Table 3: Benchmarks - Problems with correlated variables

LSF significance	**Case No.**	**Limit State function(s)**	**Stochastic variable(s)**	R_x	β	**Ref**
Beam deflection	(1)	$g(X) = 0.02 - 8\frac{X_1}{X_2 X_3}$	$X_1 : LN(1000, 200)$ $X_2 : LN(2 \times 10^{10}, 1 \times 10^{9})$ $X_3 : LN(3.9025 \times 10^{-5}, 3.9025 \times 10^{-6})$	$\begin{bmatrix} 1.0 & 0.2 & 0.2 \\ 0.2 & 1.0 & 0.2 \\ 0.2 & 0.2 & 1.0 \end{bmatrix}$	4.0	[1]
R x S	(2)	$g(X) = x_1 - x_2$	$X_1 : N(150, 20)$ $X_2 : N(120, 25)$	$\begin{bmatrix} 1.0 & 0.75 \\ 0.75 & 1.0 \end{bmatrix}$	1.809	[2]
Moment in beam	(3)	$g(X) = x_1 x_2 - x_3$	$X_1 : N(40, 5)$ $X_2 : N(50, 2.5)$ $X_3 : N(1000, 200)$	$\begin{bmatrix} 1.0 & 0.4 & 0.0 \\ 0.4 & 1.0 & 0.0 \\ 0.0 & 0.0 & 1.0 \end{bmatrix}$	2.862	[3]
Moment in beam	(4)	$g(X) = x_1 x_2 - x_3$	$X_1 : LN(40, 5)$ $X_2 : LN(50, 2.5)$ $X_3 : G(1000, 200)$	$\begin{bmatrix} 1.0 & 0.4 & 0.0 \\ 0.4 & 1.0 & 0.0 \\ 0.0 & 0.0 & 1.0 \end{bmatrix}$	2.658	[3]

References

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