ASSIGNMENT 10

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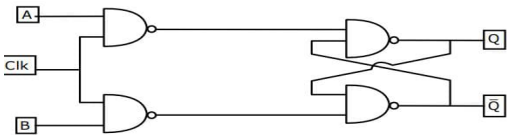
1 Problem Statement :

Consider the given circuit



in this circuit, the race around
(A) does not occur
(B) occurs when CLK=0
(C) occurs when CLK=1 and A=B=1
(D) occurs when CLK=1 and A=B=0

2 Explanation:

$$Q_{next} = \overline{\overline{A.CLK}.\overline{Q}}$$
$$= A.CLK + Q$$
$$\overline{Q}_{next} = B.CLK + \overline{Q}$$

If CLK = 1 and A = B =1
then $Q_{next} = 1$
$\overline{Q}_{next} = 1$
then no race around

If CLK = 1 and A = B =0
then $Q_{next} = Q$
$\overline{Q}_{next} = \overline{Q}$
then no race around

Thus race around does not occur in the circuit

3 Answer

the answer to the given question is (A)

To Be Noted : Race around is applicable only for J-K flip flop when CLK = 1 and A=B=1. But the given circuit is S-R flip flop so no race around occurs.

4 STATE TRANSITION TABLE

TABLE 1

Present state(Q)	input(S)	input(R)	Next state(Q_n)
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	X
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	X

1