International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 5 No. I (January, 2011), pp. 125-136

APPLICATIONS OF INFORMATION MEASURES FOR THE STUDY OF VARIATIONS OF ENTROPY IN DIFFERENT STATES OF QUEUEING PROCESSES

K. C. DESHMUKH, P. G. KHOT AND NIKHIL

Abstract

While dealing with queueing theory, we suppose that the queueing system is in a steady-state condition which reaches if the state of the system becomes essentially independent of the initial state and the elapsed time. In fact, the usual analysis of the main queueing system is based on the birth-and-death process, according to which, for any state n of the queueing system, the mean rate at which the entering incidents occur must equal the mean rate at which leaving incidents occur. Queueing theory must assume some kind of stability for obtaining a probabilistic model of the system's evaluation and the basic formulae obtained are reliable to the extent to which the conditions of the alleged birth-and-death process are satisfied. If the real probability distribution of the possible states of the queuing system is known, the corresponding entropy is a number, which may be effectively computed for measuring the amount of uncertainty about the real state of the system. But generally, we do not know this real probability distribution. The available information is summarized in mean values, mean arrival rates, mean service rates of the mean number

---