

114. Solution: C

Note that

$$\begin{aligned}P(Y = 0 \mid X = 1) &= \frac{P(X = 1, Y = 0)}{P(X = 1)} = \frac{P(X = 1, Y = 0)}{P(X = 1, Y = 0) + P(X = 1, Y = 1)} = \frac{0.05}{0.05 + 0.125} \\ &= 0.286\end{aligned}$$

$$P(Y = 1 \mid X = 1) = 1 - P(Y = 0 \mid X = 1) = 1 - 0.286 = 0.714$$

$$\text{Therefore, } E(Y \mid X = 1) = (0) P(Y = 0 \mid X = 1) + (1) P(Y = 1 \mid X = 1) = (1)(0.714) = 0.714$$

$$E(Y^2 \mid X = 1) = (0)^2 P(Y = 0 \mid X = 1) + (1)^2 P(Y = 1 \mid X = 1) = 0.714$$

$$\text{Var}(Y \mid X = 1) = E(Y^2 \mid X = 1) - [E(Y \mid X = 1)]^2 = 0.714 - (0.714)^2 = 0.20$$