



**Q1:** A backup power station can be started to deal with an electric power emergency if two relays  $A$  and  $B$  of the main supply both have failed. The probabilities of  $A$  and  $B$  failing are known to be 0.02 and 0.05, respectively. It is also known that  $B$  is more likely to fail (probability 0.08) if  $A$  has failed.

- (a) What is the probability that the backup power station starts?
- (b) What is the probability that  $A$  will fail if  $B$  has failed?
- (c) Are the events “ $A$  fails” and “ $B$  fails” statistically independent?