

## 19. SCHEDULING PROBLEMS WITH SOME MACHINE AND JOB CONSTRAINTS

Teruo Masuda

First, we consider a scheduling problem with an earliest and latest available time for each machine and gives two algorithms. One of algorithms constructs an *MAT-schedule* when there exists such a schedule. The other minimizes maximum prolongation time when the nonexistence of *MAT-schedule* is shown.

Next we show the computational complexity of scheduling problem with complementary condition, and gives an approximation algorithm with  $O(n)$ .

## 20. COMMUTATIVE TANDEM QUEUE WITH TWO TYPES OF CUSTOMERS

Jun-Ming Huang (黄俊铭)

This paper considers a commutative tandem queue with two types of customers. In no queue case we obtain the rate of loss calls and discuss some properties about it. And in infinite queue case we derive the mean queue length and attach its numerical results.

## 21. A PERIODIC PREVENTIVE MAINTENANCE POLICY WITH AGE REJUVENATION

Kimio Okuda

The present paper considers a finite horizon problem concerning with a periodic preventive maintenance policy with minimal repair at failure. At each preventive maintenance, the system can be rejuvenated to one which has an arbitrary age between zero and the current age just before the preventive maintenance. The objective of the present paper is to find an