

52374S Telecommunication networks (Tietoliikenneverkot)
Examination 7.12.2002

Answers in English or in Finnish
Vastaukset suomeksi tai englanniksi

1. A server is serving customers with a Poisson distributed rate of 2/minute. Customers arrive to the system with a Poisson distributed rate of 1/minute and wait in the queue if there is only less than 4 customers in the system; otherwise, they leave and never return. Represent the system with the Kendals notation and give the state transition diagram of the system.
2. For M/M/1 balking model it is known that $b_n = e^{-an/\mu}$ for $\lambda_n = b_n \lambda$. Find the probability that the system is in state n .
3. a) Find the shortest paths from node A to every other node in Figure 1 by using Bellman-Ford routing algorithm.
b) Describe Dijkstra's routing algorithm.
4. Discuss the main multiple access protocols
 - ALOHA
 - Carrier Sense Multiple Access (CSMA)
 - Derive the main measures of performance, throughput
delay
5. Discuss Access control of data in integrated voice/data in CDMA system
 - Simple algorithms
 - Delta modulation type prediction

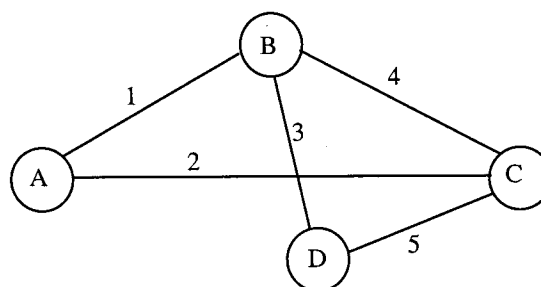


Figure 1