King Fahd University Of Petroleum & Minerals
Department of Mathematics & Statistics
STAT416 : Stochastic Processes for Actuaries (151)
Assignment # 2 (Due December 16, 2015)

Solve the following problems:

Problem.1 Defects occur a long the length of a filament at rate of $\lambda = 2$ per foot.

a. Calculate the probability that there are no defects in the rst foot of the filament(Answer: e^{-2})

b. Calculate the conditional probability that there are no defects in the second foot of the filament, given that the first foot contains a single defect?(Answer: e^{-2})

Problem.2 Messages arrive at a telegraph office as a Poisson process with mean rate of 3 messages per hour.

a. What is the probability that no messages arrive during the morning hours 8:00am to noon 12:00pm (Answer:e^{-2})

b. What is distribution of the time at which the first afternoon message arrives (Answer: Exponential with $\lambda = 3$)

Problem.3 Customers enter a store according to Poisson process of rate $\lambda = 10$ per hour. Independently, each customer buys something with probability $p = 0.30$ and leaves without making a purchase with probability $1-p = 0.70$ What is the probability that during the first hour nine people enter the store and that 3 of these people make a purchase and 6 do not? (Answer:0.0334)

Problem.4 Solve problem 6 page 412 of your text book. (Answer: See Solutions Manual)

Problem.5 Solve problem 12 page 413 part (a) of your text book. (Answer: See Solutions Manual)

Problem.6 Solve problem 14 page 414 part (a) of your text book. (Answer: See Solutions Manual)

Problem.7 Question 35 page 575-text book. (Answer: See Solutions Manual)

Problem.8 Question 41 page 576-text book. (Answer: See Solutions Manual)

Problem.9 Question 50 page 577-text book. (Answer: See Solutions Manual)

Problem.10 Question 27 page 664-text book. (Answer: See Solutions Manual)

Problem.11 Question 28 page 664-text book. (Answer: See Solutions Manual)

Problem.12 Question 29 page 664-text book. (Answer: See Solutions Manual)

Problem.13 Question 30 page 665-text book. (Answer: See Solutions Manual)

Problem.14 Question 2 page 726-text book. (Answer: See Solutions Manual)

Problem.15 Question 7 page 727-text book. (Answer: See Solutions Manual)