**Block 1. A separate question from this block is 34 points.**

Uncertainty and risk. Probabilistic models.

Uncertainty. Risk. Definition

Portfolio of risks.

Insurance. Insurance portfolios.

The simplest insurance portfolio.

A simple insurance portfolio.

Real insurance portfolio.

Price of insurance.

The principle of determining prices. The principle of risk-free.

The principle of justice.

The principle of sufficient coverage.

Portfolio heterogeneity. Proposition 3.1.

Preferences. Attitude preference.

Calculation of insurance premiums for simple and real portfolios.

Attitude of preference. Example 4.7.

The theorem on the existence of a utility function.

The system of axioms.

Characterization of attitude to risk. Attitude to risk. Neutrality.

**Block 2. A separate question from this block is 33 points.**

The tendency to risk.

Risk aversion.

The price of risk.

Risk aversion. Theorem 5.1. Remark 5.1.

Definition 5.1 of the utility function.

Quantitative expression of risk aversion.

The price of risk. Risk aversion.

Definition 5.3. Risk aversion.

Pratt's theorem.

The simplest risk process. Process description.

Description of the risk process. The equation for the ruin probability.

Calculation of ruin probabilities.

A game with an infinitely rich adversary.

Numerical solution of a difference equation of the second order. Examples.

The classic risk process. Definition

The ruin of the process.

The dependence of the probability of ruin of the process on the parameters.

Volterra integral equation of the second order.

**Block 3. A separate question from this block is 33 points.**

Numerical solution of the Volterra integral equation of the second kind.

Aggregated risk process. Aggregation operation.

The ruin.

Random walk. Theorem 8.1. Theorem 8.2.

The equation for the probability of ruin.

Example: The simplest risk process.

The lifetime of risk processes.

The simplest risk process.

A simple risk process.

The game of cats - mice.

Problem solving for the ruin probability in the classical risk model with Poisson stream of damage.

Financial structures and tools. Key objects and structures.

Individuals. Firms. Financial instrument.

The financial market. Derivative securities market.

Financial instruments. Buyer options and seller options on the market European-type securities.

Portfolio of securities. Diversification of Markovitz.

Goals and objectives of financial theory, engineering and financial actuarial calculations. Role financial theory and financial engineering.

Financial risk. Types of risks.