

SOCIETY OF ACTUARIES OF INDONESIA EDUCATION SYLLABUS

ASSOCIATE EXAMS

A10 FINANCIAL MATHEMATICS

- Aim:** To provide grounding in the techniques of financial mathematics and their application.
- Topics:** Introduction to asset types and securities markets
Interest, yield and other financial calculations
Investment risk, introduction to stochastic interest and discount
- Type** 3 hours Multiple Choice exam
- Reference:** Theory of Interest (Second Edition), 1991, by Kellison, S.G., Chapters 1-2, Chapter 3 (exclude 3.6 and 3.10), Chapter 4, Section 4.1 and the rest of page 95, Examples 4.1 and 4.2, Sections 4.4–4.8, Chapter 5, Sections 5.1–5.7, Chapter 6, Sections 6.1–6.4 and 6.6, Chapter 7, Sections 7.1–7.7 and 7.10, Chapter 8, Sections 8.7 and 8.8 (exclude Options, Futures, Forwards and Swaps), Chapter 9, Sections 9.4, 9.6, 9.8–9.10, Appendix VIII.

A20 PROBABILITY AND MATHEMATICAL STATISTICS

- Aim:** To provide a grounding in probability and mathematical statistics.
- Topics:** Concepts of probability
Random variables and their characteristics
Methods and properties of estimation
Correlation and regression analysis
Hypothesis testing and confidence intervals
Data analysis
- Type** 3 hours Multiple Choice exam
- Reference**
- A First Course in Probability (Seventh Edition), 2005, by Ross, S.M., Chapters 1–8.
 - Mathematical Statistics with Applications (Sixth Edition), 2002, by Wackerly, D., Mendenhall III, W. Scheaffer, R., Chapters 1-7.
 - Probability for Risk Management, 1999, by Hassett, M. and Stewart, D., Chapters 1–11.

- Probability: The Science of Uncertainty with Applications to Investments, Insurance and Engineering 2001, by Bean, M.A., Chapters 1–9.

A30 ECONOMICS

Aim: To provide a grounding in the fundamental concepts of both micro and macroeconomics.

Topics: Microeconomics
Macroeconomics

Type 3 hours Multiple Choice exam

Reference

- Pengantar Teori Mikroekonomi, by Sadono Sukirno
- Pengantar Teori Makroekonomi, by Sadono Sukirno

A40 ACCOUNTING

Aim: To provide the ability to interpret the accounts and financial statement of companies.

Topics: Basic principles of accounting - including the role of accounting standards
Different types of business entity
Basic structure of company accounts
Interpretation and limitation of company accounts

Type 3 hours Multiple Choice exam

Reference

- Financial Accounting and Reporting Requirements in Life Insurance Companies, 2002 by Ellizabeth A. Mulligan – LOMA 361-12-02, Chapters 1-7, 8 excluding section on “Taxes, Licenses, And Fees” and chapter 9
- Actuarial Mathematics (2nd edition), 1997 by Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A., and Nesbitt, C.J., Chapters 8, 11 (11.1-11.5) and chapter 16 (16.6-16.9)
- PSAK (Indonesia Statement of Financial Accounting Standards) 36

A50 STATISTICAL METHODS

Aims: To provide the skills and expertise in the use of models appropriate for the understanding of risk in a range of actuarial work.

Topics: Statistical models, such as regression and time series
Survival and multi-state models
Parametric and non parametric analysis of data
Graduation principles and techniques

Type 3 hours Multiple Choice exam

Reference

- Loss Models: From Data to Decisions, (Second Edition), 2004, by Klugman, S.A., Panjer, H.H. and Willmot, G.E., Chapter 1, Section 1.1 only, Chapters 9–11, Chapter 12 (excluding 12.5.4, 12.5.5 and 12.6), and Chapter 13.
- Econometric Models and Economic Forecasts (Fourth Edition), 1998, by Pindyck, R.S. and Rubinfeld, D.L., Chapters 3–6, 15–18. 6

A60 ACTUARIAL MATHEMATICS

Aim: To provide the skills and expertise in the mathematics that are of particular relevance to actuaries working in life insurance, pensions, health care and general insurance.

Topics: Actuarial mathematics as applied to life insurance, pensions, health care and general insurance
Types of products and plans - individual, group and social insurance arrangements
Pricing or financing methods of products and plans
Reserving

Type 3 hours Multiple Choice exam

Reference

- Actuarial Mathematics (Second Edition), 1997, by Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A. and Nesbitt, C.J., Chapter 3, Chapter 4, Sections 4.1–4.4, Chapter 5, Sections 5.1–5.4, Chapter 6, Sections 6.1 (excluding utility-theory approach), 6.2–6.4, Chapter 7, Sections 7.1 (excluding utility theory approach), 7.2–7.6, Chapter 8, Sections 8.1–8.4, Chapter 9, Sections 9.1–9.5, 9.6.1, 9.7, 9.9, Chapter 10, Sections 10.1–10.4, 10.5–10.5.1, 10.5.4, 10.6, and Chapter 15, Sections 15.1–15.2.1, 15.4, 15.6–15.6.1.

A70 RISK THEORY

Aim: To provide an understanding of the principles of risk theory and its applications.

