

Question #21

Key: B

From the Poisson distribution, $\mu(\lambda) = \lambda$ and $v(\lambda) = \lambda$. Then,

$\mu = E(\lambda) = 6/100 = .06$, $EPV = E(\lambda) = .06$, $VHM = Var(\lambda) = 6/100^2 = .0006$ where the various moments are evaluated from the gamma distribution. Then,

$k = .06 / .0006 = 100$ and $Z = 450 / (450 + 100) = 9/11$ where the 450 is the total number of insureds contributing experience. The credibility estimate of the expected number of claims for one insured in month 4 is $(9/11)(25/450) + (2/11)(.06) = .056364$. For 300 insureds the expected number of claims is $300(.056364) = 16.9$.