1. Three different machines M1, M2, and M3 are used to produce similar electronic components. Machines M1, M2, and M3 produce 20%, 30% and 50% of the components respectively. It is known that the probabilities that the machines produce defective components are 1% for M1, 2% for M2, and 3% for M3. If a component is selected randomly from a large batch, and that component is defective, find the probability that it was produced: (a) by M2, and (b) by M3.

2. A certain company has two car assembly plants, A and B. Plant A produces twice as many cars as plant B. Plant A uses engines from a subsidiary plant which produces 10% defective engines. Plant B uses engines from another source where 8% of the engines are defective. Car engines at each plant are installed independently. What is the probability that a car chosen at random will have a good engine?

3. It is known that of the articles produced by a factory, 20% come from Machine A, 30% from Machine B, and 50% from Machine C. The percentages of satisfactory articles among those produced are 95% for A, 85% for B and 90% for C. An article is chosen at random.

   a) What is the probability that it is satisfactory?

   b) Assuming that the article is satisfactory, what is the probability that it was produced by Machine A?

4. The probability that a student, selected at random from certain college, will pass economics is 0.8 and will pass in both economics and religion is 0.5. What is the probability that he will pass religion if it is known that he had passed economics?

15. Consider the diagram of an electronic system, which shows the probabilities of the system components operating properly. What is the probability that the entire system operates if assembly III and at least one of the components in assemblies I and II must
operate for the assembly operate? Assume that the components of each assembly operate independently and the assemblies operate independently.