family name-name-mat.#

Traffic Theory - Questions
09/09/2015

Comment the following statements providing a detailed explanation

1 In a Markov Chain we can have two or more distributions satisfying the balance equations

2 In a positive recurrent MC all states are visited with probability one

3 With the same offered traffic and number of servers the Erlang-B is smaller than the Erlang C

4 The Pollaczeck-Khintchin formula for the average delay holds for an M/G/m system

5 In an M/G/1 system with non-preemptive priority, the average delay of the highest priority users depends on the load of low priority users

6 Jackson networks allow for deterministic routing with closed paths

Outline of the answers

1 True, considering non irreducible chains with asymptotic distributions.

2 True, but more. In positive recurrent chain all states are visited within a finite average amount of time.

3 True. Both refer to finding all servers busy. But the former loses traffic, i.e., serves a smaller amount of traffic, so that servers are less fequently busy.

4 False. The Pollaczeck-Khintchin formula for an M/G/1 system only.

5 True. It depends on the load of low priority users because we may find them in the server, and must wait they end service.

6 False. Deterministic routing with closed paths means memory, i.e., it is not markovian.