

Spring 2015 Actuarial Science - Practice Final

Name: _____

Sample questions for final exam. Actual final may be longer.

1. For insurance company to exist as a business entity, company must charge premiums that is more than expected loss. Briefly explain why customers are willing to pay for such premiums. Give example of a utility function of a customer who is willing to purchase insurance.
2. Suppose we have 10,000 policy holders with identicall and independent loss distributions. Each year, we know there is .95 probability of getting in an accident, and if you are involved in an accident, loss distribution is $\text{Unif}[10,20]$.

Using individual risk model, calculate the relative loading coefficient θ , so that probability of the company making profit is 95% for given year. What is the premiums charged for each customer?

3. Suppose there is a customer who's utility function can be modeled by $u(x) = x^7$. Whould this customer buy above insurance policy?
4. Estimate the upper bound for probability that this company will go bankrupt if the above setting persisted for many years.

Find how much iniital funding is needed so that lower bound for the survival probability of the company is .99.