CS 519: Probability and Linear Algebra Assignment 2

Due date: 14th Sep '16, Wed 12 PM, During class

Q1. Prove that the PMF for hypergeometric distribution is a valid PMF. (Ref: Validity of Poisson PMF is proved in [HOS].)

Q2. [HOS] Section 3.3.0 End of Chapter Problems
Problem Nos. 6, 9, 11, 21, 22, 25

Q3. Which distribution would you use to model the random variable X in each of the following cases:

- Case 3.1: $X = Y + Z$; where Y and Z are two independent Poisson variates.
- Case 3.2: X = Number of idle nodes in a High Performance Computing (HPC) cluster where the probability of a node being idle is fixed.
- Case 3.3: X = Number of hearts (cards belonging to the suit of hearts) in the hand of your opponent during a blackjack (aka "21") game. There are four different suits, namely - diamonds, hearts, spades, clubs, comprising a deck of 52 cards (13 of each suit). Your opponent has picked two cards at random from the deck without replacement.

NOTE:
Any question related to assignment must be posted on Piazza. Direct mail to instructor's email-id will not be entertained.