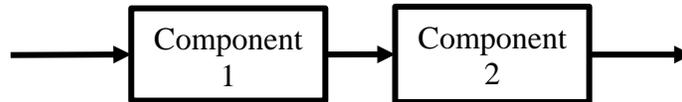


6. Two components of a system are in parallel. The reliability of component 1 is $R_1 = 0.999$, and the reliability of component 2 is $R_2 = 0.998$. If the failures of the two components are independent, find the probability that the system works.



Solution

- Event A = component 1 works
- Event B = component 2 works

$$R_1 = P(A) = 0.999 ; R_2 = P(B) = 0.998 ; A \text{ and } B \text{ are independent}$$

Let C = success of the system

$$C = AB$$

$$R_s = P(C) = P(AB) = P(A)P(B)$$

$$= R_1 R_2 = 0.999(0.998) = 0.9970$$

Notice: $R_s \leq R_1$, $R_s \leq R_2$, $R_s \leq \min(R_1, R_2)$