67. You are given the following information about a book of business comprised of 100 insureds:

(i) $X_i = \sum_{j=1}^{N_i} Y_{ij}$ is a random variable representing the annual loss of the i^{th} insured.

(ii) $N_1, N_2, ..., N_{100}$ are independent random variables distributed according to a negative binomial distribution with parameters r (unknown) and $\beta = 0.2$.

(iii) Unknown parameter r has an exponential distribution with mean 2.

(iv) $Y_{i1}, Y_{i2}, ..., Y_{iN_i}$ are independent random variables distributed according to a Pareto distribution with $\alpha = 3.0$ and $\theta = 1000$.

Determine the Bühlmann credibility factor, Z, for the book of business.

(A) 0.000

(B) 0.045

(C) 0.500

(D) 0.826

(E) 0.905