how short term factors impact the capital (financing) needs
c. Recommend an optimal capital structure and how to implement it for a given business or strategy

Risk Optimisation

d. Evaluate the capital efficiency of using reinsurance or securitizations for a given risk
e. Design a risk management plan to optimize the risk reward trade off of capital employed

Behavioral Corporate Finance
f. Assess the impact of behavioral factors in capital budgeting approaches and structure policies

Resources

- *Corporate Finance,* Berk, Jonathan and Demarzo, Peter, 3rd Edition

  Ch. 1 (Corporation), 2 (Financial Statement Analysis), 3 (Law of one Price and Financial Decision Making)*,* 17 (Payout Policy), 25 (Leasing), 26 (Working Capital), 27 (Short Term Financing), 28 (Mergers & Acquisition), 29 (Corporate Governance), and 30 (Risk Management)

- *Handbook of the Economics of Finance,* Vol 2 Part A, 2013, Chapter 5, pp.357-424

- F-113-14: Securitization, Insurance and Reinsurance

- F-120-15: Creating Value Through Best-In-Class Capital Allocation, JP Morgan, October 2009

- F-123-15: How Do CFOs Make Capital Budgeting and Capital Structure Decisions?, Journal of Applied Corporate Finance , Vol 15, #1

- F-124-15: The Modigliani-Miller Theorems: A Cornerstone of Finance, Centre for Studies in Economics and Finance, May 2005

- F-126-15: An International Comparison of Capital Structure and Debt Maturity Choices, National Bureau of Economic Research

- F-128-15: A Dynamic Theory of Optimal Capital Structure and Executive Compensation, National Bureau of Economic Research

- F-129-15: The Modigliani-Miller Theorem, The New Palgrave Dictionary of Economics

3. **Topic: Stochastic Modelling (25% of Exam)**

Learning Objective

The candidate will understand how and when to apply various stochastic techniques to situations which have uncertain financial outcomes.

Learning Outcomes

The Candidate will be able to:

a) Explain the mathematical foundation of stochastic simulation.

b) Assess the appropriateness of a given stochastic simulation technique to quantify various market risk exposures.

c) Recommend the use of techniques to reduce the computational demand when applying stochastic methodology.

d) Assess the strengths and weaknesses of the calibration techniques for a given stochastic model.

e) Interpret the results of a given application of stochastic modelling and the impact of the chosen calibration process used.

f) Explain the differences and implications of the use of P-measure and Q-measure for risk assessment.

g) Explain what risk exposures are or are not identified with a given risk metric and which metric should be used for a specific risk (e.g., instrument, exposure or portfolio.

Resources

- *Market Consistency*, Kemp, Ch. 1 (background), Ch. 4 and Ch. 7

- *Monte Carlo Methods and Models in Finance and Insurance, ,* Korn, Ch. 2.1, 2.4-to-2.7, 3.1, 3.2, 3.3.1, 3.3.2-to-pg.72, 3.4, 4.4.3, (5.1-to-5.6 background), 5.7-to-5.9, 5.11, 5.14-to-5.19, 8

- *How to Measure Anything,* Hubbard, Ch. 5

- Interest Rate Swap – Exposed

- Layering Your Own Views into a Stochastic Simulation–Without a Recalibration by T. Dardis, L. Grandchamp and D. Antonio *Risk & Rewards,* August 2013

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4. **Topic: Advanced Risk Assessment Techniques (20% of Exam)**

Learning Objective

The candidate should understand how and when to apply various advance techniques to evaluate risk or uncertainty in any business enterprise especially non-insurance organizations.

Learning Outcomes

The Candidate will be able to:

Critique models for estimating the long term discount rate

    a)   Compare and contrast the approaches for their ability to be calibrated effectively, to provide interpretable results and to give insights on the underpinning asset management strategy

Evaluate the use of cost of capital as a framework for risk assessment at both a micro and macro level

    b)   Critique and apply the market value margin concept in a market consistent valuation
    c)   Assess the efficacy of risk margins used by a business enterprise when examining its various risk exposures.

Apply the concepts of Applied Information Economics (AIE) for Enterprise Risk Management (ERM

    d)   Explain how to quantify risk when there is limited data.
    e)   Apply AIE to define risk tolerances and limits within an ERM framework.
    f)   Quantify the probability of risks taken in a given business or project, their outcome as losses/gains, and their potential impact on Employed Capital.

Resources

- *How to Measure Anything*, Hubbard, Ch. 1-3 background only, Ch. 4-10

- F-107-13: A Market Cost of Capital Approach to Market Value Margins

- F-130-15: Yield Curve Extrapolation: Work in Progress, Moody's Analytics

- [Down but not Out: A cost of Capital Approach to Fair Value Risk Margins](#)

- [A Risk Management Tool for Long Liabilities: The Static Control Model,](#) 2009 Enterprise Risk Management Monograph

5. **Topic: Financial Risk Management (15% of Exam)**

Learning Objective

The candidate will understand how to identify and recommend appropriate risk assessment and monitoring techniques for financial risk management.

Learning Outcomes

The Candidate will be able to:

a) Evaluate the methods and processes for measuring and monitoring market risk positions.

b) Describe the types of models and the sources of model risk.

c) Assess the methods and process for quantifying and managing model risk within any business enterprise.

d) Design an appropriate stress-testing process and evaluate its limitations for a given risk position.

e) Interpret the results of back-testing.

Resources

- *Monte Carlo Methods and Models in Finance and Insurance,* Korn, Korn and Kroisandt, Ch. 5

- *How to Measure Anything,* Hubbard, Ch. 7

- *Measuring Market Risk,* Dowd, Kevin , 2nd Edition

  o Ch. 10 Option Risk measures

  o Ch. 12 Mapping Positions to Risk Factors

  o Ch. 13 Stress Testing Risk

  o Ch. 15 Back Testing Risk

  o Ch. 16 Model Risk