

**Distribution of the Number of Customers Served  
During a Busy Period in a Discrete  
Time Single Server Queue**

*V. Goswami*

Kalinga Institute of Industrial Technology  
India

**Abstract**

In this paper, a discrete-time single server queueing system with infinite buffer size and geometrically distributed arrivals is considered. We derive the functional equations and analyze the distribution of the number of customers served during a busy period for geometrically distributed service time as well as for deterministic service time. We also show that in the limiting case the results obtained in this paper are consistent with the corresponding continuous-time counterparts by Medhi [1].

*Keywords:* Queueing System, Infinite Buffer Size, Geometrically Distributed Service Time, Deterministic Service Time.