

## FLEX SILICON PRODUCTS

Flex Silicon Products specializes in short production runs on obsolete semiconductor products using the latest computer aided manufacturing (CAM) tools and flexible manufacturing systems. (The obsolete semiconductor products are ordered by organizations that have old electronic systems which, for one reason or another, they must keep in operation. To keep the old systems running, the companies must buy replacement semiconductor products from time-to-time to use in maintenance.) For Flex to make money on any production run, it is necessary for at least two of its three key systems (the CAM system, the automated etcher, and the clean room) to function properly.

For any particular production run, the CAM system will fail to function properly with probability 0.1. If at least one other system fails to function properly, regardless of how this comes about, the clean room will fail to function properly with conditional probability 0.4. If no other systems fails to function properly, the clean room will fail to function properly with probability 0.2. The automated etcher fails to function properly with probability 0.7 if the CAM system fails to function properly. Otherwise, the automated etcher will function properly.

1. Determine the probability that Flex makes money on a particular production run even though the clean room fails to function properly.
2. Determine the probability that all three systems fail to function properly on a particular production run.
3. Given that more than one system failed to function properly on a particular production run, determine the conditional probabilities that:
  - a. The CAM system functioned properly.
  - b. The automated etcher failed to function properly.
  - c. Both the CAM system and the clean room failed to function properly.