

Exemplar Problem :

Q) The probability that atleast one of the two events A and B occurs is 0.6. If A and B occur simultaneously with probability 0.3, evaluate $P(\bar{A}) + P(\bar{B})$.

Soln : We know that, $A \cup B$ denotes the occurrence of atleast one of A and B and $A \cap B$ denotes the occurrence of both A and B , simultaneously.

Thus, $P(A \cup B) = 0.6$ and $P(A \cap B) = 0.3$

Also, $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

$$\Rightarrow 0.6 = P(A) + P(B) - 0.3$$

$$\Rightarrow P(A) + P(B) = 0.9$$

$$\Rightarrow [1 - P(\bar{A})] + [1 - P(\bar{B})] = 0.9 \quad [\because P(A) = 1 - P(\bar{A}) \text{ and } P(B) = 1 - P(\bar{B})]$$

$$\Rightarrow P(\bar{A}) + P(\bar{B}) = 2 - 0.9 = 1.1$$