Islamic University of Technology (IUT)

Department of Computer Science and Engineering (CSE)

Math 4441: Probability and Statistics

Quiz # 3 Marks: 30 Time: 30 Minutes

1. An unbiased die is successively rolled. Let X and Y denote, respectively, the number of rolls necessary to obtain a six and a five.

   a) Find the expected value of X, $E[X]$. 7

   b) Find the conditional expectation of X, $E[\,X \mid Y = 1\,]$. 3

   c) Find the conditional expectation of X, $E[\,X \mid Y = 5\,]$. 8

2. A business trip is equally likely to take 2, 3 or 4 days. After a d-day trip, the change in the traveler's weight, measured as an integer number of pounds, is uniformly distributed between $-d$ and d pounds. For one such trip, denote the number of days by the random variable D and the change in weight by the random variable W. Find the joint PMF, $P_{DW}(d, w)$.