Topics Covered in Lecture 26

3-October-2002

- **Example 8.11 (Equivalent Failure and Repair Rates)**

$$A = \frac{MTTF_{eq}}{MTTF_{eq} + MTTR_{eq}} = \frac{\mu_{eq}}{\lambda_{eq} + \mu_{eq}}.$$

$$\lambda_{eq} = \frac{\lambda \pi_M - 1}{1 - \pi_M}$$

$$\mu_{eq} = \mu.$$

$$A = \frac{\mu_{eq}}{\lambda_{eq} + \mu_{eq}} = \frac{\mu(1-\pi_m)}{\lambda \pi_{M-1} + \mu(1-\pi_M)} = 1 - \pi_M.$$

- **Example 8.13 (Response Time in a Client-Server System)**
Throughput of single client $= \dfrac{1}{E[R] + \frac{1}{\lambda}}$
Throughput of M clients $= \dfrac{M}{E[R] + \frac{1}{\lambda}}$

$$E[R] = \frac{M}{E[T]} - \frac{1}{\lambda}$$

$$M^* = \frac{E[B_0] + 1/\lambda}{E[B_0]} = 1 + \frac{\mu}{\lambda}.$$

- **Wireless Handoff Performance Model**
The probability of dropping a handoff call is given by

$$p_d(n,g) = \pi_n.$$

The probability of dropping a new call is obtained by assigning reward rate 1 to states $n-g$ to n and reward rate zero to the remaining states.

$$P_b(n,g) = \sum_{k=n-g}^{n} \pi_k$$