

राष्ट्रिय जीवन बीमा कम्पनी लिमिटेड  
प्राविधिक सेवा, एक्चुरी समूह, तह ६, सहायक व्यवस्थापक पदको खुला तथा आन्तरिक प्रतियोगितात्मक  
परीक्षाको पाठ्यक्रम  
द्वितीय पत्र (Paper II)  
सेवा सम्बन्धी (Service Related)

खण्ड (A) - ७० अङ्क  
(७ प्रश्न × १० अङ्क)

**1. Actuarial Science and Risk Management**

**1.1. Theory of Interest Rates**

Relationship between Interest Rate and Discount Rate; Effective Interest Rate, Nominal Interest Rate and Force of Interest and its Relationships, Real and Money Interest Rates. Concepts of Present Value and the Accumulated Value, Calculation of Present value and the Accumulated Value for Given Different Cash flow Scenarios, Term Structure of Interest Rate and Factor Influencing Interest Rate, Relationships Between Discrete Spot Rates and Discrete Forwards Rates as well as Continuous Spot Rates and Continuous Forward Rates, Par Yield and Yield to Maturity.

**1.2. Assurance and Annuities:** Definition of Assurance and Annuities and their Types Involving One Life and Both Lives, Benefits Under Different Assurance Types Contracts, The Operation of Conventional With-Profits Contracts in Which Profits are Distributed by the Use of Regular Reversionary Bonuses and by Terminal Bonuses, Relationship Between Annuity Payable in Advance and in Arrear, Relationship Between Temporary, Deferred and Whole Life Annuities; Relationship Between Assurance and Annuity Factors Using Equation of Value.

**1.3. Pricing and Reserving**

Concept of the Principle of Equivalence

**Pricing:** Definition of Gross Premiums and Calculation of Gross Premiums for Insurance Contract Benefits Under Various Scenarios Using the Equivalence Principle (Which Includes: Single Premium, Regular Premium, Increasing and Decreasing Death Benefits, Different Payment of the Survival Benefits).

**Reserving:** Reason for Setting up Reserves, Definition of Prospective and Retrospective Reserves, Calculation of Gross Prospective and Retrospective Reserves, Conditions in which the Prospective Reserve and Retrospective Reserve are same.

Concepts of Net Premium and Net Premium Valuation, Relationship of Net Premiums and Net Premium Valuation with Gross Premiums and Gross Premium Valuation respectively.

**Profit Testing:** Concept and Importance of Profit Testing of Different Life Insurance Contracts, Concept of Profit Vector, Profit Signature, Net Present Value and Profit Margin; Use of Profit Margin to Price a Product.

**1.4. Random Variables and Distributions**

Definition and Key Characteristics of Discrete and Continuous Distributions, Poisson Process, Jointly Distributed Random Variables, Marginal Distribution and Conditional Distribution, Central Limit Theorem.

**1.5. Data Analysis**

Exploratory Data Analysis, Different Measures of Correlation and Various Statistical Measures, Concept of a Sample, a Population and Statistical Inference, Statistics and Its Sampling Distribution.

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**1.6. Statistical Inference**

Method of Maximum Likelihood for Constructing Estimators of Population Parameters, Confidence Interval, Null and Alternative Hypotheses, Type I and Type II Errors, Level of Significance, and Probability-Value, Goodness of Fit Test.

**1.7. Regression Theory and Application**

Simple Regression Model, Multiple Linear Regression Model, Exponential Family of Distributions, Variable, a Factor Taking Categorical Values and An Interaction Term, Generalized Linear Model and Interpretation of Its Output.

**1.8. Survival Models**

Distribution and Density Functions of the Random Future Lifetime, Survival Function and Force of Mortality, Gompertz and Makeham Laws of Mortality, Curtate Future Lifetime and Its Expected Value, Concept of Graduation and Graduation Tests.

**1.9. Corporate and Managerial Finance**

Different Types of Loan and Share Capital, Public and Private Company, Types of Medium-Term and Short-Term Finance, Basic Principles of Corporate Taxation, Corporate Capital Structure and Dividend Policy, Factors to be Considered When Deciding Capital Structure and Dividend Policy, Concept of Derivative and its Instruments, Financial Planning and Control, Working Capital Management, Selection of Long-Term Assets Under Uncertainty, Cost of Capital, Weighted Average Cost of Capital, Choice of Discount Rate Including Allowance for Risk.

**1.10. Risk Management** - Concept and Definition of Risk and Uncertainty in Insurance Business, Key Risk Categories: Market Risk (Interest Rate Risk, Foreign Exchange Risk, Equity Risk, Property Risk), Credit Risk, Counterparty Risk, Concentration Risk, Liquidity Risk, Insurance Risk, Operational Risk, Solvency Risk, Climate Risk, Relationship between Systematic Risk and Specific Risk, Risk Measures; Properties and Limitations of Value at Risk (VaR), Tail Value at Risk (TVaR), Probability of Ruin, Expected Shortfall (ES); Risk Management Framework: Concepts of Enterprise Risk Management (ERM) and Three Lines of Defense, Risk Management Processes in Insurance, Risk Based Capital, Concepts and Objectives of Own Risk and Solvency Assessment (ORSA), ORSA Preparation and Documentation, Importance of Risk Measurement for Solvency and Capital Adequacy.

**खण्ड (B) - ३० अङ्क**

**(३ प्रश्न × १० अङ्क)**

**2. सम्बन्धित कानूनी व्यवस्था (Relevant Legal Provisions)**

2.1. नेपालको संविधान (Constitution of Nepal)

2.2. राष्ट्रिय जीवन बीमा कम्पनी लिमिटेडको प्रबन्धपत्र र नियमावली (Memorandum of Association and Articles of Association of Rastriya Jeewan Beema Company Limited)

2.3. राष्ट्रिय जीवन बीमा कम्पनी लि. को कर्मचारी सेवा, शर्त तथा सुविधा सम्बन्धी विनियमावली, २०८२ (Employee Service, Conditions and Facilities Bylaw, 2082 of Rastriya Jeewan Beema Company Limited)

2.4. बीमा ऐन, २०७९ र बीमा नियमावली, २०८१ (Insurance Act, 2079 and Insurance Regulations, 2081)

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- 2.5. बीमकको संस्थागत सुशासन सम्बन्धी निर्देशिका, २०८० (Directives on the Corporate Governance of Insurers, 2080)
- 2.6. सम्पत्ति शुद्धीकरण (मनी लाउन्डरीङ्ग) निवारण ऐन, २०६४ {Asset (Money) Laundering Act, 2008}
- 2.7. बीमकको बीमाङ्गी नियुक्ति सम्बन्धी निर्देशिका, २०८१ (Guideline Related to Actuary Appointment for Insurers, 2024)
- 2.8. जीवन बीमा व्यवसाय गर्ने बीमकको बीमाङ्गीय मूल्याङ्कन सम्बन्धी निर्देशिका, २०७७ (Directive on Actuarial Valuation of Life Insurers, 2077)
- 2.9. जोखिममा आधारित पूँजी तथा सोल्वेन्सी सम्बन्धी निर्देशिका, २०८२ (Risk Based Capital and Solvency Directive, 2025)
- 2.10. जीवन बीमालेख सम्बन्धी निर्देशिका, २०७९ (Life Insurance Policy Related Directive, 2079)