

ABSTRACT

This research thesis focuses on the theoretical aspect of maintenance models (also known as policies) for repairable systems with a general degree of repair. The relevant mathematical and statistical theory needed to describe the models is presented in section 2. Most maintenance models are based on the classical ones, namely: age replacement policy, block replacement policy, periodic replacement with minimal repair at failure policy, and the repair cost limit policy. Hence we described these policies in detail in section 3. In sections 4 to 6, we considered the various extensions made to the age replacement policy, block replacement policy and the repair cost limit policy respectively. The concept of imperfect repair is also introduced. Over the years, several maintenance models with a general degree of repair have been proposed. Hence in section 7, we discussed the ones which are based on the concept of the virtual age of a system. The costs associated with maintenance are of paramount importance. Thus for each model we derived the cost function.