

ASSIGNMENT 6

SUBMISSION: Monday, 29th March 2021(11:59pm)

Submit by email

1. An insurance policy on an electrical device pays a benefit of 4000 if the device fails during the first year. The amount of the benefit decreases by 1000 each successive year until it reaches 0. If the device has not failed by the beginning of any given year, the probability of failure during that year is 0.4.
What is the expected benefit under this policy?
2. If I flip a fair coin 5 times, what is the probability that I will get tails in at least 3 consecutive flips?
3. A fair six-sided die is rolled until it comes up 6. What is the probability that the number of rolls will be exactly 5 given that it takes at least 2 rolls?
4. The number of power surges in an electric grid has a Poisson distribution with a mean of one power surge every twelve hours. What is the probability that there will be no more than one power surge in a 24-hour period?
5. During hurricane season, the number of tropical storms per month that come within 100 miles of Cuba has a binomial distribution with mean 1 and maximum value 4, and the number of tropical storms in each month is independent of the number in other months. If there are no tropical storms during the first month of the season, what is the probability that the first tropical storm of the season comes during the fourth month?