Q:If $P(A) = 0.4$, $P(B) = 0.8$ and $P(B|A) = 0.6$, then $P(A \cup B)$ is equal to
(A) 0.24
(B) 0.3
(C) 0.48
(D) 0.96
Solution: : Given,

$$P(A) = 0.4 \tag{1}$$
$$P(B) = 0.8 \tag{2}$$
$$P(B|A) = 0.6 \tag{3}$$

We know that,

$$P(B|A) = \frac{P(A \cap B)}{P(A)} \tag{4}$$

Therefore,

$$P(A \cap B) = P(B|A) \cdot P(A) \tag{5}$$
$$= 0.6 \cdot 0.4 \tag{6}$$
$$= 0.24 \tag{7}$$
$$P(A \cup B) = P(A) + P(B) - P(A \cap B) \tag{8}$$
$$= 0.4 + 0.8 - 0.24 \tag{9}$$
$$= 0.96 \tag{10}$$