

$$1.7 \quad (1) \quad T(n') = 3 \times 2^{n'} = 64 T(n) \Rightarrow n' = n + 6$$

$$(2) \quad T(n') = 64 T(n) \Rightarrow n' = 8n$$

$$(3) \quad T(n) = C, \text{ 任意规模}$$

$$1.9 \quad (1) \quad n \leq 2^5 \quad f(n) = 2 \log n \leq 2g(n)$$

$$(2) \quad n \geq 2^5 \quad f(n) = 2 \log n \Rightarrow g(n) \Rightarrow f(n) = \Theta(g(n))$$

$$(3) \quad n \geq 4 \quad f(n) \leq 2g(n) \Rightarrow f(n) = O(g(n))$$

$$(4) \quad f(n) > g(n) \Rightarrow f(n) = \Omega(g(n))$$

$$(5) \quad f(n) > g(n) \Rightarrow f(n) = \Omega(g(n))$$

$$(6) \quad f(n) \geq g(n), f(n) < 10g(n) \Rightarrow f(n) = \Theta(g(n))$$

$$(7) \quad f(n) \geq g(n) \Rightarrow f(n) = \Omega(g(n))$$

$$(8) \quad f(n) \geq \frac{1}{10} g(n) \Rightarrow f(n) = \Omega(g(n))$$

$$(9) \quad f(n) \leq g(n) \Rightarrow f(n) = O(g(n))$$

①

1-1 设各情况分别为 $\{s_1, \dots, s_k\}$, 概率分别为 $\{p_1, \dots, p_k\}$

假设第 k 种情况最坏

$$T(n) = \Theta(f(n)) = \sum_{i=1}^k p_i T_i(n)$$

$$p_k T_k(n) = \Theta(T(n)) \sim \sum_{i=1}^k p_i T_i(n)$$

$$p_k \Theta(T_k(n) \geq T(n)) \quad \text{则 } T_k(n) = \Omega(f(n))$$

