

# **COST-BENEFIT ANALYSIS OF A TWO-UNIT COLD STANDBY SOPHISTICATED SYSTEM WHEREIN UNITS HAVE THREE OPERATIONAL STAGES**

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## **ABSTRACT**

The present paper deals with a cold standby sophisticated system with two identical units, each of which undergoes three stages of its operational life viz. burn-in period (Stage-I), useful life period (Stage-II) and wear-out period (Stage-III). Every unit has different failure as well as repair rates at these stages of its operation with the lowest failure rate found at Stage-II. Various measures of the system effectiveness such as mean time to system failure(MTSF), availability of the system, busy period of the repairman, expected number of repairs and expected number of replacements have been obtained using semi-Markov processes and regenerative point technique. Cost-benefit analysis of the system is carried out and various conclusions regarding the system have been drawn through graphical studies.

**KEYWORDS:** Three operational stages, semi-Markov processes, regenerative point technique, MTSF, profit function.