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,

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

We know that,

$$\Pr(B|A) = \frac{\Pr(AB)}{\Pr(A)} \tag{4}$$

Therefore,

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

Hence, option (D) 0.96 is the correct option.