1. Maximum Delay

| **Node** | **Logic** | **Min Delay (ns)** | **Max Delay (ns)** |
| --- | --- | --- | --- |
| P | a\*b | 10 | 10 |
| Q | P+c | 5 | 15 |
| R | ~d | 5 | 5 |
| S | Q\*R | 15 | 25 |
| T | S+R | 10 | 30 |
| out | T^e | 10 | 40 |

1. The maximum output delay reported by STA is not accurate, because:  
   In order for *out* to change, either *T* or *e* must change.

If *e* changes and *T* remains the same, *out* changes with a delay of *G6* = 10.

In order for *T* to change, either *S* or *R* must change.

Since *S = Q\*R*, the true logic of *T*: *T=Q\*R + R*

Therefore, *T=R* and *T* effectively has a delay of *G3* + *G5* = 5 + 5 = 10

Therefore, if *T* changes and *e* remains the same, *out* changes with a

delay of *G3 + G5 + G6* = 5 + 5 + 10 = 20

As such, the maximum delay of *out* is actually 20ns