① SUCESOS

A = " El estudiante A está en el piso" $P(\bar{A}) = 0.5$
B = " - - - - - B - - - - " $P(\bar{B}) = 0.25$
C = " - - - - C - - - - " $P(\bar{C}) = 0.15$

$P(A) = 0.5$ $P(B) = 0.75$ $P(C) = 0.85$

Ll_a = " La llamada recibida es para A"
Ll_B = " - - - - - - - B"
Ll_c = " - - - - - - - C"

$P(Ll_a) = \frac{1}{5}$ $P(Ll_B) = P(Ll_c) = \frac{2}{5}$

a)

a.1) $P(A \cup B \cup C) = 1 - P(\bar{A} \cap \bar{B} \cap \bar{C}) \overset{indep}{=} 1 - P(\bar{A})P(\bar{B})P(\bar{C}) =$

$= 1 - 0.5 \cdot 0.25 \cdot 0.15 = 0.98125$

a.2) $P((Ll_a \cap A) \cup (Ll_B \cap B) \cup (Ll_c \cap C)) =$

$= P(Ll_a \cap A) + P(Ll_B \cap B) + P(Ll_c \cap C) =$

$= P(Ll_a)P(A) + P(Ll_B)P(B) + P(Ll_c)P(C)$

$= \frac{1}{5} 0.5 + \frac{2}{5} 0.75 + \frac{2}{5} 0.85 = 0.1 + 0.3 + 0.34 = 0.74$

b)

b.1) $P\left[(Ll_a \cap Ll_a \cap Ll_a) \cup (Ll_B \cap Ll_B \cap Ll_B) \cup (Ll_c \cap Ll_c \cap Ll_c)\right]$

$= P(Ll_a \cap Ll_a \cap Ll_a) + P(Ll_B \cap Ll_B \cap Ll_B) + P(Ll_c \cap Ll_c \cap Ll_c) =$

$= (P(Ll_a))^3 + (P(Ll_a))^3 + (P(Ll_c'))^3$

$= \left(\frac{1}{5}\right)^3 + \left(\frac{2}{5}\right)^3 + \left(\frac{2}{5}\right)^3 = \frac{1}{125} + \frac{8}{125} + \frac{8}{125} = \frac{17}{125} = 0.136$

b.2) $P(Ll_a \cap Ll_B \cap Ll_c) \cdot 3! = P(Ll_a)P(Ll_B)P(Ll_c) 3!$

$= \frac{1}{5} \frac{2}{5} \frac{2}{5} 3!$

$= \frac{4 \cdot 6}{125} = 0.192$