ABSTRACT

Acceptance sampling plan plays a vital role in Statistical quality control analysis. It deals with the acceptance or rejection of the large sized submitted lot of items on the basis of the quality characteristics of the inspected items in sample taken from the lot. A good acceptance sampling plan not only reduces the time and energy required for inspection and the cost of construction inspection but also increases the accuracy of the decision regarding the lot disposition.

In this dissertation, an economic reliability group acceptance sampling plan is designed for truncated life tests, when a tester accommodating a multiple number of items as a group and can be tested simultaneously, when the lifetime of an item is assumed to follow a generalized exponential distribution with a known value of shape parameter.

The test termination ratios are obtained by considering various levels of the producer's risk, while the acceptance number, group size and number of groups are fixed in advance. The operating characteristic values for various quality levels are also obtained. The comparison of the proposed reliability test plan is made with the existing group acceptance sampling plan available in literature such as Srinivasa Rao (2009). It is found that the values of the test termination ratios of the proposed reliability test plan are smaller than the existing sampling plan of Srinivasa Rao (2009). Therefore, we can say that the proposed reliability test plan is preferable than the existing group acceptance sampling plan in terms of test time and cost. The results are explained with the help of tables, OC Curve and numerical examples.

We see that as the group size increases for fixed values of acceptance number "c" and number of groups "g", the test termination ratios decreases and as the acceptance number and number of group increases the test termination ratios also increases for fixed value of group size. It can be seen that the test termination ratio increases as the shape parameter increases. We can observe that the values of the operating characteristic increases with the increase in quality level.