Frequently asked questions:

1. **Why utility function is necessary in the study of Insurance?**

Ans.

It has been shown that if a company follows well defined objectives in its insurance policy, these objectives can be represented by a utility function which the company seeks to maximize. This formulation of the problem will in general make it possible to determine a unique insurance arrangement which is optimal when the company's objectives and external situation are given.

2. **What is meant by Utility? Explain.**
   Ans:
   Utility" refers to the perceived value of a good and utility theory. For example, if you prefer vanilla ice-cream to chocolate, you would assign greater utility to vanilla ice-cream than to the same quantity of chocolate ice-cream. The fact that different agents have different utilities for goods is the basis of all markets. In other words, "Utility" is the perceived ability of something to satisfy needs or wants. It is a representation of preferences over some set of goods and services. Utility is applied to generate an individual's value for the wealth.

3. **Write a note on actuaries.**
   Ans:
   An actuary applies mathematical and statistical techniques to financial problems. Actuaries manage financial risk and make financial sense of the future for their clients. They look at what's happened in the past and use it to make predictions about the future, developing appropriate strategies for the risks involved.

4. **Give any one example where actuarial science could be applied.**
   Ans:
   actuarial science can be applied in the assessment of capital projects and in helping a broad range of large financial organizations to better understand their liabilities and cater for them.

5. **What is insurance system ?**
   Ans:
   An insurance system is a mechanism for reducing the adverse financial impact of random events. In case of insurance, the risk is covered. In the event of loss of or other items, insurance company pays as assured. In financial investments payments are based on the

size of a financial loss or profit occurring and are not associated with the person suffering the loss.

6. **What is banking system ?**
   Ans:
   Banking institutions were developed for the purpose of receiving, investing, and dispensing the savings of individuals and corporations. The cash flows in and out of a savings institution do not follow deterministic paths. In case of bank deposits, the returns are determined by what is totally paid.

7. **Write the difference between banking system and insurance system.**
   Ans.

   Banking institutions were developed for the purpose of receiving, investing, and dispensing the savings of individuals and corporations. The cash flows in and out of a savings institution do not follow deterministic paths. In case of bank deposits, the returns are determined by what is totally paid where as insurance system is a mechanism for reducing the adverse financial impact of random events. In case of insurance, the risk is covered. In the event of loss of or other items, insurance company pays as assured.

8. **Explain a decision problem faced by the owner of the property subject to loss.**
   Ans:

   Suppose, the property owner has a utility of wealth function u(w) where wealth w is measured in monetary terms. The owner faces a possible loss due to random events that may damage the property. The distribution of the random loss X is assumed to be known. The idea is that we assume that the owner will be indifferent between paying an amount G to the issuer, who will assume the random financial loss, and assuming the risk himself. The situation can be stated as

   $$u(w\text{-}G) = \text{E}[u(w\text{-}X)].$$

   Here, right-hand side is the expected utility when insurance is not purchased. That is on an average utility of what may remain from the wealth after the loss. Whereas left-hand side is the utility after paying G for insurance and the loss will be nullified or protected.

9. **What is risk averse, and coefficient of risk aversion.**
   Ans:

   Suppose, utility function u(w) where w is measured in monetary terms. We assume that a

   utility function satisfies the conditions

$$u'(x) > 0 \quad \text{and} \quad u''(x) < 0. \tag{1}$$

An individual whose utility function satisfies the conditions in (1) is said to be risk averse,

and risk aversion can be quantified through the coefficient of risk aversion defined by

$$r(x) = - u''(x) / u'(x).$$

10. **Explain the term decreasing marginal utility with an example.**
Ans:

Suppose, the property owner has a utility of wealth function u(w) where wealth w is measured in monetary terms. The owner faces a possible loss due to random events that may damage the property. The distribution of the random loss X is assumed to be known. It is natural to assume that $u(w)$ is an increasing function, i.e. "more is better". In addition, it has been observed that for many decision makers, each additional equal increment of wealth results in a smaller increment of associated utility. This is called decreasing marginal utility, that is $u''(x) < 0$
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