

3 Three events A, B and C have probabilities  $\frac{2}{5}$ ,  $\frac{1}{3}$  and  $\frac{1}{2}$ , respectively. If,  $P(A \cap C) = \frac{1}{5}$  and  $P(B \cap C) = \frac{1}{4}$ , then find the values of  $P(C/B)$  and  $P(A' \cap C')$ .

Here,  $P(A) = \frac{2}{5}$ ,  $P(B) = \frac{1}{3}$ ,  $P(C) = \frac{1}{2}$ ,  $P(A \cap C) = \frac{1}{5}$  and  $P(B \cap C) = \frac{1}{4}$

$\therefore P(C/B) = \frac{P(B \cap C)}{P(B)} = \frac{1/4}{1/3} = \frac{3}{4}$

and  $P(A' \cap C') = 1 - P(A \cup C) = 1 - [P(A) + P(C) - P(A \cap C)]$   
 $= 1 - \left[ \frac{2}{5} + \frac{1}{2} - \frac{1}{5} \right] = 1 - \left[ \frac{4 + 5 - 2}{10} \right] = 1 - \frac{7}{10} = \frac{3}{10}$