$C_5\ C_4\ C_3\ C_2\ C_1$

CROSS
+ ROADS
DANGER

$C_5 = 1$

$S+S = R$ (even)

0 ×
2 ×
4
6
8

$C+R = A+10$

$C_4+C+R = A+10$

$C_4$ → 0

$C+4 = A+10$

$C = A+6$

$C \geq 6$ : 6, 7, 8, 9

| | | | | | |
|---|---|---|---|---|---|
| 1 | C 9 | R 4 | O | S 2 | S 2 |
| + | R 4 | O | A | D 1 | S 2 |
| | D 1 | A 3 | N | G | E 3 | E 4 |

A == E not possible

Now keeping These values

$R=6$, $S=3$

$R+O = N$

$6+O = N$

(6,1) X
(6,2)
(6,3)

| | | | | | |
|---|---|---|---|---|---|
| | ° | | | | |
| 1 | C 9 | R 6 | O 2 | S 3 | S 3 |
| + | R 6 | O 2 | A 5 | D 1 | S 3 |
| | D 1 | A 5 | N 8 | G 7 | E 4 | E 6 |

$D=1$ $O=2$ $E=4$

$C=9$ $N=8$

$R=6$ $G=7$

$A=5$ $S=3$

| State | h(n) |
|---|---|
| S | 15 |
| 1 | 13 |
| 2 | 10 |
| 3 | 7 |
| 4 | 12 |
| 5 | 10 |
| 6 | 10 |
| 7 | 0 |

1) $S \to 1 \Rightarrow F(n) = g(n) + h(n)$

$= 3 + 13 = 16$ ✗

$S \to 4 \Rightarrow F(n) = g(n) + h(n)$

$= 4 + 12 = 16$ ✓

2) $S \to 1 \to 2 \Rightarrow F(n) = 7 + 10 = 17$ ✓

$S \to 1 \to 4 \Rightarrow F(n) = \quad + 12 = 20$ hold

3) $S \to 1 \to 2 \to 3 \Rightarrow F(n) = 8 + 7 = 15$ ✓

$S \to 1 \to 2 \to 5 \Rightarrow F(n) = 12 + 10 = 22$ hold

1) $S \rightarrow 4 \Rightarrow F(n) = g(n) + h(n)$
$= 4 + 12 = 16$

2) $S \rightarrow 4 \rightarrow 1 \Rightarrow F(n) = 9 + 13 = 22$ ✗

$S \rightarrow 4 \rightarrow 5 \Rightarrow F(n) = 6 + 10 = 16$ ✓

3) $S \rightarrow 4 \rightarrow 5 \rightarrow 2 \Rightarrow F(n) = 11 + 10 = 22$ ✗

$S \rightarrow 4 \rightarrow 5 \rightarrow 6 \Rightarrow F(n) = 10 + 10 = 20$ ✓

4) $S \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow (7) \Rightarrow F(n) = 20 + 0 = 20$ ✓

$S \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7$ Cost = 20