



Uva Wellassa University
Faculty of Management



Degree of Bachelor of Business Management in Entrepreneurship and Management
FOURTH YEAR FIRST SEMESTER EXAMINATION - FEBRUARY/MARCH 2012
EMG 432-3 - Actuarial Models

Instructions to candidates:

No. of pages : Two (02)
No. of questions : Six (06)
Time allocation : Two (02) hours
Marks allocation : Eighty (80) Marks

Index Number:

Answer only 05 questions.

Part B – Essay Questions

1. Claim sizes are as follows;

100, 200, 500, 1000, 1500, 2000, 3700

An exponential is fitted to claim sizes using the method of moments.

Let X be the claim size.

Determine the estimate of $\Pr(X > 500)$.

2. Claim sizes are as follows:

1000, 1000, 1000, 1500, 2500, 5000

A lognormal distribution is fitted to the claim sizes using the method of moments.

Determine the estimate for μ .

3. You are given the following;

- Losses follow a Pareto distribution with parameters θ and α .
- The 10th percentile of the distribution is $\theta - k$, where k is a constant.
- The 90th percentile of the distribution is $5\theta - 3k$.

Determine α .

4. Losses follow a lognormal distribution with parameters $\mu = 7$ and $\sigma = 2$. There is an ordinary deductible of 2000.

Determine the following.

- a) $E(X \wedge 2000)$.
- b) Loss Elimination Ratio (LER).

5. A loss is exponentially distributed with mean 1000. An insurance will pay nothing if the loss is less than 500 and the entire loss if the loss exceeds 500.

Calculate

- (a) The expected payment per loss.
- (b) The expected payment per payment will be less than 1000.
- (c) The probability that the payment will be less than 1000.

6. You are given the following information:

- A large risk has a lognormal claim size distribution with parameters $\mu = 8.443$ and $\sigma = 1.239$.
- The insurance agent for the risk settles all claims under 5000. (Claims of 5000 or more are settled by the insurer, not the agent)

Determine the expected value of a claim settled by the insurance agent.