KFUPM | Term 162 | Date: 16/11/2017
Mathematics & Statistics | AS 483 | Duration: 30 minutes

Quiz# 3

Name: ID #: Section:

Q1: For a special investment product, you are given:

(i) All deposits are credited with 75% of the annual equity index return, subject to a minimum guaranteed crediting rate of 3%.
(ii) The annual equity index return is normally distributed with a mean of 8% and a standard deviation of 16%.
(iii) For a random variable X which has a normal distribution with mean μ and standard deviation σ, you are given the following limited expected values:

E(X ^ 3%)		
	μ=6%	μ=8%
σ=12%	-0.43%	0.31%
σ=16%	-1.99%	-1.19%

E(X ^ 4%)		
	μ=6%	μ=8%
σ=12%	0.15%	0.95%
σ=16%	-1.43%	-0.58%

Calculate the expected annual crediting rate.

Q2: Loss amounts have the distribution function

$$F(x) = \begin{cases} \left(\frac{x}{100}\right)^2, & 0 \le x \le 100 \\ 1, & x > 100 \end{cases}$$

An insurance pays 80% of the amount of the loss in excess of an ordinary deductible of 20, subject to a maximum payment of 60 per loss. Calculate the conditional expected claim payment, given that a payment has been made.

Q3: A group dental policy has a negative binomial claim count distribution with mean 300 and variance 800.
Ground-up severity is given by the following table:

Severity	**Probability**
40	**0.25**
80	**0.25**
120	**0.25**
200	**0.25**

You expect severity to increase 50% with no change in frequency. You decide to impose a per claim deductible of 100.
Calculate the expected total claim payment after these changes.