

Unit 9 - Week 7

Course outline

How to access the portal

Week 0 Assignment 0

Week 1

Week 2 : Unit 2

Week 3 : Unit 3

Week 4 : Unit 4

Week 5 : Unit 5

Week 6

Week 7

Lecture 31 : Latches and Flip-Flops (Part I)

Lecture 32 : Latches and Flip-Flops (Part II)

Lecture 33 : Latches and Flip-Flops (Part III)

Lecture 34 : Clocking and Timing (Part I)

Lecture 35 : Clocking and Timing (Part II)

Lecture Materials

Feedback for Week 7

Quiz : Week 7 Assignment 7

Week 8

Week 9

Week 10

Week 11

Week 12

Download Videos

Text Transcripts

Detail Solution

Live Session

Week 7 Assignment 7

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-18, 23:59 IST.

- 1) A sequential circuit differs from a combinational circuit because
- The circuit output depends only on the present inputs.
 - The circuit output depends on the present state and the present inputs.
 - The next state depends on the present state and the present inputs.
 - The next state depends only on the present state and not on the present inputs.

1 point

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- b.
c.

- 2) How is a latch different from a flip-flop?
- A flip-flop is triggered by the edge of a clock, whereas a latch is a level-sensitive storage element.
 - A latch is more flexible than a flip-flop.
 - A latch can be triggered both at the positive as well as the negative edges of a clock, unlike a flip-flop.
 - A latch is used more frequently in clocked sequential circuits.

1 point

- a.
 b.
 c.
 d.

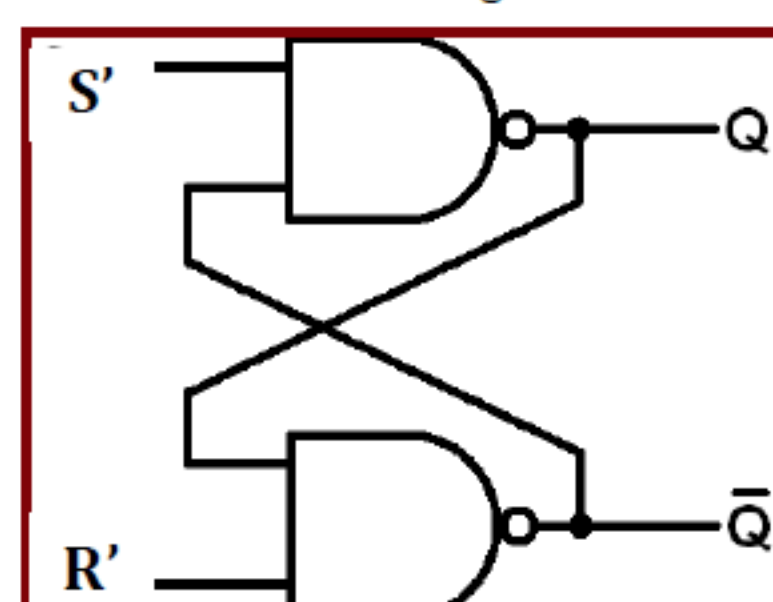
No, the answer is incorrect.

Score: 0

Accepted Answers:

- a.

- 3) How race condition occurs in the following S-R latch?



- The value of Q cannot be predicted when $S = R = 1$ is applied.
- The value of Q cannot be predicted when we apply $S = R = 0$ after the application of $S = R = 1$.
- The circuit output starts oscillating.
- None of these.

1 point

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- b.

- 4) The frequency of a clock is 10 MHz, and the ON period is 75 nanoseconds. The OFF period of the clock signal is nanoseconds.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 25

1 point

- 5) In the excitation table for a J-K flip-flop, what do we have to apply on the J and K inputs to change the output value from 1 to 0?

- $J = 1, K = X$
- $J = X, K = 0$
- $J = X, K = 1$
- None of these

1 point

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- c.

- 6) To construct a J-K master-slave flip-flop, we need NAND/NOT gates.

No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 9

1 point

- 7) To divide the frequency of a rectangular periodic waveform by 2, we need

- A S-R flip-flop
- A D flip-flop
- A T flip-flop
- None of these

1 point

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- c.

- 8) What is setup time of a flip-flop?
- Minimum amount of time the input to the flip-flop must be stable before the active clock edge appears.
 - Minimum amount of time the input of a flip-flop must be stable after the active clock edge appears.
 - Minimum amount of time for which the clock signal needs to be high.
 - None of these.

1 point

- a.
 b.
 c.
 d.

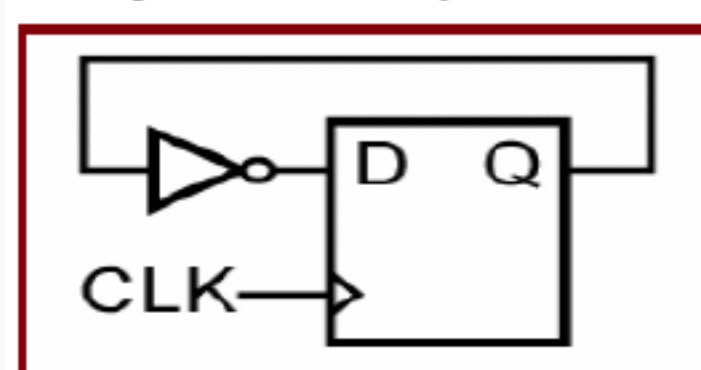
No, the answer is incorrect.

Score: 0

Accepted Answers:

- a.

- 9) For the following circuit, if $t_{pINV} = 6$ nanoseconds, $t_{pFF} = 10$ nanoseconds, and $t_{setup} = 4$ nanoseconds, the maximum clock frequency with which the circuit will operate correctly is MHz.



No, the answer is incorrect.

Score: 0

Accepted Answers:

(Type: Numeric) 50

1 point

- 10) What is meant by static hazard in a combinational circuit in response to some changes in the input values?

- There is a momentary transition in the output, but the initial and final output values are the same.
- There is a momentary transition in the output, but the initial and final output values are different.
- There is a static discharge of charge in the output that may lead to erroneous situation.
- None of these.

1 point

- a.
 b.
 c.
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

- a.