Topics: Probability Model in Risk Process
Risk models (individual and collective)
Estimation of Risk Distributions
Credibility theory
Ruin theory

Type 3 hours Essay exam

Reference

- Introduction to Probability Models (Eighth Edition), 2003, by Ross, S.M., Chapter 5, Sections 5.3.1, 5.3.2 (through Definition 5.1), 5.3.3, 5.3.4 (through Example 5.14 but excluding Example 5.13), Proposition 5.3 and the preceding paragraph, Example 5.18, 5.4.1 (up to example 5.23), 5.4.2 (excluding Example 5.25), 5.4.3, and Exercise 40.
- Loss Models: From Data to Decisions, (Second Edition) 2004, by Klugman, S.A., Panjer, H.H., and Willmot, G.E., Chapter 2 (background only), Chapter 3 (background only), Chapter 4, Sections 4.1–4.4 (excluding data-dependent distributions), 4.6.1–4.6.5, 4.6.7 through Theorem 4.51 (excluding zero-modified distributions, in particular Example 4.46, Theorem 4.49 and subsequent examples that depend on these distributions), 4.6.9–4.6.11, Chapter 5, Sections 5.1–5.6, Chapter 6, Sections 6.1– 6.3, 6.7 (excluding discretization), Chapter 8, Section 8.1.1. [Candidates will not be responsible for zero-modified distributions including instances where they are used in examples.] and Chapters 15 - 17

A80 PROFESSIONALISM

Aim To develop awareness of professionalism issues and the importance of professionalism in the work of an actuary.

Topics: Characteristics and standards of a profession
Code of conduct and practice standards
The regulatory roles of actuaries
The professional role of the actuary

Type 6 hours seminars and workgroup papers

Reference

- Society of Actuaries of Indonesia Code of Ethics and Professional Conduct
- Society of Actuaries of Indonesia Standard of Practice

FELLOWSHIP EXAMS

F10 INVESTMENT AND ASSET MANAGEMENT

Aim: To develop the ability to apply actuarial principles to the valuation, appraisal, selection and management of investments.

Topics: The objectives of institutional and individual investors
Types of investment (bonds, shares, property and derivatives)
Regulation and taxation of investments
Investment risk
Valuation of investments
Portfolio selection - incorporating assessment of relative value
Performance measurement
Portfolio management
Financial & Market models – e.g. term structure of interest rates and cash flow.

Type 3 hours Essay exam

Reference

- Bond Portfolio Management, (Second Edition), 2001, by Fabozzi, F.J., editor, Chapters 2, 15–16.
- Investments, (Fifth Edition), 2002, by Bodie, Z., Kane, A., and Marcus, A., Chapters 1 (background only, 2–5, 6 (excluding appendix), 7, 8 (excluding appendix), 9–1 and 20 - 27.
- Financial Economics, 1998, by Panjer, H.H., editor, Chapters 2 (sections 1–6 only), 3, 5–6.

F20 ACTUARIAL MANAGEMENT

Aim: To develop the ability to apply the principles of actuarial planning and control needed on sound financial lines.

Topics: The general operating environment
Reserving and valuation of liabilities
Asset and liability relationships
Solvency of the provider
Calculation and distribution of profit (surplus)

Type 3 hours Essay exam

Reference

- Understanding Actuarial Management: The Actuarial Control Cycle. Institute of Actuaries of Australia, 2003 by Bellis, C., Shepherd, J., and Lyon, R.
- Enterprise Risk Management: From Incentives to Controls. John Wiley & Sons, Inc. 2003 by Lam, J.

F31 ACTUARIAL ASPECT IN LIFE INSURANCE

Aim: To develop the ability to apply the principles of actuarial planning and control needed for the operation in life insurance.

Topics: Assessment of risks
Product design and development
Pricing and assumptions
Reserving and valuation of liabilities
Monitoring the experience
Reinsurance

Type 3 hours Essay exam

Reference

- Actuarial Aspects of Individual Life Insurance and Annuity Contracts, ACTEX Publications, 1999 by Easton, A.E. and Harris, T. F.
- Group Insurance, (Fourth Edition), ACTEX Publications, 2003 by Bluhm W.F.
- Life Insurance Products and Finance, 2000, by Atkinson, D., and Dallas, J.,
- Government Regulations

F32 ACTUARIAL ASPECT IN PENSION FUND

Aim: To develop the ability to apply the principles of actuarial planning and control needed for the operation in pension fund.

Topics: Assessment of risks
Product design and development
Pricing and assumptions
Reserving and valuation of liabilities
Monitoring the experience
Reinsurance

Type 3 hours Essay exam

Reference

- A Problem Solving Approach to Pension Funding and Valuation, (Second Edition), 1996, by Aitken, W.H.,
- Fundamentals of Private Pensions. (Eighth Edition), Oxford University Press, 2005 McGill, D.M., Brown, K.N., Haley, J.J., and Schieber, S.J.,
- Government Regulations

F33 ACTUARIAL ASPECT IN GENERAL INSURANCE

Aim: To develop the ability to apply the principles of actuarial planning and control needed for the operation in general insurance.

Topics: Assessment of risks
Product design and development
Pricing and assumptions
Reserving and valuation of liabilities
Monitoring the experience
Reinsurance

Type 3 hours Essay exam

Reference

- Introduction to Ratemaking and Loss Reserving for Property and Casualty Insurance (Second Edition), 2001, ACTEX Publications by Brown, R. L. and Gottlieb, L.R.,
- Foundations of Casualty Actuarial Science (Fourth Edition), 2001,
- Government Regulations

F34 ACTUARIAL ASPECT IN HEALTH INSURANCE

Aim: To develop the ability to apply the principles of actuarial planning and control needed for the operation in health insurance.

Topics: Assessment of risks
Product design and development
Pricing and assumptions
Reserving and valuation of liabilities

Monitoring the experience
Reinsurance

Type 3 hours Essay exam

Reference

- Individual Health Insurance, 1988, by O'Grady, F.T.,
- Group Insurance, (Fourth Edition), ACTEX Publications, 2003 by Bluhm W.F.
- Government Regulations

MAPPING OF SYLLABUS

