

Esercizio I - pari

15 aprile 2003

For the configuration shown in Figure 1, write down the Boolean expressions for the system up and system down state, and derive the expressions for:

- (1) The reliability using Reliability Block Diagram method;
- (2) The reliability using the state enumeration method;
- (3) The reliability using **minpath** and the unreliability using **mincut**;
- (4) The unreliability using Fault-tree method;

Show that the expressions obtained by the different methods are equal.

Given that the components are assumed to have constant failure rates with the values reported in the following table, compute the reliability value between time $t = 0$ and $t = 10000 \text{ h}$ assuming with step $\Delta t = 2500 \text{ h}$.

$\lambda_A = 2.0 \cdot 10^{-5} \text{ f/h}$	$\lambda_B = 1.5 \cdot 10^{-6} \text{ f/h}$
$\lambda_C = 8.0 \cdot 10^{-6} \text{ f/h}$	$\lambda_D = 5.0 \cdot 10^{-5} \text{ f/h}$
$\lambda_E = 4.0 \cdot 10^{-6} \text{ f/h}$	

