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Madhu Jain* (drmadhujain@yahoo.co.in), Department of Mathematics, IIT Roorkee, Roorkee, Hardwar, UT 247 667, India. *Finite Priority Queueing System with Service Interruption.*

This paper is concerned with a finite buffer queueing model with preemptive resume priority and service interruption. The system may fail anytime while providing service to the priority and non-priority customers. The arrival patterns of two types of the customers are independent Poisson processes wherein the service times are exponentially distributed. The service discipline of the customers is first come first served (FCFS) within their own queue. Further, Runge-Kutta (R-K) method of fourth order is used to obtain the solution of the system of transient equations governing the model. Various performance measures are obtained in terms of transient probabilities such as expected number of the customers in the system, throughput, expected delay, probability of the server being idle, busy or broken down, etc.. The numerical results are obtained by taking an illustration to examine the effects of various system parameters on the performance measures and total expected cost. (Received September 05, 2012)