1. A crime is committed by one of two suspects, A and B. Initially, there is equal evidence against both of them. In further investigation at the crime scene, it is found that the guilty party had a blood type found in 10% of the population. Suspect A does match this blood type, whereas the blood type of Suspect B is unknown. (a) Given this new information, what is the probability that A is the guilty party? (b) Given this new information, what is the probability that B’s blood type matches that found at the crime scene?

Ans : Consider, the events E1,E2

and A P(E1)=1/2 P(E2)=1/2

P(E1/A)=20×100/100×100,P(E2/A)=20×20/100×100

∴ Required probability P(A/E1)=P(E1)×P(E1/A)/P(E1)×P(E1/A)+P(E2)×P(E2/A)

=1/2×(20×100/100×100)/(1/2)×(20×100/100×100)+(1/2×(20×20/100×100))

=20×100/20×(100+20)=100/120=5/6