

ABSTRACT

A QUEUEING MODEL FOR MAINTENANCE SYSTEM WITH APPLICATION ON SHRIAN AL-SHAMAL COMPANY

This research is dealing with the application of queueing theory at the central workshop in Shrian AL-Shamal Company for roads and dams, the period was one year in order to build a model for improving working conditions and developing service efficiency offered. Finding out the measures of queueing model applied.

The research sample is arrived machines at the central workshop during the research period. The research depends on the following hypotheses:

- The arrival rate follows the Poisson distribution.
- The number of machines under show also follows the Poisson distribution.
- The service discipline applied in the workshop is general, i.e. it is possible to use (FCFS), (FCLS), (SIRO), or (SIP) methods.

The main conclusions of this research are:

1. The service density is very high, it's about (84.1%) for the whole time of the day which equals to (19) hours, in which the system is occupied
2. It is easy to use the concept of probability generating function (PGF) that depends on time for the mathematical treatments of the queueing models, instead of the other complicated approaches The following results are reached:
 - a- The machines number in the waiting list follows the Poisson distribution with rate of (0.53) machines per day.
 - b- The machines numbers who under show also follows the Poisson distribution with rate of (0.63) machines per day.
3. . The efficiency of queueing model (M/M/1):(GD/N/∞) applied at the central workshop, this is because of the possibility of carrying out some probability distribution on the study changes.
4. The increase in the number of workshops will be result in the decrease of density service and model measures.

