

Previous Year Question with Solution :

Q)

If two events A and B are such that $P(A^c) = 0.3$, $P(B) = 0.4$ and $P(A \cap B^c) = 0.5$, then $P(B/(A \cup B^c)) = \dots\dots\dots$

Soln :

Given that $P(A^c) = 0.3$, $P(B) = 0.4$ and $P(A \cap B^c) = 0.5$

$$\begin{aligned} \text{then } P[B/(A \cup B^c)] &= \frac{P[B \cap (A \cup B^c)]}{P(A \cup B^c)} \\ &= \frac{P((B \cap A) \cup (B \cap B^c))}{P(A \cup B^c)} = \frac{P(A \cap B)}{P(A) + P(B^c) - P(A \cap B^c)} \\ &= \frac{P(A) - P(A \cap B^c)}{1 - P(A^c) + 1 - P(B) - P(A \cap B^c)} \\ &= \frac{1 - 0.3 - 0.5}{1 - 0.3 + 1 - 0.4 - 0.5} = \frac{0.2}{0.8} = \frac{1}{4} \end{aligned}$$