CHAPTER 8

CONCLUSION

The present study discusses discrete and continuous time queueing models with server breakdown/repair, closedown and vacation policies. Priority queues of loss system with different types of customers, namely, feedback, impatient and negative customers are also considered. Analytical treatment of all models proposed in this study was done by using either supplementary variable technique or embedded Markov chain technique or both.

This research work provides an updated and comprehensive treatment of discrete and continuous time queueing models that have potential applications in manufacturing, computer and communication networks, etc. All the chapters are motivated with a practical situation for better understanding and application. In order to justify the theoretical results, numerical illustrations of all models are discussed with assumed parameters.

Analytical treatment of this research work is done by using remaining service time as supplementary variables in chapters 2 – 6 and remaining inter arrival time as supplementary variable in chapter 7. In chapter 2, continuous time queueing model is analysed by considering MAP/G/1/N queue with single and multiple vacation policies by combining two phases of service with MAP arrivals. In chapter 3, MAP/(a,b)/1/N queue with multiple vacations and closedown times have been considered. In chapter 4, multi-server non-Markovian loss system with pre-emptive priority and server
breakdown which arises in voice over internet protocol is considered. In chapter 5, a discrete time infinite capacity queueing system with correlated arrival and negative customers is considered. In chapter 6, discrete time queueing model is considered with correlated arrival, negative and feedback of customers with general service. In chapter 7, discrete time queueing model is considered with general in input with the server is subject to starting failures and impatient customers. All the models considered in this thesis are unique and more general in nature.

**FUTURE ENHANCEMENT**

The following are some of the possible future extensions of the models considered.

- Waiting time analysis may be obtained for models in chapter 3 and chapter 4
- Queueing models discussed in chapters 2,3,5,6 and 7 may be considered for the more complex multi-server case.
- Models in chapters 2-3 may be generalised with BMAP, DMAP and DBMAP with variant customers.

Thus the present work is devoted to the analysis of some continuous and discrete time queueing models with priority queues, loss system, server breakdowns and repair, single and multiple vacations with closedown times, impatient, negative and feedback of customers.