1. Jenny goes to school by bus every day. When it is not raining, the probability that the bus is late is $\frac{3}{20}$. When it is raining, the probability that the bus is late is $\frac{7}{20}$. The probability that it rains on a particular day is $\frac{9}{20}$. On one particular day the bus is late. Find the probability that it is not raining on that day.

(Total 5 marks)

2. In a class of 20 students, 12 study Biology, 15 study History and 2 students study neither Biology nor History.

   (a) Illustrate this information on a Venn diagram.

   (2)

   (b) Find the probability that a randomly selected student from this class is studying both Biology and History.

   (1)

   (c) Given that a randomly selected student studies Biology, find the probability that this student also studies History.

   (1)
   (Total 4 marks)

3. At a nursing college, 80 % of incoming students are female. College records show that 70 % of the incoming females graduate and 90 % of the incoming males graduate.
   A student who graduates is selected at random. Find the probability that the student is male, giving your answer as a fraction in its lowest terms.

   (Total 5 marks)

4. Only two international airlines fly daily into an airport. UN Air has 70 flights a day and IS Air has 65 flights a day. Passengers flying with UN Air have an 18% probability of losing their luggage and passengers flying with IS Air have a 23% probability of losing their luggage. You overhear someone in the airport complain about her luggage being lost.

   Find the probability that she travelled with IS Air.

   (Total 6 marks)

5. Bag A contains 2 red and 3 green balls.

(a) Two balls are chosen at random from the bag without replacement. Find the probability that 2 red balls are chosen.

(2)

Bag B contains 4 red and n green balls.

(b) Two balls are chosen without replacement from this bag. If the probability that two red balls are chosen is $\dfrac{2}{15}$, show that $n = 6$.

(4)

A standard die with six faces is rolled. If a 1 or 6 is obtained, two balls are chosen from bag A, otherwise two balls are chosen from bag B.

(c) Calculate the probability that two red balls are chosen.

(3)

(d) Given that two red balls are chosen, find the probability that a 1 or a 6 was obtained on the die.

(4)
(Total 13 marks)