Problem 1:
Section 5.5, Problem 10 a, c, e. (5th edition: section 4.5, Problem 10 a, c, e.)

Problem 2:
Section 5.5, Problem 30. (5th edition: section 4.5, Problem 30.)

Problem 3:
Section 6.1 Problems 8, 12, 16. (5th edition: section 5.1, Problems 8, 12, 16.)

Problem 4:
Section 6.2 Problem 10 a, b, c. (5th edition: Problem 10 a, b, c.)

Problem 5:
Section 6.2 Problem 12. (5th edition: Problem 12.)

Problem 6:
Section 6.2 Problem 24. (5th edition: Problem 24.)

Problem 7:
Section 6.2 Problem 26. (5th edition: Problem 26.)

Problem 8:
(Section 6.3, problem 6.) When a test for steroids is given to soccer players, 98% of the players taking steroids test positive and 0.5% of the players not taking steroids test positive. Suppose that 5% of soccer players take steroids. What is the probability that a soccer player who tests positive takes steroids?

Problem 9:
(Section 6.3, problem 8) Suppose that one person in 10,000 people has a rare genetic disease. There is an excellent test for the disease: 99.9% of people with the disease test positive and only 0.02% who do not have the disease test positive.

a) What is the probability that someone who tests positive has the genetic disease?

b) What is the probability that someone who tests negative does not have the disease?
Extra Credit 10:
The 120 seats of an airline flight were completely booked, with each of the 120 passengers having a different assigned seat. The passengers entered the plane one-by-one. Unfortunately, the first passenger couldn’t read his boarding pass and sat in a (uniformly) random seat. Each subsequent passenger sat in their assigned seat if it was available when they entered and sat in a (uniformly) random empty seat otherwise. What is the probability that the last passenger sat in their assigned seat? (Caution: not easy.)