[1] 40% of goods carried by a store come from Company A while the remaining 60% come from Company B. It is known that 1% of goods from Company A are defective. It also known that 3% of all goods at the store are defective products from Company B. If a randomly selected product from the store was found to be defective, find the probability that it came from Company B.

\[
P(A) = 0.4, \quad P(B) = 0.6
\]

\[
P(D|A) = 0.01, \quad P(DB) = 0.03
\]

\[
P(DA) = P(DM) \cdot P(A) = 0.01 \times 0.4 = 0.004
\]

\[
P(D) = P(DA) + P(DB) = 0.024
\]

\[
P(DB) = \frac{P(DB)}{P(D)} = \frac{0.03}{0.024}
\]

[2] Ten Engineering students are identified as E₁, E₂, …, E₁₀. If three students are selected randomly from this group of ten students, find the probability that E₂ and E₇ get selected.

Total No. of ways to select 3 students

\[
\begin{align*}
N &= \binom{10}{3} = \frac{10 \times 9 \times 8}{1 \times 2 \times 3} \\
\end{align*}
\]

When E₂ & E₇ are selected, No. of ways to select the 3rd student

\[
= \binom{8}{1} = 8
\]

\[
P(E_2 \& E_7 \text{ selected}) = \frac{8 \times 1 \times 2 \times 2}{10 \times 9 \times 8}
\]
On the average, a company receives 24 calls per hour. If the number of calls received is modeled by a Poisson random variable, find the probability that the company receives more than 2 calls in 10 minutes.

\[ \lambda = \frac{24}{60} \times 10 = 4 \text{ calls/10 min} \]

\[
P(x > 2) = 1 - P(x = 0) - P(x = 1) - P(x = 2) \]

\[
= \left[ 1 - e^{-4} - e^{-4} \cdot 4 + \frac{e^{-4} \cdot 4^2}{2} \right]
\]