CHAPTER-VII

Overall summary, conclusions
And
Future Scope
In the world of reliability, everyone tries to design the system as per requirement as well as long lasting. For this our requirements are known, long life may be achieved by analyzing the available historical data of the system. The concept of redundancy helps us to be sure in achieving our goal.

The present work is done to get some theoretical results with different assumptions and in different situations. Most of assumptions were made up to now by taking 2-unit systems but the thesis has results on multi-unit systems, starting from a very simple model of type 2-out-of-3 units system. The relationships between components are considered and decisions about the choice of component can be made to improve overall system reliability.

In the thesis firstly we investigated the benefits of using an ARM (automatic repair machine) and found that when ARM fails availability decreases. Secondly we investigated into the benefits of maintaining units. The behavior of a system was examined to see if a unit is heated due to over loading/over working. It was found from different graphs that increase in repair rate give increase in availability of the system thus increase the reliability of the system. In a few models inspection was carried out on failure of a unit and inspection system to find out whether the failed unit required a full repair or minor repair/maintenance. Money and time can be saved following such decisions. The preventive maintenance can increase the reliability of the system and decrease the cost of repair. Again if we compare the system 2-out-of-3 and 3-out-of-4 the first system seems to be more reliable as compared to the latter.

This study reflects benefits of multi-unit systems. Models with limited assumptions and certain constraints were examined by widening the assumptions and under different aspects and working conditions. Practically the industry uses multi-units in a system producing the same product and the systems comprising many units to complete it, the scope of the results found in the thesis may be extended depending upon the requirement and resources.