$$P_{\mathrm{e}}(X \mid Y) \geq 1 - \frac{n\,(n-1) - (n-2)\,\exp\big(H_{1/2}(X \mid Y)\big) + 2\,\sqrt{\exp\big(H_{1/2}(X \mid Y)\big)\,(n-1)\,\big(n - \exp\big($$

$$P_{\mathrm{e}}(X \mid Y) \geq 1 - \frac{1 + \sqrt{\exp\big(-H_2(X \mid Y)\big)\,(n-1)\,\big(n - \exp\big(H_2(X \mid Y)\big)\big)}}{n}$$