

राष्ट्रीय जीवन बीमा कम्पनी लिमिटेड  
प्राविधिक सेवा, एक्चुरी समूह, तह ७, नायव व्यवस्थापक पदको आन्तरिक प्रतियोगितात्मक परीक्षाको  
पाठ्यक्रम

द्वितीय पत्र (Paper II)  
सेवा सम्बन्धी (Service Related)

खण्ड (A) - ७० अङ्क  
(७ प्रश्न × 10 अङ्क)

**1. Actuarial Science and Risk Management**

- 1.1. Theory of Interest Rates: Relationship between Rates of Interest and Discount, Effective Rate of Interest, Nominal Rate of Interest 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 a given different Cash Flow Scenarios  
Term Structure of Interest Rate, Factor Influencing it, Relationships between Discrete Spot Rates and Forwards Rates as well as Continuous Spot Rates and Forward Rates, Par Yield and Yield to Maturity.
- 1.2. Assurance and Annuities: Definition and its Various 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, between Temporary, Deferred and Whole life Annuities, Relations between Assurance and Annuity Factors Using Equation of Value
- 1.3. Asset Liability Management (ALM): Concepts of Duration and Convexity, Immunization and ALM Governance Framework.
- 1.4. Pricing and Reserving: Concept of the Principle of Equivalence
  - 1.4.1 Experience Analysis: Mortality, Lapse and Expense experience (Conceptual), Assumption Setting, Feedback into Pricing and Reserving.
  - 1.4.2 Pricing: Define and Calculate the Gross Premiums of the 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).
  - 1.4.3 Reserving: Reason for Setting up Reserves, Define and Calculate the Gross Prospective and Retrospective Reserves, Conditions in Which the Prospective Reserve and Retrospective Reserve are same.
  - 1.4.4 Concepts of Net Premiums and Net Premium Valuation and their Relation with the Gross Premiums and Gross Premium Valuation Respectively.
  - 1.4.5 Profit Testing: Concept and Importance of Profit Testing of Life Insurance Contracts, Concept of the Profit Vector, Profit Signature, Net Present Value and Profit Margin, Use of Profit Margin to Price a Product.
  - 1.4.6 Sensitivity Analysis and Stress Testing: Concept and Purpose, Common Stress Scenarios in Insurance

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- 1.5. 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
- 1.6. Data Analysis  
Exploratory Data Analysis, Different Measures of Correlation, Concept of Sample, Population, Statistics and its Sampling Distribution.
- 1.7. 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
- 1.8. 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.
- 1.9. 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, Graduation and Graduation Tests.
- 1.10. Corporate Finance  
Different Types of Loan and Share Capital, Public and Private Company, Different Types of Medium-Term and Short-Term Company Finance, Basic Principles of Corporate Taxation, Corporate Capital Structure and Dividend Policy and Factors to be Considered when Deciding Capital Structure and Dividend Policy, Ways of Distributing Profits, Concept of Derivatives and its Instruments.
- 1.11. Managerial Finance:  
Financial Planning and Control, Working Capital Management, Selection of Long-Term Assets under Uncertainty and Risk, Financial Structure, Cost of Capital, Weighted Average Cost of Capital, Carryout the Cash Flow Projections, Choice of the Discount Rate Including Allowance for Risk.
- 1.12. Risk Management
  - 1.12.1 Risks: Meaning, Risk and Uncertainty, Risk Appetite, Risk Tolerance, Risk Capacity, Risk Limits, Risk Profile
  - 1.12.2 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
  - 1.12.3 Relationship between Systematic Risk, Non-Systematic or Specific Risk and Concentration of Risk.
  - 1.12.4 Risk Measures: Properties and Limitations of the Following Risk Measures: Value at Risk (VaR), Tail Value at Risk (TVaR), Probability of Ruin, Expected Shortfall

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- 1.12.5 Risk Management Framework: Concepts of Enterprise Risk Management (ERM) and the Three Lines of Defense.
- 1.12.6 Risk Management Processes in Insurance (Risk identification, Risk Assessment, Risk Treatment, Risk Reduction and Risk Review and Monitoring)
- 1.12.7 Risk Mitigation: Risk Treatment Strategies: Acceptance, Avoidance, Transference and Mitigation; Risk Pooling Principles, Risk Retention, Hedging Strategies (Derivatives, ALM)
- 1.12.8 Capital Management: Relationship between Risk and Capital, Economic Capital vs Regulatory Capital, RBC Framework, Capital Adequacy and Solvency Standards
- 1.12.9 Concepts and Objectives of Own Risk and Solvency Assessment (ORSA), ORSA Preparation and Documentation.
- 1.12.10 Importance of Risk Measurement for Solvency and Capital Adequacy
- 1.13. NFRS 17: Insurance Contract  
Fulfillment Cashflows, Contractual Service Margin (CSM), Liability for Remaining Coverage (LRC), Liability for Incurred Claims (LRC), Aggregation of Contracts, Discounting, Measurement Models, Transition from NFRS 4, Contract Boundary, Unbundling of Contracts

**खण्ड (B) - ३० अङ्क**  
**(३ प्रश्न × १० अङ्क)**

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

- 2.1. नेपालको संविधान (Constitutional 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. बीमा ऐन, २०७९ र बीमा नियमावली, २०८१ (Insurance Act, 2079 and Insurance Regulations, 2081)
- 2.4. बीमकको संस्थागत सुशासन सम्बन्धी निर्देशिका, २०८० (Directives on the Corporate Governance of Insurers, 2080)
- 2.5. सम्पत्ति शुद्धीकरण (मनी लाउन्डरीङ्ग) निवारण ऐन, २०६४ र सम्पत्ति शुद्धीकरण (मनी लाउन्डरीङ्ग) निवारण नियमावली, २०८१ {Assets (Money) Laundering Act, 2064} and {Assets (Money) Laundering Regulations, 2081}
- 2.6. जलवायु जोखिम सम्बन्धी निर्देशिका, २०७८ (Climate Risk Directive, 2078)
- 2.7. बीमकको बीमाङ्गीय 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)

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- 2.9. जोखिममा आधारित पूँजी तथा सोल्भेन्सी सम्बन्धी निर्देशिका, २०८२ (Risk Based Capital and Solvency Directive, 2025)
- 2.10. जीवन बीमालेख सम्बन्धी निर्देशिका, २०७९ (Life Insurance Policy Related Directive, 2079)
- 2.11. Own Risk Solvency Assessment Directives, 2023